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The effect of board gender diversity on cross-listing

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Abstract

This paper examines whether board gender diversity affects the decision to cross-list firms. The study is based on an extensive sample of 131,022 company-year observations consisting of 15,751 unique companies across 66 industries in 83 countries with different levels of institutional development from 1999 to 2018. Analysis reveals that cross-listing is not rare phenomena, but rather a very attractive strategy that is widely used by corporations seeking financial internationalization. The findings show that greater gender diversity on the board reduces the probability of cross-listing, and are robust to a battery of endogeneity tests including IV of gender grammatical marking, propensity score matching and reverse causality. In addition, we find that stronger institutional context will offset part of the negative effect that having women on the board has on cross-listing.

Key Words: cross-listing, board gender diversity, gender grammatical marking.

JEL: G32, G34, M14

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1. Introduction

Cross-listing (or dual listing) a company's shares in an additional market outside of the home country is a major decision for its board of directors. The benefits of cross-listing are especially high for companies from countries with weak institutions and small capital markets. These benefits include adjusting to better corporate governance environments that reduce consumption of private benefits (Doidge et al., 2009), creating growth opportunities (Doidge et al., 2004) and lowering the cost of raising capital (Hail & Leuz, 2009). Research also indicates that minority shareholders are better protected when firms cross-list in strong institutional settings such as United States (Pagano et al., 2002; Reese & Weisbach, 2002), and cross-listing could enhance firm value and improve investment decisions (Bris et al., 2012). However, cross-listing also has costs and imposes higher risks when dealing with unfamiliar cultures and institutions (Doidge et al., 2010). Scholars suggest that cross-listed firms in strong institutional environments face a greater level of scrutiny from investors because of the strong role of financial analysts and other intermediaries, including media attention (Baker et al., 2002). Such scrutiny can be high in those markets that are highly regulated like the U.S. Moreover, there are also other factors that bear on a board's decision to cross-list. For instance, Karolyi (2006) concludes that factors like language, culture, and geography have an impact on cross-listing decisions. In other words, it is not just the lower cost of capital or bonding with better corporate governance institutions that leads a board to approve a cross-listing of the company.

In the last decade, a growing body of literature has recognized the significant influence of board gender diversity on board decision and company outcomes (Adams & Ferreira, 2009; Conyon & He, 2017; Talavera et al., 2018; Terjesen et al., 2009). The extant literature highlights the benefits of board gender diversity. For example, scholars found evidence of greater board gender diversity and lower pay gap between male and female managers (Carter et al., 2017). Others

found a positive association between board gender diversity and firm performance in the emerging Chinese economy (Liu et al., 2014). Scholars also highlight that women possess unique skills and expertise (Adams et al., 2018; Kim & Starks, 2016) that can improve firm performance.

Despite the widely-held assumptions in the extant literature that board gender diversity enhances firm's performance, empirical evidence based on agency theory finds that gender diversity in boardroom can have a positive, negative or insignificant impact on firm performance and market value (Adams & Ferreira, 2009; Carter et al., 2010; Chapple & Humphrey, 2014; Ferreira, 2015; Talavera et al., 2018; Tasheva & Hillman, 2019), because organizations may appoint boards with gender and ethnic-based diversity for appearances sake and not effectively utilize people's diverse contributions (Abdullah, 2014; Abdullah et al., 2016; Hillman et al., 2007). In addition, scholars indicate that gender diversity in boardrooms can also lead to potential conflicts on the board, which might have negative implications for board cohesion and thereby hinder firms' performance and competitive advantage (Jurkus et al., 2011; Post & Byron, 2015; Roberson & Park, 2007; Triana et al., 2014). On some boards, women might not be allowed the power needed to make effective decisions, which could lead to low performance. Diversity is, therefore, a double-edged sword that can either hinder or improve strategic change and performance (cf. Carter et al., 2010; Post & Byron, 2015; Tasheva & Hillman, 2019; Triana et al., 2014). Keeping in view the mixed results of extant studies, Post and Byron (2015) indicate that it is important to take into account the underlying conditions and contexts that might provide important insights about the impact of board diversity and firm performance.

An enormous body of literature in the social sciences and business management, specifically in finance, suggests that women are more risk averse than men (Carter et al., 2017), leading to further research examining the effect of having women members of the board and company outcomes (see Kirsch, 2018 for a cross-field literature review). Although a few studies contradict

the general consensus (i.e., find that female board members do not assume different risk than male board members) (Sila et al., 2016), most studies found that women take different risks than men, when serving on corporate boards (Carter et al., 2017). Because cross-listing a company outside the domestic market introduces additional risk in the form of liability of foreignness and institutional differences across countries (e.g., La Porta et al., 1998, 2002), we hypothesize that an increased number of women on a company's board will reduce the probability of its cross-listing.

Other studies link board gender diversity with institutional context, suggesting that board gender diversity enhances a firm's performance, and that this impact depends on the legal environment (Adams & Ferreira, 2009; La Porta et al., 2002). Institutional environments differ in developed and developing economies, which may lead boards to adopt different types of corporate governance (cf. La Porta et al., 1998; Grosvold & Brammer, 2011; Terjesen et al., 2009, 2015). This suggests that the decision to cross-list a firm may be moderated by institutional factors in the country where it will be cross-listed (La Porta et al., 2002). Women are more active as board members in companies and environments with weaker corporate governance (Chen et al., 2017; Ye et al., 2019). Better corporate control can influence decisions related to cross-listing of firms (Abdallah & Georgen, 2008), leading us to suggest that stronger institutional environments/countries will offset part of the gender board diversification effect on cross-listing. In a stronger institutional environment, a board's decision making concerning the risky step of cross-listing is generally more robust than in weaker institutional settings, which reduces the inherent risk. Strong institutional settings facilitate lower transaction costs associated with internationalization, and are also associated with better monitoring than weaker institutional environments (e.g., Terjesen et al., 2009, 2015).

To summarize, based on previous literature, we expect that having a greater number of women on a board will make that firm's board less likely to cross-list. In addition, the cross-country

variation in local institutions moderates the effects of gender diversity on cross-listing such that stronger institutional settings positively influence the gender diverse board with cross-listing of firms.

In an extensive sample of 131,022 company-year observations consisting of 15,751 unique companies across 66 industries (2-digit SIC codes) in 83 countries from 1999 to 2018, we found that 2,235 unique companies headquartered in 66 countries cross-listed their equity shares on foreign exchange markets during our sample period, implying that cross-listing is not rare, but rather an attractive strategy used by many corporations seeking financial internationalization. We further observe an unequal national distribution of cross-listing, with Canadian companies (34%) being the most active, followed by companies in United Kingdom (9.40%), Australia (7.04%), China (4.63%), and United States (4.10%). Cross-listing events peaked in 2013 and then stabilized at approximately 17% in terms of the proportion of cross-listing subsample to full sample. Regarding women's representation on corporate boards, we observe not only significant variation ranging from boards consisting only of men to a super majority of women directors, but we also observe an almost the monotonic time-series increase over our sample period.

In multivariate settings, we find that the likelihood of a company cross-listing its equity shares decreases when women's presence on the board is stronger, suggesting that board gender diversity acts as a deterrent to a company's financial internationalization. To ensure that our findings are not driven by a spurious association between board gender diversity and the likelihood of cross-listing events, we perform a battery of robustness tests to mitigate endogeneity concerns. First, we add a country fixed effect in the baseline models to control, at least, for home country-level omitted variables. The results remain robust after controlling for time-invariant heterogeneity within a country over our sample period. Second, we uses instrumental variable (IV) analysis using grammatical gender marking in the language of the company's home country as an IV that has

been validated for testing board gender diversity in prior studies (e.g., Hicks et al., 2015; Santacreu-Vasut et al., 2014). Again, the results from IV estimation confirm the negative effect of greater board gender diversity on the likelihood of cross-listing. Third, we construct a matched subsample using propensity score matching (PSM) based on firm and industry-level characteristics. Using the matched sample, we also find that greater board gender diversity leads to a lower likelihood of cross-listing. Lastly, we examine those firms where board gender diversity does not change over time for at least two consecutive years. For these firms, reverse causality is unlikely because board gender diversity remained constant and thus did not change in response to firms' decision to cross-list. Despite these additional tests, the results are consistent across the sample. In a subsequent cross-sectional analysis, we examine the moderating role of institutional environment of the home country (where a company is headquartered) on the impact of the company's gender board diversity on its cross-listing. We find that if the decision on cross-listing is made in an environment with strong institutions, there is a higher probability that a gender diverse board will approve it than in an environment with weak institutions. The institutional setting relates to the quality of corporate governance. Women on boards seem to be reluctant to cross-listing, but in those countries in which the corporate governance framework is clearly defined and respected, women might feel more comfortable to take risky decisions.

The topic is important because of the recent increase in the number of women on corporate boards,[1] as well as policy-makers and the popular press highlighting how board gender diversity is associated with greater firm value. The rise in women directors is mainly due to increased social pressure for diversity and inclusion (Farrell & Hersch, 2005). Despite the growing research on cross-listing and firm value, there has been relatively little research conducted on the impact of

[1] https://www.2020wob.com/sites/default/files/2020WOB_GDI_Report_2017_FINAL.pdf

board gender diversity on the decision to cross-list. We contribute to the literature on board gender diversity, cross-listing and institutions in a number of ways.

We are the first to document the strong negative effect that women board members have on cross-listing in foreign markets. This result is significant to a variety of robustness tests including a very strong IV using the grammatical gender marking of the dominant language at the home country. This contributes an interesting perspective to the growing body of literature on board gender diversity and cross-listing. Existing studies have focused on corporate control and cross-listing, as well as the association of mergers and acquisitions with cross-listing, but we provide novel insights by highlighting the role of gender in cross-listing decisions. Our research also contributes to the small but growing literature on the factors that moderate the impact of diversified boards. The magnitude of the impact that having a diversified board in general, and gender-diverse board in particular, has on different organizations varies (Anderson et al., 2011). We demonstrate that a stronger institutional environment moderates the effect of female board members on cross-listing. Since institutions shape a firm's behavior including internationalization strategies, having stronger institutions mitigates the opportunistic behavior of managers leading to better decisions about cross-listing. This finding is interesting and adds to the recent studies that have examined the effect of institutions on firm level outcomes in regarding to gender on the board (cf. Seierstad et al., 2017; Terjesen et al., 2009, 2015).

2. Methodology

2.1. Data Collection

For this study, we begin with the BoardEx global leadership database (BoardEx), which provides the biographical profiles of board members and senior executives associated with over

800,000 global organizations.[2] The biographical profiles in BoardEx allow us to obtain data on board members' age, gender, tenure in current position, time on the board, number of educational qualifications, and network size. Drawing upon this data, we first measure boardroom gender diversity[3] in terms of the incidence and degree of women's presence on the board. Given that BoardEx tracks individual board members over time, board member-year level data is collapsed down to board-year level to understand unique characteristics not only of each board member, but also of the board itself.

To identify financially internationalized companies whose equity shares have been cross-listed on foreign stock exchanges in addition to their domestic stock exchanges during our sample period, we primarily used two security daily files, "Compustat Daily Updates – Security Daily" and "Compustat Global – Security Daily" (together, the "Compustat Security Daily files"[4]) available at Wharton Research Data Services (WRDS). Compustat Daily Updates – Security Daily provides detailed information on all financial instruments[5] issued by companies domiciled in North America, while Compustat Global – Security Daily provides data for other countries. The information includes, but is not limited to, the type (i.e., equity or debt) of each instrument and the location (i.e. specific stock exchange and country) where each is traded. For company-level financial and accounting data including total assets, ROA, sales growth rate, and leverage of

[2] BoardEx provides four individual data files, each designated for the following four regions, North America, Europe, UK, and Rest-of-the-World.

[3] Although we understand that gender diversity involves more nuanced variations, BoardEx data does not provide more detailed data than the binary sex of each board member.

[4] According to WRDS, Compustat security daily files are created by WRDS using raw data including security information available Compustat North America and Compustat Global.

[5] BoardEx also provides the ISINs of financial instruments issued by companies. Given that ISINs can be assigned not only to equities, but also to debt instruments, we choose to use Compustat security daily files to more clearly identify financially internationalized companies whose equity shares have been cross-listed during our sample period. For example, in case that a company which raises capitals by issuing one equity in one country and debt instrument in another country, then this firm will have two ISINs for each financial instrument but should not be treated as having its equity shares cross-listed.

companies, we use two fundamentals annual files (together Compustat fundamental annual files) named as "Compustat Daily Updates – Fundamentals Annual" and "Compustat Global – Fundamentals Annual." Using the Compustat-Capital IQ identity file,[6] we match company-level Compustat fundamental annual files (using GVKEYs) and board-level BoardEx data (using ISINs, which leaves us with a final sample of 131,022 company-year observations[7] consisting of 15,751 unique companies in 66 industries (2-digit SIC codes) and 83 countries (listed in Appendix 4[8]) for 20 years from 1999[9] to 2018. The sample used in the analysis is slightly different, since the data availability varies for each regression analysis.

2.2. Dependent Variables

Using the Compustat security daily files, we first identify the types and specific locations of issuance for all financial instruments issued by companies whose financial instruments are traded in at least two different stock exchange markets. We further impose two additional conditions to create a final list of cross-listed companies for our analysis. First, given that Compustat security daily files include different types of financial instruments (including common stock, preferred stock, various bonds and financial derivatives), we focus on common/ordinary equity shares[10] and American Depository Receipts (ADR) for identifying cross-listed companies. Second, we exclude these companies that cross-list their equities in multiple stock exchanges in the same country (e.g.,

[6] Compustat-Capital IQ identity file provides the mapping table among various key company identifiers including GVKEY, CUSIP, CIK, and ISIN.

[7] BoardEx also provides company-level financial data including market capitalization at year-end and revenues generated during a year, but data is very sparse and limited only to a subset of companies in BoardEx. When we use company-level financial data available from BoardEx instead of using Compustat, our final sample suffers from a dramatic reduction in size to less than 3,000 company-year observations.

[8] Appendix 4 also include a matrix showing the home countries and host countries of the top five countries in the sample.

[9] BoardEx begins its coverage in 1999.

[10] We intentionally exclude preferred equity shares when identifying financially internationalized companies because preferred shares do not give holders voting privileges.

a US company listed on both the New York and Philadelphia stock exchanges) from our definition of cross-listed companies. We then construct a dummy variable, "cross-listing," which has a value of 1 if a company is financially internationalized by cross-listing its equity ownership on foreign stock exchanges in addition to their domestic stock exchanges during our sample period.

2.3. Independent Variables for gender on boards of directors

Using BoardEx, we construct four dependent variables of interest, to measure the degree and frequency with which women directors are present on the board. First, we gauge the degree of board gender diversity, by constructing Female_ratio, which represents the proportion of women out of the total number of directors on the board. Given that it might take some time before the impact of gender diversity in boardroom on corporate decision-making becomes apparent, we follow Coles et al. (2014) in developing an alternative measure, Tenure Weighted (TW) female ratio, which represents the sum of the tenure of women directors divided by the total tenure of all directors on the board. The TW female ratio assumes that the longer the tenure of women directors, the greater their influence on corporate decision making.

Next, we create two dummy variables to capture the incidence of women's presence on the board. We first create an indicator variable, Female_director (yes/no), which has a value of 1 if a company has at least one-woman director on the board. To cope with criticism that companies increasingly tend to window-dress gender diversity in their boardroom by adding a single woman director, or that one-woman director might not be enough to have a significant influence on the corporate decision-making process in a heavily male-dominated board, we also use an alternative indicator, Female_director>1 (yes/no), which has a value of 1 if a company has at least two women directors on the board.

2.4. Control Variables

The board of directors is the paramount mechanism for effective corporate governance as firms develop competitive advantages and improve performance. To capture the unique characteristics of the board of directors, we include board-specific characteristics as control variables in all models. First, debate on the role of the board is dominated by the issue of board monitoring effectiveness (Chaganti et al., 1985; Coles et al., 2014). Therefore, we include two board-related variables to capture the effectiveness of board monitoring on cross-listing: board size and independent director ratio. Board size is the number of directors on the board, and the independent director ratio is the proportion of independent directors (neither inside nor gray) out of the total number of directors on the board. We also control for other board-specific characteristics such as: (1) average time directors are on the board, in years, (2) average number of qualifications of directors, (3) average network size of directors, and (4) average age of directors. To reduce the impact of outliers on our analyses, we use log values for all board-related variables except for the independent director ratio. To control for company-specific financial data,[11] we use logarithm of total assets, return on assets (ROA), annual sales growth rate, and leverage as proxies for firm size, profitability, growth potential, and borrowing cost-driven financial incentive to access global equity markets, respectively. Lastly, as a domestic country-specific control variable, we also include market capitalization of listed domestic companies in the home country to account for the overall development and strength of a country's financial markets. Detailed definitions of all variables used in the paper are presented in Appendix 1.

[11] To convert financial data in foreign currency to US dollars, we use the historical exchange rates available from World Bank Indicators (https://data.worldbank.org/indicator/PA.NUS.FCRF)

2.5. Summary Statistics

Panel A of Table 1 reports summary statistics for the variables used in the empirical analysis. As shown in Panel A, the mean of cross-listing (yes/no) is 0.12 (15,112 company-year observations, cross-listing subsample), suggesting that cross-listing is not a rare phenomenon, but rather a very attractive strategy widely used by many corporations that seek financial internationalization. We further investigate the cross-listing subsample by breaking it down by country where cross-listing companies are headquartered. Figure 1 reveals several noteworthy findings. First, 2,235 unique companies headquartered in 66 out of the 83 countries in our sample cross-listed their equity shares during our sample period, implying that cross-listing is not limited to companies from a few countries. Second, Canadian companies were the most active in cross-listing activities, accounting for 34% of the cross-listing subsample, followed by companies in United Kingdom (9.40%), Australia (7.04%), China (4.63%), and the United States (4.10%), showing that cross-listing is pursued more frequently by companies in these countries. We further break down the cross-listing subsample by year. As shown in Figure 2, cross-listing events have increased almost monotonically, except for 1999[12] and peaked in 2013 before stabilizing around 17% of the cross-listing subsample, out of the full sample, as global financial markets have become more integrated over our sample years.

In terms of board gender diversity, the mean Female_ratio of 9.74% shows that one out of 10 board directors is a woman across all our sample companies. However, we observe a significant variation from zero (no women on the board) for some companies to 83.30% (more than super majority of directors on the board being women) for other companies. The mean of Female_director (yes/no) of 0.53 means that the majority (53%) of our sample companies have at

[12] This is partly due to the observed sparse coverage of global firms by BoardEx in 1999.

least one-woman director on the board while the mean of Female_director>1 (yes/no) of 0.22 shows that about one-fifths (22%) of our sample has at least 2 women directors on the board.

<<Figure 1 about here>>

<<Figure 2 about here>>

To examine the time-series evolution of women's presence on boards over our sample period, we plot the ratio of boards with at least one-woman director to total boards over the years. As shown in Figure 3, the proportion of company boards with at least one woman director increases almost monotonically, except for a surge[13] in 2000 and a subsequent drop in 2003 which overlaps the passage of the Sarbanes-Oxley Act, and the associated exchange listing requirement mandating that companies in the U.S. have a majority of independent directors on their boards. The average board size is 8.25 directors of whom 75% were classified as independent directors.[14] Each director serves for an average of 6.85 years and holds an average of roughly two educational qualifications, and has an average network size of 984.46 through employment, other activities, education and so on. The average age of all directors on boards in our sample is 58.37. GII scores (explained below in section 3.3) range from 0 to 4, and similar variations are observed for Conditional GII and GII factors, suggesting that grammatical gender marking differs substantially across countries in our final sample.

Panel B of Table 1 presents the correlation coefficients among variables of interest used in the study. First, the correlation between cross-listing (yes/no) and each board diversity measure is significant and positive, which does not support our hypothesis. However, this positive correlation

[13] The plotted significant change in female board presence in early 2000 is not a subject of this paper and therefore, we call for further investigation into this phenomenon in future studies.

[14] This is similar to Adam and Ferreira (2009) who document an average of 9.38 directors on boards and a 63% independent director ratio.

does not suggest that women directors on boards increase its likelihood to cross-list equity shares in foreign stock exchange markets. Instead, the positive correlation merely suggests that board gender diversity is endogenously associated with a company's decision to cross-list. The causal effect of board gender diversity on cross-listing should be established in multivariate regression settings, which we introduce in section 3, Results.

As expected, the correlations among board gender diversity measures are high, but less than one, suggesting that the different metrics capture different aspects of women's presence on boards. In line with our expectations, the positive correlations of firm size (total assets) and profitability (ROA) suggest that companies need to be larger and sufficiently profitable to attract global equity investors and bear the costs incurred when they cross-list their equity shares in foreign markets. Highly-leveraged companies might be more inclined to cross-list in order to lower their financing costs, as evidenced by the positive correlation with leverage. The negative correlations with sales growth rate indicate that mature, established companies are likely candidates for cross-listing, whereas the correlation with market capitalization of listed domestic companies is negative, suggesting that companies in countries with well-developed, financially strong equity markets have less incentive to cross-list shares in global financial markets. Again, all interpretations based on the correlation analysis are subject to endogeneity issues, which should be addressed adequately by a multivariate regression analysis before any causal effect can be established.

Along with the significant variations in our key variables of interest, the wide geographical spread of our 83 sample countries provides us with an excellent environment for testing the associations between women's presence on the board of a company and the company's decision to cross-list their equity shares in foreign stock markets.

<<Table 1 goes about here>>

2.6. Empirical Models

In this study we estimate the following baseline multivariate regression model in Eq. (1). Cross-listing (yes/no), the dependent variable, is measured in year *t*, while all the independent variables, including each of four board gender diversity measures, are measured in year *t-1*. All regression models include a year-fixed effect since cross-listing might be related to global business cycle and other intertemporal macroeconomic changes over our sample years. Industry-fixed effect (using 2-digit SIC) is also included to take into account that cross-listing decision might be related to competition and common practices within specific industries

$$Cross\text{-}listing_{j,t} = \alpha + \beta_1 * Board\ gender\ diversity_{j,t-1} + \beta_2 * Controls_{j,t-1} + Industry\ fixed\ effect + Year\ fixed\ effect + \varepsilon \quad (1)$$

Given that Cross-listing (yes/no) is a dichotomous variable, we employ probit regression models. We include board, company and domestic country-specific variables as control variables in Eq. (1). Unless otherwise stated, we use robust standard errors in all models to obtain unbiased estimates of standard errors, under the assumption of heteroscedasticity.

3. Results

3.1. Baseline multivariate probit regressions

To test our hypothesis that a more gender-diverse board is less likely to foster cross-listing, we estimate probit models using Eq. (1) where a binary variable for cross-listing is used as a dependent variable and each gender diversity measure is used as an independent variable of interest along with control variables that might affect a company's decision to cross-list. As shown in Model (1) on Panel A of Table 2, where we use Female_ratio as a focal explanatory variable for capturing the degree of board gender diversity, the coefficient of Female_ratio is strongly negative at less than 1% significance level, supporting our hypothesis. We re-calculate Eq. (1) using the TW female ratio as a measure for board gender diversity to take it into account that the impact of women's

presence on the board increases when women directors have a longer tenure than their male counterparties. As shown in Model (2), the coefficient of the TW female ratio is again strongly negative and is more statistically significant, as seen in higher t-statistics. Next, in order to capture the incidence of women's presence on the board, we use Female_director (yes/no) in place of board gender diversity in Eq. (1). The significantly negative coefficient of Female_director (yes/no) in Model (3) implies that even one-woman director affects the decision to cross-list. When we capture the incidence of women's presence on the board by replacing Female_director (yes/no) with Female_director>2 (yes/no) in response to the window-dressing criticism, we find a significantly negative effect of female presence on the board on the decision to cross-list. Together, the results in Table 2 provide strong evidence supporting our hypothesis that a company is less likely to cross-list its equity shares in foreign capital markets when more women directors are present on its board, regardless of how female presence on the board is measured, which is also consistent with our hypothesis.

Although we add market capitalization of all listed firms in their home country as an additional control variable, there is a concern that there might be an omitted-variable bias because we do not adequately control for heterogeneity in the home country, which might correlate with each gender diversity measures in influencing companies' decision to cross-list their shares in foreign countries. To mitigate this concern, we add country dummies to minimally control for time-invariant home country-level omitted variables in our multivariate regression estimation. As reported in Panel B of Table 2, our results remain robust even after accounting for time-invariant characteristics within a given country over years, and heterogeneous characteristics across countries in our sample.

As noted, cross-listing has been used widely by companies in 66 out of 83 countries, but more frequently by companies in certain countries. To see whether this sample selection bias distorts our main findings, we re-estimate Equation (1) excluding companies headquartered in Canada, the

United Kingdom, Australia, China, and the United States from the analysis. Results (not reported for the sake of brevity) continue to hold, suggesting that our findings are not driven by this sample selection bias.

<<Table 2 goes about here.>>

3.2. Cross-sectional analyses: Moderating effect of home market institutions

To investigate whether the deterrent effects on cross-listing by gender diversity on the board could be moderated by cross-country variation in local institutions of home countries, we first create and include an interaction term between each board gender diversity measure and local institutions as a focal explanatory variable in Eq. (2).

$$\textit{Cross-listing}_{j,t} = \alpha + \beta_1 * \textit{Board gender diversity}_{j,t-1} + \beta_2 * \textit{Local institution} + \beta_3 * \textit{Board gender diversity}_{j,t-1} * \textit{Local institution} + \beta_4 * \textit{Controls}_{j,t-1} + \textit{Industry fixed effect} + \textit{Year fixed effect} + \varepsilon \quad (2)$$

The coefficient of the interaction term (β_3) is designed to capture the varying effect of board gender diversity on cross-listing, depending on cross-country variation in local institutions. To define local institutions, we conduct a principal component analysis (an exploratory factor analysis) on the ten institution variables of home countries in La Porta et al. (1997) and extract two factors from them.[15] The results in Table 3 show that, of the 10 variables, six are loaded on factor 1 and four are loaded on factor 2. Upon closer inspection, we observe that five of the six[16] variables loaded positively on factor 1 (GEI factor) are general environmental institutions (GEI) that promote societal interests at large (*rule of law, efficiency of judicial system, contracts repudiation by government, risk of expropriation,* and *accounting standards*). Meanwhile, all four variables

[15] Criterion stopped at two factors.

[16] The only other variable loaded on factor 1 is *mandatory dividend*, which loaded negatively, but the sign is as expected because it is an MIP variable. As documented in Choi et al. (2016), GEI and MIP institution variables are expected to have opposing signs.

uploaded to factor 2 (MIP factor) are in the category of minority investor protection institutions (MIP) and promote a specific group's interests (*percentage of share capital to call an extraordinary shareholders' meeting, percentage of secured creditors to approve reorganization, anti-director rights,* and *creditor rights*). All four uploaded positively except for the *percentage of share capital to call an extraordinary shareholders' meeting,* which loaded negatively because the lower percentage means more power for the minority shareholders.

<<Table 3 goes about here>>

We first estimate probit regressions in Eq. (2) using the interaction term with GEI factor and results are reported in Table 4. As shown in Panel A of Table 4 where we first interact the GEI factor with each board gender diversity measure, we find that the interaction terms are significantly positive in all models, and each board gender diversity measure continues to be significantly negative. This means that the negative effect on cross-listing of board gender diversity remains but is lessened if the company is headquartered in a country with higher GEI. We also find that the coefficients of the interaction terms are almost half in magnitude, but opposite in sign to those of board gender diversity, suggesting that the effect of stronger GEI environment attenuates the effect of women's presence on the board by half.

We next re-estimate probit regressions in Eq. (3) using the interaction term with MIP factor. Panel B of Table 4 presents very similar results. Again, the interaction terms are significantly positive in all models while each board gender diversity measure continues to be significantly negative. The coefficients of the interaction terms with MIP are greater in magnitude, but opposite in sign to those of board gender diversity, suggesting that the effect of female presence on the board is more than offset by the positive effect of stronger MIP environment. Interestingly, the coefficients of GEI factor in Panel A are all negative and mostly significant, while those of MIP

factor in Panel B are all positive and mostly significant, but it is beyond the scope of this paper to deal with different types of institutions and their direct effect on cross-listing.

<<Table 4 goes about here>>

The positive effect of the interaction between women and institutions could be attributed to the fact that stronger institutions leads to better corporate governance. This might mean that women in an environment with weaker corporate governance tend to object to cross-listing at higher rates than those in places with stronger corporate governance. This is consistent with the findings of Terjesen and Singh (2009), that the literature on gender board diversity provides evidence that having women on the board contributes to more effective corporate governance. Therefore, when corporate governance is weak the risk of cross-listing increases, and women on the board tend to be less in favor of cross-listing under such conditions.

In addition, when a firm cross-lists on a foreign market it is subject to securities law of the host country. As an additional robustness test, we use the quality of securities law measures in the home country because our sample includes also companies that are listed only in the home country. The results and detailed explanation of the regressions are presented in Appendix 5. As shown in the Appendix, board gender diversity continues to lead to a lower likelihood of cross-listing even after additionally controlling for public enforcement of securities law in home countries, and the results are robust to alternative measures of the quality of home country securities laws.

3.3. Robustness Instrument Variable (IV) probit regressions

To establish the causal effect of board gender diversity on cross-listing, we use to a variety of methods to mitigate the endogeneity concerns, especially those resulting from the omitted-variable bias. First, we complete the regression model specifications by adding a full range of control variables, which we believe affect a company's decision to cross-list. Second, we re-estimate our

baseline probit model in Eq. (1) by augmenting country dummies to at least control for time-invariant home country-level omitted variables.

To further respond to possible endogeneity issues, we conduct a number of robustness tests. First, we employ the 2-stage instrumental variable probit model (IVprobit) in Eq. (2) where a binary variable of cross-listing is used as a dependent variable and the gender intensity index[17] (GII) is used as an instrumental variable (IV) for each board gender diversity measure to alleviate possible concerns about reverse causality.[18] Prior studies have validated GII as an IV (e.g., Hicks et al., 2015; Santacreu-Vasut et al., 2014) for measuring the overall intensity of the gender distinction in a company's dominant language. A detailed explanation can be found in Gay et al. (2013) and is quoted in Appendix 2. Because GII is based on the four grammatical structures (SBII, NGII, GAII, and GAII) described in the appendix, it assumes a linearity effect by summing the four individual gender-marking indices. Therefore, we construct two additional gender-based language indices as a check. We first create a conditional GII by interacting the SBII with the sum of NGII, GAII and GPII. For second additional gender-based language index, we conduct a principal component factor analysis on four individual language indices (SBII, NGII, GAII, and GPII), which allows us to form only a single GII factor. As shown in Appendix 3, all four individual language indices upload positively and exhibit very high correlations with the GII factor, suggesting that it describes the commonality among all four individual language indices well.

However, there is one critical disadvantage of using IVprobit in our study rather than regular 2-stage least squares (2SLS) IV regression, namely IVprobit requires that the endogenous

[17] Grammatical gender marking in a language was determined centuries ago so it cannot be an outcome of current corporate policies toward board gender diversity and cross-listing.

[18] IV estimation is widely employed in finance and economics to eliminate endogeneity concerns, which include, but are not limited to (1) omitted variable bias, (2) reverse causality bias, and (3) errors-in-variable bias.

explanatory variable be continuous, not discrete, so as to obtain an unbiased estimator from IVprobit. Given that only two of our board gender diversity measures, Female_ratio and TW female ratio, are continuous we use them as focal explanatory variables of interest in IVprobit in Eq. (3)

$$Cross\text{-}listing_{j,t} = \alpha + \beta_1 * Predicted\ value\ of\ Board\ gender\ diversity_{j,t-1} + \beta_2 * Controls_{j,t-1} + Industry\ fixed\ effect + Year\ fixed\ effect + \varepsilon \quad (3)$$

In order to calculate the predicted value of the presence of women on the board in Equation (3), we first execute a 1st-stage IVprobit regression in which the female ratio of a company is regressed on the GII of a country where the company operates as an instrumental variable,[19] together with the same control variables[20] used in Table 2. The logic behind using GII as an instrumental variable is that gender marking in language is a country-specific, time-invariant variable that cannot be influenced by current management decisions on cross-listing (exclusion condition is met), making reverse causality very unlikely. Untabulated results of the 1st-stage IVprobit regression show that GII exhibits very strong statistical power for explaining the female ratio, suggesting that it is a very relevant IV (relevance condition is met).

Having shown that GII is a valid IV satisfying both the exclusion and relevance conditions, we continue to calculate the 2nd-stage IVprobit regressions in which we used the *predicted* values of the female ratio obtained from the 1st-stage IVprobit as an explanatory variable of interest along with the same control variables as in Table 2, while positioning cross-listing (yes/no) as the dependent variable. As reported in Model 1 in Panel A of Table 5, the significantly negative coefficient on the predicted value of the Female ratio suggests that greater board gender diversity

[19] Two conditions should be satisfied for an IV to be valid in the IV estimation. (1) Relevance: the country-specific GII is relevant in explaining the female ratio of the company operating in the country. (2) Exclusion: the time-invariant, country-specific GII could not be a result of the current management decision on the company's policies.
[20] We also include industry fixed effect and year fixed effect, but intentionally exclude country fixed effect in the IV regressions because the GII, an instrument variable of interest in the 1st-stage IVPROBIT regression is time-invariant, making it redundant if used simultaneously with country fixed effect in the same regressions.

is more likely to impede the cross-listing decision, not vice versa. We further re-calculate IVprobit in Eq. (2) by using the TW female ratio as an alternative board gender diversity measure instead of Female_ratio. As shown in Model (4), we continue to find significantly negative coefficents of the predicted values of the TW female ratio, reconfiming that women directors on the board are more likely to act as a deterrent to cross-listing. For robustness, we re-calculate IVprobit in Eq. (2) by replacing the GII with Conditional GII and GII factor interchangeably as valid instrumental variables to re-estimate the predicted value of each board gender diversity measure. As with the GII, the 1st-stage IVprobit regressions show that the Conditional GII and GII factor are strongly related to both board gender diversity measures (relevance condition is met). As shown in Models 2 and 5 (Models 3 and 6) in Panel A of Table 5, results from the 2nd-stage IVprobit regressions using the Conditional GII (GII factor) as an alternative instrumental variable consitstenly support our hypothesis that greater gender diversity is less likely to lead to cross-listing. The coefficients of *predicted* board gender diversity measures continue to be significantly negative in all models, suggesting that gender diversity on boards leads to significantly lower likelihood that the company will cross-list its equity shares in foreign markets, even after controlling for possible endogeneity concerns. Lastly, the Wald tests of the exogeneity of the instrumental variables are marginally significant in most models, implying that the endogeneity concerns including reverse causality are not as severe as initially thought.

<<Table 5 goes about here.>>

3.4. Robustness: Propensity score matching (PSM) estimation

To further address the endogeneity issue, we conduct additional analyses using propensity score matching (PSM). For PSM, we first sort the sample by "female ratio" on the board and regard

those firms whose female ratio is in the highest quintile[21] as our "treatment" group. Then, using the predicted likelihood or propensity score estimated in the first-stage logit model, we one-to-one match each firm in our treatment group with a firm in our control group that has the closest propensity score within 0.1% width without replacement. Our matching is based on four firm-level characteristics, plus the same 2-digit SIC industry, which have been identified to determine board gender diversity in prior studies (Huang & Kisgen, 2013; Farell & Hersch, 2005; Gul et al., 2011). Therefore, our treatment and control firms are virtually identical in terms of observable firm-level determinants of board gender diversity. The only difference is that the treatment group has greater board gender diversity, compared to the control group.

To evaluate the validity of our matching procedure, we follow Dhaliwal et al. (2016) and conduct the following matching diagnostic tests. First, we estimate a probit regression analysis predicting the probability of being in the treatment group (high female ratio in the top quintile of the full sample). Table 6 presents the results for the full sample in Model 1 and for the PSM subsample in Model 2 of Panel A. As shown in Model 2, the statistically insignificant coefficients of all firm-level control variables and the dramatic drop of the pseudo-R2 to less than 0.1% in the PSM subsample indicate that none of the control variables now predict which firms are more likely to be in the treatment group.

Second, we compare the summary statistics of the propensity scores including the mean and the standard deviation between the treatment and the control groups. As expected, we find no discernable differences in any of the summary statistics between the two groups as reported in Panel B of Table 6, suggesting that the firms in the two groups are identical with respect to propensity scores.

[21] Using quartile instead of quintile to define the treatment group does not alter our findings.

Lastly, the mean difference tests in Panel C of Table 6 report no statistical difference in the means for all firm-level control variables between the treatment and the control groups, suggesting that the firms in the two groups are identical at least with respect to firm-level characteristics used to construct our PSM subsample. The firms in the treatment and the control groups are statistically indistinguishable. When combined, all three diagnostic tests strongly demonstrate that our matching procedure is successful, and the two groups essentially differ only on one dimension, i.e., the degree of female ratio. Therefore, if board gender diversity does not matter, the two groups of firms would exhibit a similar likelihood of cross-listing. Panel D of Table 6 shows the results of the probit regression analysis based on a PSM subsample. The coefficients of all board gender diversity measures are significantly negative in all models, reconfirming our findings that greater board gender diversity leads to less likelihood of cross-listing.

<<Table 6 goes about here.>>

3.5. Robustness: Reverse causality

Critics might argue that reverse causality could pose more serious endogeneity concerns to our study because of self-selection bias. For example, reverse causality might arise in a company which plans to cross-list. Such company has incentives to favor fewer women directors to its board because its management fears that risk-averse women directors may be a serious hindrance to its planned cross-listing. To further address reverse causality concerns,[22] we identify a subsample of 98,978 firm-year observations where the number of women directors serving on the board does not change in at least two consecutive years. Given that for these firms, the number of women directors remains constant over time, board gender diversity cannot have changed in response to a firm's decision to cross-list, thereby minimizing reverse causality. Using this subsample, we re-calculate

[22] Using a lagged regression of cross-listing in year *t* on board gender diversity in year *t-1* in our main analyses helps us alleviate the concern that reverse causality drives our results to some extent.

the baseline multivariate probit regressions. As reported in Panel A of Table 7, each board gender diversity measure continues to carry significantly negative coefficients, corroborating the results for the full sample. However, board gender diversity could change even if the number of women directors remains the same, if the number of men on the board increases or decreases. To address this possibility, we choose another subsample of 78,806 firm-year observations where the female ratio does not change in at least two consecutive years. Our findings using this subsample in Panel B of Table 7 remain robust to the alternative identification of firms whose board gender diversity did not change.

<<Table 7 goes about here.>>

4. Additional robustness tests (presented in Appendixes)

1. The critical mass theory (Kanter, 1977) shows that the impact of women when they belong to a minority group is quite limited. The theory has been tested for boards with more than three women, or more than 30% of the board (Jia & Zhang, 2013; Konrad et al., 2008; Schwartz-Ziv, 2017; Torchia et al., 2011). Appendix 6 presents results for boards with either 3 or more women or with more than 30% women. As shown in Appendix 6, all critical mass variables carry negative coefficient, implying that the deterrent effect of board gender diversity continues to hold for cross-listing decisions when women establish a strong representation on the board. We, however, find that both statistical significance and economic magnitude of the effect of each critical mass variable on cross-listing are not much different from ones we report in Table 2. This might suggest that women's representation on the board does not need to reach the critical mass threshold and their mere presence on the board will be enough to make a meaningful impact on corporate decision on cross-listing.

2. Women have been joining boards recently, mostly as independent directors. The effect that an executive director could have on the final outcomes of a board discussion is different than the influence of a relatively new independent director. Therefore, Appendix 7, presents the Female_ned_ratio which represents the proportion of female non-executive directors to the total number of all non-executive directors on the board, and TW-Female_ned_ratio for the tenure of female non-executive directors divided by the total tenure of all non-executive directors on the board. As shown in Appendix 7, we find the same negative effect of females on cross-listing.
3. To test our hypothesis we also use cross-section data for the year before the actual cross-listing. By using propensity score matching (PSM) we capture a sample of identical companies that did not cross-list. The results, reported in Appendix 8, show that in the probit regression analysis using the cross-sectional PSM subsample, the coefficient of each key variable for board gender diversity remains significantly negative. The results reconfirm that greater gender diversity in the boardroom leads to a lower likelihood of cross-listing even in the cross-sectional data analysis.
4. Moreover, institutions culture (informal institutions) could moderate the relation between board gender diversity and cross-listing, meaning that in societies with fewer gender roles, women on the board should have a stronger voice and gender diversity might be more effective and powerful in influencing corporate decisions (g.e. Almor, et al., 2019; Bazel-Shoham et al., 2020). To capture the cultural role of home country, we use House et al. (2004) cultural dimension of gender egalitarianism (GE), which provides a score for gender roles at the country level. As shown in Appendix 9, the interaction terms carry positive and significant coefficients in all regression models while each board gender diversity remains negative and significant.

5. Discussion and Conclusion

Cross-listing firms have received a growing attention in literature on finance (e.g., Abed & Abdallah, 2017; Abdallah & Georgen, 2008). Currently, a growing body of literature on corporate governance deals with board diversification, and more specifically with board gender diversification and firm performance (Adams et al., 2015; Kirsch, 2018). Adding more women to a board changes its decision-making process. This could be an outcome of changing the dynamic on the board. In other words, breaking the "old boys club" and having different viewpoints and ideas. But most of the literature argues that females on average have higher levels of risk aversion, lower level of overconfidence, and less competitive desire than males (Croson & Gneezy, 2009), leading us to argue and support empirically that gender board diversity will decrease the probability of cross-listing.

The findings indicate that having a greater number of women on the board reduces the level of cross-listing, and institutional settings moderate this result. In stronger institutional settings, having more women on the board likely allows more cross-listing than in weaker institutional settings. This suggest that institutions matter (La Porta et al., 1998; North, 1990) especially for corporate governance in general and more specifically for issues of gender-related corporate governance (e.g., Seierstad et al., 2017; Terjesen et al., 2015). In the words of Terjesen et al., (2009: 334) "*the evidence shows that gender diversity on corporate boards contributes to more effective corporate governance*." In our case, if the decision on cross-listing is made in an environment with strong corporate governance regimes there is a higher probability that a gender diverse board will approve it, than in an environment with weak corporate governance.

Our results are based on an extensive sample of 131,022 company-year observations consisting of 15,751 unique companies across 66 industries (2-digit SIC codes) in 83 countries for 20 years from 1999 to 2018, we find that cross-listing events are not country-specific, but global phenomena

for companies seeking financial internationalization while those events are chosen more frequently by companies in some countries such as in Canada, United Kingdom, Australia, China, and United States. The popularity for cross-listing among companies has increased before being stabilized around 17% in terms of the proportion of cross-listing subsample to full sample in 2013 and afterward. In multivariate settings, we document that companies with greater board gender diversity are less likely to cross-list their equity shares in foreign stock markets. The result is robust to possible endogeneity concerns as shown by a battery of robustness tests including instrumental variable approaches, propensity score matching and reverse causality. Using cross-sectional analysis, we examine the moderating role of local institutional environment, and find that the observed effect of board gender diversity on the cross-listing remains but is attenuated by stronger home institutional environments. These findings contribute to the recent research which suggests that corporate governance practices and institutions co-evolve (cf. Terjesen et al., 2015).

Future research could examine how the channels that influence the board gender diversity impact the decrease in cross-listing. The current study does not examine if the impact is due to diversity (breaking the "old boys club") or the difference in behavioral attributes between the genders, e.g., the higher risk aversion of the average female. These channels could be important for professionals and policy makers. If the result is an outcome of diversity then any form of diversity (e.g., ethnicity, national origin) could achieve the same results. But if it is due to differences in behavioral attributes between the genders, only increasing gender board diversity would be effective. Also, we find in appendix 8 that cross-listed firms tend to have a female director who is younger and has spent less time on board and with the firm but has more time remaining before retirement, compared to female counterparts serving in non-cross-listed firms. Much of the work on board gender diversity remain at counting women's heads. Future research should shed light on the characteristic of the females and the impact of the characteristic on board and company

outcomes. Finally, this research does not take a stand on whether the reduction in cross-listing due to having women on the board increases or decreases company value. Rather, we document the causal effect that a larger number of women on the board lower the probability of cross-listing. We also find that stronger local institutions mitigate the impact of gender board diversity and cross-listing decision, thus future research could integrate comparative institutions and examine their role on cross-listing decisions.

Figure 1.

Number of company-year observations and unique companies in the cross-listing subsample by country[23]

Domestic country	Company-year observations	Unique cross-listing companies
Canada	5,195	879
United Kingdom	1,421	179
Australia	1,064	157
China	699	115
United States	619	109
Hong Kong	725	103
Ireland	649	66
Germany	359	51
Switzerland	370	40
South Africa	301	37
India	289	35
Singapore	253	34
New Zealand	189	34
Spain	265	32
Russian Federation	258	32
Bermuda	241	29
Netherlands	216	28
Mexico	152	26
France	197	21
Belgium	128	17
Italy	130	16
Norway	103	14
Indonesia	78	13
Israel	78	13
Austria	83	12
Finland	113	10
Thailand	64	10
Luxembourg	58	10
66	**15,112**	**2,235**

[23] Only countries with more than 10 unique cross-listing companies are reported for brevity

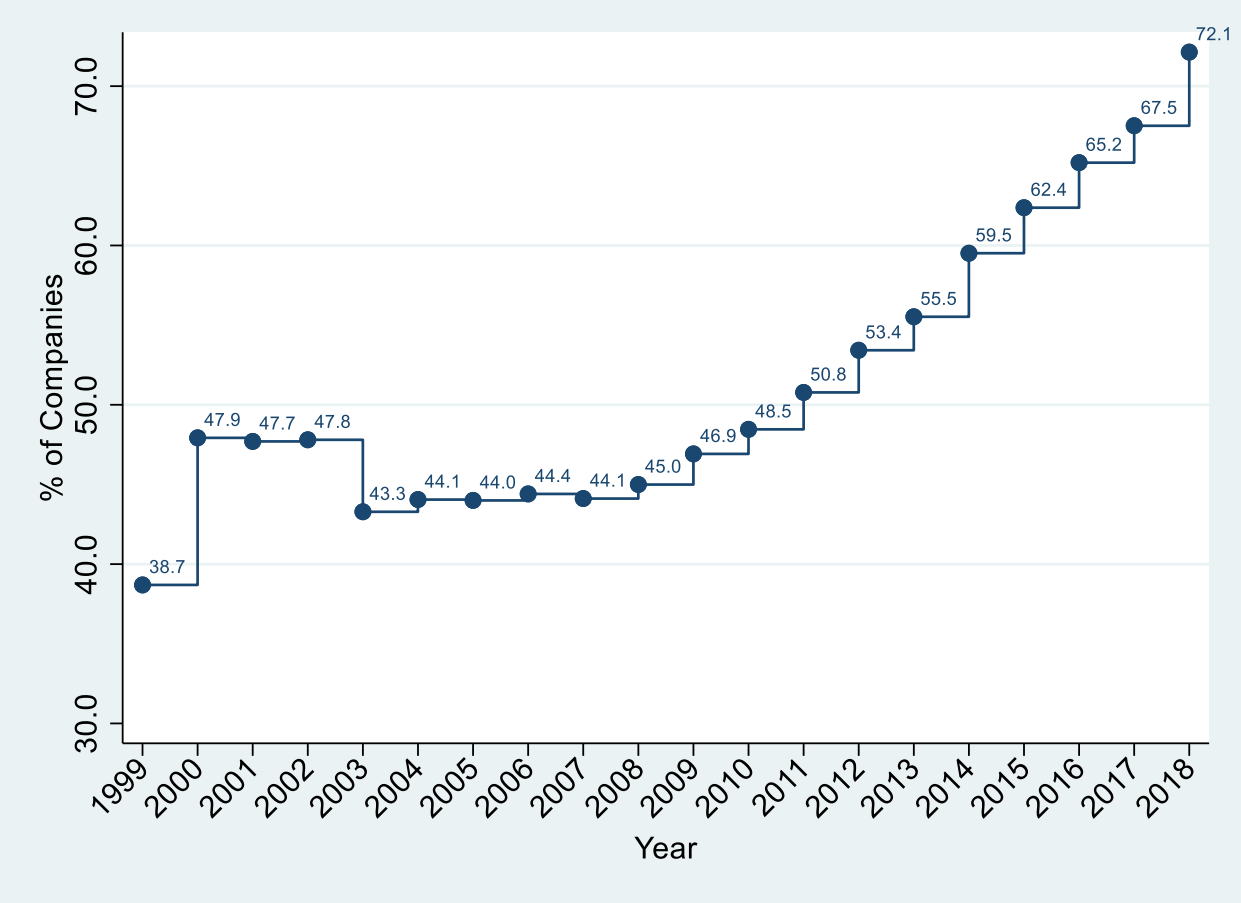
Figure 2.

Number of company-year observations in cross-listing subsample, relative to full sample by year.

Year	Cross-listing subsample (A)	Full sample (B)	A/B
1999	56	713	7.85%
2000	75	2,339	3.21%
2001	108	2,828	3.82%
2002	127	3,075	4.13%
2003	226	5,286	4.28%
2004	285	6,170	4.62%
2005	339	6,748	5.02%
2006	395	7,006	5.64%
2007	499	7,383	6.76%
2008	619	7,261	8.52%
2009	658	7,023	9.37%
2010	788	7,499	10.51%
2011	1,058	7,799	13.57%
2012	1,252	7,914	15.82%
2013	1,409	8,254	17.07%
2014	1,465	8,771	16.70%
2015	1,483	9,041	16.40%
2016	1,445	8,856	16.32%
2017	1,463	9,038	16.19%
2018	1,362	8,018	16.99%
Total	**15,112**	**131,022**	**11.53%**

Figure 3.

Evolution of female presence on the board over years.



Tables

Table 1.

Summary Statistics and Correlation Matrix

Cross-listing (yes/no) has a value of 1 if a company is a financially internationalized company through cross-listing its equity ownership in foreign stock exchanges in addition to their local stock exchanges. Female_ratio represents the proportion of women directors to the total number of directors on the board. TW (Tenure-Weighted) female ratio represents the sum of the tenure of women directors divided by the total tenure of all directors on the board (Coles et al., 2014). Female_director (yes/no) has a value of 1 if a company has at least one woman director on the board. Female_director>1 (yes/no) has a value of 1 if a company has at least two women directors on the board. Please refer to Appendix 1 for detailed definitions of all other variables.

Panel A. Summary Statistics	Observations	mean	median	Standard deviation	Minimum	Maximum
cross-listing (yes/no)	131,022	0.12	0.00	0.32	0.00	1.00
Female ratio	131,020	0.10	0.08	0.11	0.00	0.83
TW (Tenure-weighted) female ratio	131,022	0.08	0.01	0.11	0.00	1.00.00
Female director (yes/no)	131,022	0.53	1.00	0.50	0.00	1.00
Female director>1 (yes/no)	131,022	0.22	0.00	0.42	0.00	1.00
GII	119,935	1.14	1.00	0.64	0.00	4.00
Conditional GII	119,935	0.18	0.00	0.59	0.00	3.00
GII factor	119,935	-0.86	-0.94	0.39	-1.57	0.89
Board size	131,022	8.25	8.00	3.06	1.00	33.00
Independent director ratio	131,022	0.75	0.80	0.17	0.00	1.64
Average board time in years of directors	131,022	6.85	6.13	4.32	0.00	35.40
Average number of qualifications of directors	131,022	1.93	2.00	0.63	0.00	8.25
Average network size of directors	131,022	984.46	820.75	757.98	2.00	7,094.00
Average age of directors	131,022	58.37	58.67	5.67	30.00	97.00
Sales growth rate	131,022	0.81	0.95	1.00	-0.97	8.96
Total assets	131,022	9,837.85	616.77	85,826.72	0.00	3,771,199.85
Leverage	131,022	0.22	0.17	0.25	0.00	2.70
ROA	131,022	-0.05	0.03	0.39	-5.82	0.37
Market capitalization of listed domestic companies, Current US Millions)	131,022	10,855,522.83	11,054,430.00	10,135,013.59	0.00	32,120,702.65

Panel B. Correlation Matrix

Numbers in parenthesis correspond to numbers of variables in Appendix 1. * p<0.1, ** p<0.05, *** p<0.01

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	1.000							
(2)	0.043***	1.000						
(3)	0.023***	0.831***	1.000					
(4)	0.037***	0.805***	0.648***	1.000				
(5)	0.066***	0.754***	0.634***	0.500***	1.000			
(6)	0.105***	0.218***	0.176***	0.397***	0.380***	1.000		
(7)	0.038***	0.195***	0.155***	0.233***	0.207***	0.303***	1.000	
(8)	-0.025***	0.018***	-0.029***	0.066***	0.052***	0.142***	0.066***	1.000
(9)	0.118***	0.123***	0.105***	0.147***	0.125***	0.129***	0.278***	-0.070***
(10)	0.009***	0.138***	0.119***	0.178***	0.163***	0.196***	0.292***	-0.049***
(11)	0.012***	0.025***	0.010***	0.092***	0.068***	0.182***	0.320***	0.483***
(12)	-0.042***	-0.039***	-0.023***	-0.017***	-0.025***	0.015***	0.180***	-0.038***
(13)	0.176***	0.254***	0.213***	0.356***	0.349***	0.657***	0.347***	0.151***
(14)	0.021***	0.036***	0.028***	0.049***	0.038***	0.074***	0.073***	-0.022***
(15)	0.006*	0.079***	0.059***	0.108***	0.087***	0.201***	0.066***	0.145***
(16)	-0.107***	-0.015***	-0.002	0.052***	0.019***	0.188***	0.299***	0.138***

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(9)	1.000							
(10)	0.494***	1.000						
(11)	0.105***	0.112***	1.000					
(12)	0.109***	0.153***	0.088***	1.000				
(13)	0.201***	0.299***	0.250***	0.018***	1.000			
(14)	0.035***	0.059***	0.033***	0.008**	0.180***	1.000		
(15)	-0.013***	0.019***	0.083***	-0.011***	0.331***	-0.188***	1.000	
(16)	0.164***	0.130***	0.196***	0.270***	0.167***	0.041***	0.058***	1.000

Table 2.

Multi-variate Probit Regression: Cross-Listing by Gender Board Diversity

We employ the multi-variate probit regression models in Eq. (1) where cross-listing (yes/no), which has a value of 1 if the company is financially internationalized company through cross-listing, is used as a dependent variable. Female_ratio represents the proportion of women directors to the total number of directors on the board. TW female ratio represents the sum of the tenure of women directors divided by the total tenure of all directors on the board (Coles et al., 2014). Female_director (yes/no) has a value of 1 if a company has at least one woman director on the board. Female_director>1 (yes/no) has a value of 1 if a company has at least two women directors on the board. Please refer to Appendix 1 for detailed definitions of all other variables. Panel A reports results from the baseline probit regressions while Panel B report results from the probit regressions where country dummies are additionally included. All regressions included industry and year dummies. Robust z-statistics are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Panel A. Baseline probit regression	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Female ratio	-0.491***			
	(-9.805)			
TW female ratio		-0.575***		
		(-11.740)		
Female director (yes/no)			-0.157***	
			(-13.110)	
Female director>1 (yes/no)				-0.099***
				(-7.732)
[Board Characteristics]				
Log (Board size)	0.274***	0.269***	0.326***	0.298***
	(12.491)	(12.279)	(14.537)	(13.302)
Independent director ratio	0.129***	0.121***	0.124***	0.102***
	(3.378)	(3.194)	(3.262)	(2.703)
Log (Average board time in years of directors)	-0.005	-0.012	-0.004	-0.006
	(-0.549)	(-1.195)	(-0.417)	(-0.590)
Log (Average number of qualifications of directors)	1.029***	1.028***	1.035***	1.023***
	(34.083)	(34.006)	(34.312)	(33.898)
Log (Average network size of directors)	-0.224***	-0.224***	-0.222***	-0.224***
	(-33.165)	(-33.054)	(-32.809)	(-33.060)
Log (Average age of directors)	-0.574***	-0.565***	-0.553***	-0.545***
	(-8.399)	(-8.287)	(-8.125)	(-8.011)
[Firm Characteristics]				
Sales growth rate	0.008	0.008	0.007	0.009
	(1.344)	(1.374)	(1.295)	(1.528)
Log (Total assets)	0.190***	0.191***	0.190***	0.189***
	(48.010)	(48.154)	(48.161)	(47.689)
Leverage	-0.275***	-0.277***	-0.273***	-0.274***
	(-8.889)	(-8.948)	(-8.842)	(-8.881)
ROA	-0.237***	-0.238***	-0.237***	-0.239***
	(-16.025)	(-16.118)	(-16.010)	(-16.205)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.037***	-0.037***	-0.037***	-0.037***
	(-36.745)	(-36.507)	(-36.521)	(-36.534)
Constant	-0.594*	-0.607*	-0.778**	-0.757**
	(-1.714)	(-1.754)	(-2.252)	(-2.190)
Observations	131,020	131,022	131,022	131,022
Year FE	YES	YES	YES	YES

Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.175	0.176	0.176	0.175

Robust z-statistics in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Panel B. Country FE model	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Female ratio	-0.214***			
	(-3.619)			
TW female ratio		-0.346***		
		(-6.216)		
Female director (yes/no)			-0.065***	
			(-4.451)	
Female director>1 (yes/no)				-0.022
				(-1.378)
[Board Characteristics]				
Log (Board size)	0.218***	0.218***	0.239***	0.220***
	(7.689)	(7.691)	(8.304)	(7.624)
Independent director ratio	-0.130***	-0.129***	-0.128***	-0.138***
	(-2.645)	(-2.632)	(-2.607)	(-2.812)
Log (Average board time in years of directors)	0.020	0.016	0.020	0.020
	(1.565)	(1.279)	(1.602)	(1.533)
Log (Average number of qualifications of directors)	0.574***	0.573***	0.574***	0.570***
	(15.704)	(15.679)	(15.718)	(15.618)
Log (Average network size of directors)	0.013	0.014	0.014	0.013
	(1.427)	(1.503)	(1.466)	(1.382)
Log (Average age of directors)	0.422***	0.421***	0.426***	0.442***
	(4.887)	(4.896)	(4.947)	(5.137)
[Firm Characteristics]				
Sales growth rate	0.013*	0.012*	0.012*	0.013*
	(1.742)	(1.707)	(1.707)	(1.801)
Log (Total assets)	0.202***	0.203***	0.202***	0.200***
	(40.649)	(40.938)	(40.817)	(40.395)
Leverage	-0.162***	-0.164***	-0.162***	-0.161***
	(-4.525)	(-4.584)	(-4.519)	(-4.491)
ROA	-0.265***	-0.266***	-0.265***	-0.266***
	(-16.515)	(-16.579)	(-16.517)	(-16.543)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.003	-0.003	-0.003	-0.003
	(-1.387)	(-1.397)	(-1.425)	(-1.346)
Constant	-4.074***	-4.070***	-4.126***	-4.138***
	(-9.028)	(-9.025)	(-9.165)	(-9.179)
Observations	130,663	130,665	130,665	130,665
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Pseudo R-squared	0.443	0.443	0.443	0.443

Robust z-statistics in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Table 3.

Principal Component Factor Analysis of Institution Variables

We conduct a principal component analysis (an exploratory factor analysis) on the ten institution variables in La Porta et al. (1997) and extract two factors from them. Please see La Porta et al. (1997) for exact definitions of these variables.

Variable	Factor 1 (GEI)	Factor 2 (MIP)
Rule of law	0.90	
Percentage of share capital to call an extraordinary shareholders' meeting		-0.44
Mandatory dividend	-0.45	
Percentage of secured creditors to approve reorganization		0.59
Anti-director rights		0.45
Creditor rights		0.85
Efficiency of judicial system	0.78	
Contract repudiation by government	0.90	
Risk of expropriation	0.93	
Accounting standards	0.76	

Table 4.

Cross Sectional Analyses: Moderating Role of Local Institutions

We investigate whether the deterrent effects on cross-listing by gender diversity on the board could be moderated by cross-country variation in local institutions. We first create and include an interaction term between each board gender diversity measures and each of two local institutional factors (GEI factor and MIP factor) obtained from a principal component analysis in Table 6 as a focal explanatory variable. Panel A reports probit regressions in Eq. (3) using the interaction term between GEI factor and each board gender diversity measure while Panel B reports probit regressions in Eq. (3) using the interaction term between MIP factor and each board gender diversity measure. Please refer to Appendix 1 for detailed definitions of all other variables. All regressions included industry and year dummies. Robust z-statistics are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Panel A. GEI factor	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Interaction with GEI factor	1.310***	0.751***	0.207***	0.075*
	(6.941)	(3.986)	(4.889)	(1.647)
Female ratio	-1.812***			
	(-9.782)			
TW female ratio		-01.695***		
		(-9.236)		
Female director (yes/no)			-0.448***	
			(-10.776)	
Female director>1 (yes/no)				-0.205***
				(-4.594)
GEI factor	-0.137***	-0.056**	-0.126***	-0.021
	(-4.412)	(-1.982)	(-3.606)	(-0.789)
[Board Characteristics]				
Log (Board size)	0.512***	0.500***	0.603***	0.542***
	(11.060)	(10.800)	(12.783)	(11.460)
Independent director ratio	0.563***	0.585***	0.574***	0.529***
	(6.834)	(7.128)	(7.002)	(6.475)
Log (Average board time in years of directors)	-0.045**	-0.059***	-0.043**	-0.049**
	(-2.246)	(-2.979)	(-2.152)	(-2.424)
Log (Average number of qualifications of directors)	2.118***	2.114***	2.125***	2.095***
	(31.946)	(31.884)	(32.197)	(31.622)
Log (Average network size of directors)	-0.417***	-0.414***	-0.411***	-0.413***
	(-27.753)	(-27.487)	(-27.350)	(-27.497)
Log (Average age of directors)	-0.433***	-0.405***	-0.371**	-0.339**
	(-2.916)	(-2.746)	(-2.523)	(-2.294)
[Firm Characteristics]	0.037***	0.037***	0.035***	0.038***
Sales growth rate	(3.342)	(3.295)	(3.176)	(3.455)
Log (Total assets)	0.342***	0.348***	0.343***	0.342***
	(40.900)	(41.684)	(41.290)	(41.012)
Leverage	-0.595***	-0.599***	-0.594***	-0.588***
	(-9.495)	(-9.558)	(-9.473)	(-9.423)
ROA	-0.443***	-0.447***	-0.443***	-0.448***
	(-14.638)	(-14.801)	(-14.660)	(-14.882)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.072***	-0.072***	-0.072***	-0.072***
	(-35.307)	(-35.155)	(-35.201)	(-35.063)
Constant	-3.605***	-3.783***	-4.061***	-4.178***
	(-4.725)	(-4.971)	(-5.348)	(-5.498)

Observations	123,587	123,589	123,589	123,589
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.181	0.182	0.182	0.180

Robust z-statistics in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Panel B. MIP factor	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Interaction with MIP factor	0.882***	1.162***	0.362***	0.359***
	(8.667)	(11.221)	(15.792)	(14.481)
Female ratio	-0.589***			
	(-5.682)			
TW female ratio		-0.925***		
		(-9.211)		
Female director (yes/no)			-0.273***	
			(-10.739)	
Female director>1 (yes/no)				-0.080***
				(-3.113)
MIP factor	0.126***	0.128***	0.007	0.123***
	(6.351)	(7.224)	(0.306)	(7.146)
[Board Characteristics]				
Log (Board size)	0.426***	0.420***	0.519***	0.444***
	(9.331)	(9.199)	(11.144)	(9.528)
Independent director ratio	1.030***	1.061***	1.048***	0.988***
	(11.646)	(12.049)	(11.859)	(11.261)
Log (Average board time in years of directors)	-0.033*	-0.044**	-0.020	-0.032
	(-1.645)	(-2.182)	(-0.997)	(-1.601)
Log (Average number of qualifications of directors)	1.961***	1.962***	1.957***	1.934***
	(30.813)	(30.781)	(30.840)	(30.385)
Log (Average network size of directors)	-0.400***	-0.396***	-0.385***	-0.396***
	(-28.649)	(-28.328)	(-27.510)	(-28.272)
Log (Average age of directors)	-0.223	-0.204	-0.226	-0.138
	(-1.494)	(-1.381)	(-1.536)	(-0.929)
[Firm Characteristics]	0.055***	0.055***	0.056***	0.057***
Sales growth rate	(5.139)	(5.151)	(5.183)	(5.325)
Log (Total assets)	0.357***	0.361***	0.361***	0.356***
	(42.427)	(42.891)	(43.109)	(42.317)
Leverage	-0.589***	-0.592***	-0.591***	-0.591***
	(-9.467)	(-9.520)	(-9.500)	(-9.507)
ROA	-0.473***	-0.475***	-0.483***	-0.480***
	(-15.826)	(-15.905)	(-16.236)	(-16.045)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.062***	-0.062***	-0.064***	-0.062***
	(-28.156)	(-28.247)	(-28.999)	(-28.220)
Constant	-5.134***	-5.262***	-5.368***	-5.471***
	(-6.697)	(-6.872)	(-7.053)	(-7.153)
Observations	123,587	123,589	123,589	123,589
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.185	0.186	0.188	0.186

Robust z-statistics in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Table 5.

Robustness: IV Regression

We employ the 2-stage IVprobit model in Eq. (2) where cross-listing (yes/no) is used as a dependent variable and each gender intensity index (GII, Conditional GII, and GII factor) is used as an instrumental variable (IV) for two continous board gender diversity measures (female ratio and TW female ratio) respectively. GII is calculated as the sum of NG, SB, GA and GP. Conditional GII is an interaction of SB with the sum of NG, GA and GP. GII factor is obtained by conducting a principal component factor analysis on four individual language indices (NGI, GA, GP and SB). Models 1 to 3 (Models 4 to 6) report the 2nd-stage IVprobit where we use the *predicted* values of female ratio (TW female ratio) obtained from the 1st-stage IVprobit as an explanatory variable of interest along with the same control variables in Table 2. Please refer to Appendix 1 for detailed definitions of all other variables. All regressions included industry and year dummies. z-statistics are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

	(1)	(2)	(3)	(4)	(5)	(6)
Instrument	GII	Conditional GII	GII factor	GII	Conditional GII	GII factor
Dependent Variable	Cross-listing (yes/no)					
[Gender diversity on the board]						
female_ratio *(Predicted)*	-1.764*	-3.990***	-1.605*			
	(-1.862)	(-4.636)	(-1.695)			
TW_female_ratio *(Predicted)*				-1.201*	-3.100***	-1.087*
				(-1.860)	(-4.680)	(-1.691)
[Board Characteristics]						
Log (Board size)	0.401***	0.478***	0.396***	0.366***	0.407***	0.363***
	(9.970)	(12.527)	(9.839)	(13.423)	(14.678)	(13.352)
Independent director ratio	0.321***	0.441***	0.313***	0.274***	0.347***	0.270***
	(4.838)	(6.979)	(4.710)	(5.600)	(6.996)	(5.517)
Log (Average board time in years of directors)	0.016	0.026**	0.016	0.001	-0.011	0.002
	(1.380)	(2.189)	(1.323)	(0.090)	(-0.888)	(0.151)
Log (Average number of qualifications of directors)	1.195***	1.259***	1.190***	1.171***	1.214***	1.169***
	(28.840)	(31.492)	(28.737)	(34.225)	(35.191)	(34.177)
Log (Average network size of directors)	-0.257***	-0.245***	-0.258***	-0.260***	-0.250***	-0.261***
	(-28.520)	(-27.272)	(-28.641)	(-31.945)	(-30.051)	(-32.055)
Log (Average age of directors)	-0.876***	-1.058***	-0.863***	-0.796***	-0.894***	-0.790***
	(-8.226)	(-10.414)	(-8.104)	(-10.015)	(-11.155)	(-9.947)
[Firm Characteristics]						
Sales growth rate	0.013**	0.008	0.014**	0.015***	0.013**	0.016***
	(2.246)	(1.438)	(2.307)	(2.764)	(2.285)	(2.794)
Log (Total assets)	0.181***	0.199***	0.180***	0.176***	0.190***	0.175***
	(20.448)	(24.401)	(20.303)	(27.626)	(29.580)	(27.561)
Leverage	-0.223***	-0.242***	-0.221***	-0.220***	-0.238***	-0.219***
	(-8.304)	(-8.987)	(-8.256)	(-8.378)	(-8.985)	(-8.339)
ROA	-0.219***	-0.221***	-0.218***	-0.220***	-0.224***	-0.219***
	(-15.516)	(-15.441)	(-15.511)	(-15.596)	(-15.743)	(-15.581)
[Home country Characteristics]						
Log (Market capitalization of listed domestic companies, Current US Millions)	-0.043***	-0.046***	-0.043***	-0.042***	-0.043***	-0.042***
	(-26.834)	(-29.001)	(-26.742)	(-32.369)	(-32.809)	(-32.337)

Constant	-0.357	-0.016	-0.382	-0.497	-0.308	-0.509
	(-0.788)	(-0.036)	(-0.844)	(-1.147)	(-0.706)	(-1.175)
Observations	119,933	119,933	119,933	119,935	119,935	119,935
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Wald test of the exogeneity	2.355	19.28	1.864	1.365	16.62	0.991

z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6.

Robustness – Propensity Score Matching (PSM) Subsample

We execute additional analyses using propensity score matching (PSM). For PSM matching, we first sort the sample by "female ratio" and regard those firms whose female ratio is in the highest quintile as our "treatment" group. Then, using the predicted likelihood or propensity score estimated in the first-stage logit model, we one-to-one match each firm in our treatment group with a firm in our control group that has the closest propensity score within 0.1% width without replacement. Our matching is based on four (4) firm-level characteristics along with the same 2-digit SIC industry, which have been identified to determine board gender diversity in prior studies (Farrell & Hersch, 2005; Gul et al., 2011; Huang & Kisgen, 2013). Panels A to C report results of PSM diagnostic tests and Panel D reports results using a PSM sub-sample only. Please refer to Appendix 1 for detailed definitions of all other variables. All regressions included industry and year dummies. Robust z-statistics are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Panel A: PSM diagnostic Logit regression	(1)	(2)
Sample	Full sample (pre-matched)	PSM subsample (post-matched)
Variables	*Treated group*	
[Firm Characteristics]		
Sales growth rate	-0.067***	-0.008
	(-12.052)	(-1.133)
Log (Total assets)	0.108***	-0.001
	(47.167)	(-0.246)
Leverage	-0.075***	-0.021
	(-3.693)	(-0.763)
ROA	-0.061***	-0.002
	(-4.685)	(-0.089)
Constant	-1.465***	0.066
	(-19.214)	(0.606)
Observations	132,312	52,798
Year FE	YES	YES
Industry FE	YES	YES
Pseudo R2	0.0455	0.000666

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Panel B: Summary statistics of the propensity score between the treated group and control group								
	Obs.	mean	Std. dev	min	p25	p50	p75	max
Treated group	26,399	0.2378	0.0951	0.0217	0.1673	0.2232	0.2978	0.6159
Control group	26,399	0.2378	0.0952	0.0217	0.1673	0.2232	0.2979	0.6165
Difference	0	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001	-0.0006

Panel C: Mean difference tests of the control variables between the treatment and control group				
	Treated Group	Control group	Mean Difference	t-statistic
Sales growth rate	0.725	0.730	-0.005	-0.686
Log (Total assets)	6.977	6.978	-0.001	-0.063
Leverage	0.232	0.234	-0.002	-1.025
ROA	-0.015	-0.015	0.000	-0.014

Panel D. PSM model	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Female ratio	-0.467***			
	(-7.034)			
TW female ratio		-0.554***		
		(-9.037)		
Female director (yes/no)			-0.174***	
			(-8.638)	
Female director>1 (yes/no)				-0.113***
				(-6.553)
[Board Characteristics]				
Log (Board size)	0.259***	0.253***	0.304***	0.315***
	(7.830)	(7.636)	(9.078)	(9.271)
Independent director ratio	-0.141**	-0.149**	-0.157***	-0.161***
	(-2.413)	(-2.570)	(-2.708)	(-2.775)
Log (Average board time in years of directors)	-0.066***	-0.076***	-0.064***	-0.066***
	(-4.181)	(-4.839)	(-4.084)	(-4.175)
Log (Average number of qualifications of directors)	1.126***	1.126***	1.128***	1.124***
	(23.714)	(23.702)	(23.808)	(23.693)
Log (Average network size of directors)	-0.234***	-0.233***	-0.230***	-0.231***
	(-21.806)	(-21.733)	(-21.449)	(-21.525)
Log (Average age of directors)	-0.279**	-0.260**	-0.241**	-0.244**
	(-2.497)	(-2.345)	(-2.169)	(-2.197)
[Firm Characteristics]				
Sales growth rate	-0.010	-0.009	-0.009	-0.008
	(-0.789)	(-0.751)	(-0.736)	(-0.664)
Log (Total assets)	0.225***	0.226***	0.224***	0.224***
	(37.210)	(37.331)	(37.180)	(37.114)
Leverage	-0.448***	-0.453***	-0.449***	-0.444***
	(-9.366)	(-9.452)	(-9.377)	(-9.296)
ROA	-0.222***	-0.224***	-0.222***	-0.221***
	(-8.129)	(-8.205)	(-8.148)	(-8.129)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.049***	-0.049***	-0.049***	-0.049***
	(-31.774)	(-31.562)	(-31.660)	(-31.744)
Constant	-2.171***	-2.199***	-2.374***	-2.467***
	(-3.643)	(-3.711)	(-4.020)	(-4.155)
Observations	52,282	52,283	52,283	52,283
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.188	0.189	0.188	0.188

Robust z-statistics in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Table 7. Robustness – Reverse Causality

We re-estimate the baseline multivariate probit regressions in Eq. (1) using a subsample where board gender diversity does not change for at least two consecutive years. Panel A reports results using a subsample of 98,978 firm-year observations where the number of women directors serving on the board does not change in at least two consecutive years while Panel B reports results of a subsample of 78,806 firm-year observations where the female ratio has not changed in at least two consecutive years. Please refer to Appendix 1 for detailed definitions of all other variables. All regressions included industry and year dummies. Robust z-statistics are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Panel A. No change in the number of women directors	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Female ratio	-0.604***			
	(-9.813)			
TW female ratio		-0.599***		
		(-10.266)		
Female director (yes/no)			-0.179***	
			(-12.987)	
Female director>1 (yes/no)				-0.113***
				(-7.244)
[Board Characteristics]				
Log (Board size)	0.287***	0.284***	0.347***	0.311***
	(11.102)	(10.972)	(13.101)	(11.791)
Independent director ratio	0.148***	0.134***	0.142***	0.114**
	(3.299)	(3.011)	(3.199)	(2.571)
Log (Average board time in years of directors)	-0.071***	-0.081***	-0.069***	-0.073***
	(-5.439)	(-6.204)	(-5.267)	(-5.608)
Log (Average number of qualifications of directors)	1.031***	1.027***	1.037***	1.023***
	(29.035)	(28.922)	(29.246)	(28.825)
Log (Average network size of directors)	-0.238***	-0.238***	-0.235***	-0.238***
	(-30.022)	(-29.951)	(-29.658)	(-29.943)
Log (Average age of directors)	-0.594***	-0.579***	-0.571***	-0.562***
	(-7.340)	(-7.172)	(-7.084)	(-6.970)
[Firm Characteristics]	0.005	0.005	0.005	0.006
Sales growth rate	(0.736)	(0.796)	(0.706)	(0.925)
Log (Total assets)	0.193***	0.193***	0.193***	0.191***
	(41.338)	(41.294)	(41.484)	(40.937)
Leverage	-0.293***	-0.295***	-0.292***	-0.293***
	(-8.103)	(-8.144)	(-8.065)	(-8.087)
ROA	-0.236***	-0.237***	-0.236***	-0.238***
	(-13.706)	(-13.746)	(-13.727)	(-13.864)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.034***	-0.033***	-0.033***	-0.033***
	(-28.048)	(-27.762)	(-27.816)	(-27.806)
Constant	-0.530	-0.554	-0.745*	-0.688*
	(-1.328)	(-1.388)	(-1.871)	(-1.725)
Observations	98,978	98,978	98,978	98,978
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.179	0.179	0.180	0.178
Robust z-statistics in parenthesis *** p<0.01, ** p<0.05, * p<0.1				
Panel B. No change in female ratio	(1)	(2)	(3)	(4)

[Gender diversity on the board]				
Female ratio	-0.703***			
	(-9.707)			
TW female ratio		-0.683***		
		(-9.430)		
Female director (yes/no)			-0.193***	
			(-12.356)	
Female director>1 (yes/no)				-0.137***
				(-7.063)
[Board Characteristics]				
Log (Board size)	0.333***	0.327***	0.382***	0.350***
	(11.272)	(11.101)	(12.747)	(11.699)
Independent director ratio	0.211***	0.195***	0.204***	0.180***
	(4.292)	(3.983)	(4.166)	(3.683)
Log (Average board time in years of directors)	-0.042***	-0.051***	-0.038***	-0.047***
	(-2.926)	(-3.570)	(-2.624)	(-3.243)
Log (Average number of qualifications of directors)	0.977***	0.974***	0.982***	0.970***
	(24.905)	(24.822)	(25.050)	(24.733)
Log (Average network size of directors)	-0.225***	-0.225***	-0.222***	-0.225***
	(-25.740)	(-25.724)	(-25.437)	(-25.673)
Log (Average age of directors)	-0.604***	-0.587***	-0.586***	-0.573***
	(-6.894)	(-6.710)	(-6.700)	(-6.553)
[Firm Characteristics]	0.011	0.011	0.011	0.012*
Sales growth rate	(1.511)	(1.551)	(1.504)	(1.656)
Log (Total assets)	0.182***	0.182***	0.182***	0.180***
	(34.512)	(34.387)	(34.594)	(34.148)
Leverage	-0.298***	-0.299***	-0.297***	-0.296***
	(-7.405)	(-7.419)	(-7.387)	(-7.372)
ROA	-0.227***	-0.227***	-0.228***	-0.230***
	(-12.457)	(-12.482)	(-12.502)	(-12.623)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.025***	-0.024***	-0.024***	-0.024***
	(-18.563)	(-18.261)	(-18.326)	(-18.316)
Constant	-0.748*	-0.777*	-0.937**	-0.887**
	(-1.691)	(-1.758)	(-2.119)	(-2.009)
Observations	78,806	78,806	78,806	78,806
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.178	0.178	0.179	0.177

Robust z-statistics in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Appendix 1. Definitions of variables

	Variable	Definition
(1)	Cross-listing (yes/no)	1 if a company is a financially internationalized company through the cross-listing of its equity ownership in foreign stock exchanges in addition to their local stock exchanges and 0 otherwise.
(2)	Female ratio	Proportion of women directors to the total number of directors on the board
(3)	TW (Time-weighted) female ratio	Sum of the tenure of women directors divided by the total tenure of all directors on the boar
(4)	Female director (yes/no)	1 if a company has at least one woman director on the board
(5)	Female director>1 (yes/no)	1 if a company has at least two women directors on the board and 0 otherwise.
(6)	Log (Board size)	Natural log of the number of directors on the board plus 1
(7)	Independent director ratio	Proportion of independent directors (neither inside nor gray) to the total number of directors on the board.
(8)	Log (Average board time in years of directors)	Natural log of average number of qualifications of directors plus 1
(9)	Log (Average number of qualifications of directors)	Natural log of average board time in years of directors plus 1
(10)	Log (Average network size of directors)	Natural log of average network size of directors plus 1
(11)	Log (Average age of directors)	Natural log of average age of directors plus 1
(12)	Sales growth rate	Change in sales (sales - one-year lagged sales), scaled by one-year lagged sales
(13)	Log (Total assets)	Natural log of total assets
(14)	Leverage	(Short-term debts + Long-term debts)/Total assets
(15)	ROA	Net income divided by Total assets
(16)	Log (Market capitalization of listed domestic companies)	Natural log of Market capitalization of listed domestic companies plus 1, in Current US Millions

Appendix 2. GII

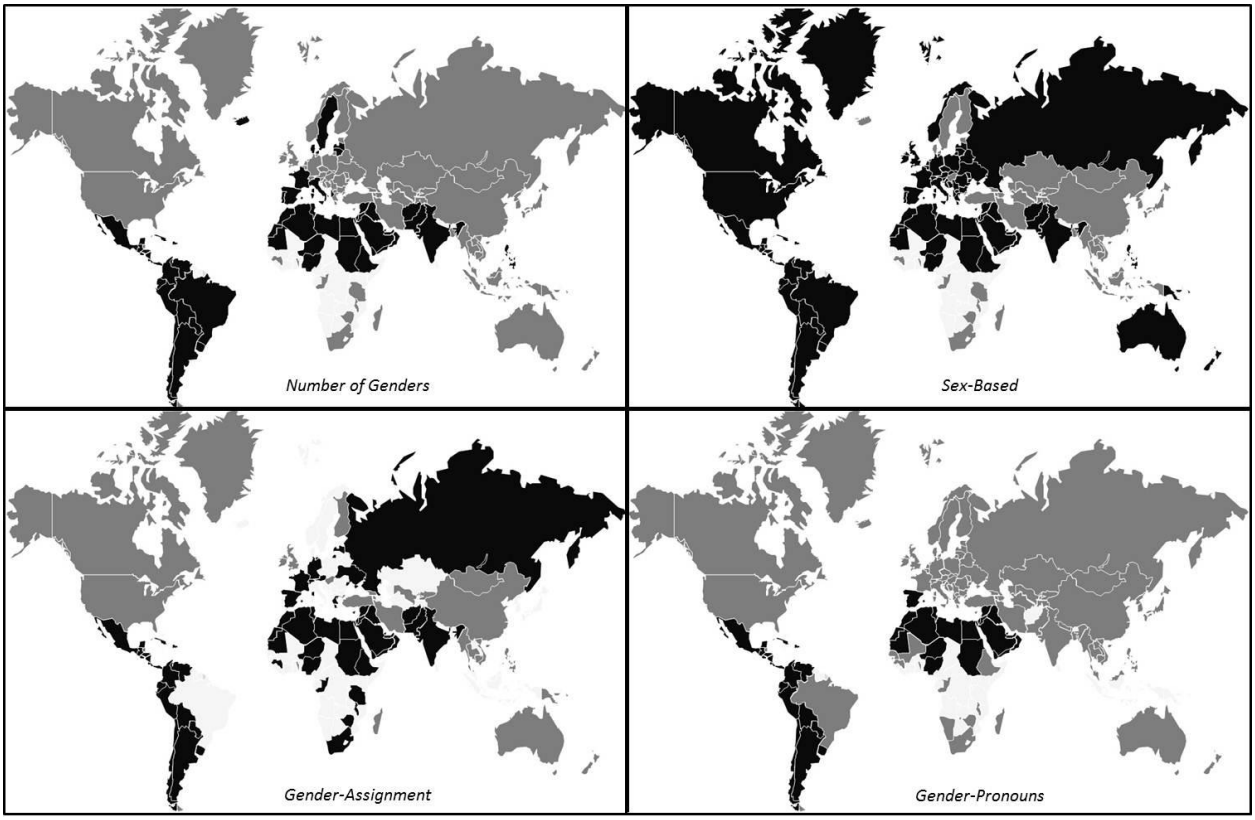
The source of this appendix is Gay at el. (2013). The World Atlas of Language Structures (WALS), includes four structures related to gender; GII incorporates them into a single measure of all available information regarding grammatical gender marking in a language. The first structure relates to Sex-Based (SB) gender (Corbett, 2011b [WALS chapter 31]). A language's gender system can be based on biological sex or on another distinction, for example, the distinction human and non-human, as in Fulfulde, a member of the Niger-Congo linguistic family, or between animate and inanimate, among others. The GII includes a dummy variable that equals one for languages with a biological sex-based gender system, and zero for languages with on a different system.

The second structure relates to the number of genders (NG), or the number of noun types that have different agreements (Corbett, 2011a [WALS chapter 30]). For example, while French has two genders ("feminine" and "masculine'') English includes "neuter'' as a third. There are languages, such as Nigerian Fula, which feature 20 genders. The GII includes a dummy variable that equals one for languages with two genders, and zero for languages that have a number of genders different from two.

The third structure is Gender Assignment (GA), which captures how a speaker assigns nouns to the genders defined by the gender system of a language, which provides a set of rules to help speakers make appropriate agreements (Corbett, 2011c [WALS chapter 32]). Assignment can depend on the semantic meaning or the form of the noun. For example, "table" is neuter in English, which assigns gender only on semantic, biological grounds. However, it is feminine in French, which assigns gender to nouns that do not have a biological gender. The GII includes a dummy variable that equals one for languages whose gender assignment system is both semantic and formal, and zero otherwise.

The fourth structure relates to Gender Pronouns (GP), which captures gender distinctions in independent personal pronouns (Siewierska, 2011 [WALS chapter 44]). There are languages with no gender distinctions in pronouns, gender distinctions in third-person pronouns only, and gender distinctions in the third-person and in the first and/or the second person. For example, English distinguishes gender in third-person pronouns only ("she," "he" and "it."). The GII includes a dummy variable that equals one for languages with gender distinction in third, and the first and/or second person pronouns and zero otherwise. Together GII=NG+SB+GA+GP where GII Є{0;1;2;3;4}.

For example, the GII for German is 1 + 1 + 0 + 0 = 2. It has a sex-based gender system (SB = 1) and assigns gender on the basis of both semantic and formal rules (GA = 1); however, German assigns gender to third-person pronouns only (GP = 0) and does have a neuter gender (NG = 0). An additional aggregate index is GIIV2 = NG + SB+ GP. The GIIV2 index excludes GA from GII. The motive for this exclusion is to overcome sample-size limitations of GII index owing to the relatively high fraction of countries for which we lack information on the GA grammatical variable. The maps in Appendix 2 Figure 1 below show the gender structure distribution for each country's dominant language.



Appendix 2. Figure 1. The four gender structure Intensity Black countries means Dummy equals 1.

Table 1 in Appendix 2 presents a dataset extract that includes the five countries. Table 2 in Appendix 2 shows indices variations across linguistic families and within the Indo-European subfamily

Table A2.1. Dataset extract

Country	Language	NG	SB	GA	GP	GII
Argentina	Spanish	1	1	1	1	4
Armenia	Armenian	0	0	0	0	0
Australia	English	0	1	0	0	1
Austria	German	0	1	1	0	2
Azerbaijan	Azerbaijani	0	0	n/a	0	n/a

Note. The table presents a dataset extract that includes the seven indices. We use four individual variables and three indices because (a) they contain different and complementary information; e. g., only 34% of languages have SB=1 and GP=1; and (b) using different variables allows a bigger sample and different samples, as robustness checks.

Table A2.2. Indices Variation

Family	N^C	N^L	NG	SB	GA	GP
Indo-European	67	34	0. 48	0. 91	0. 79	0. 30
Afro-Asiatic	23	5	1	1	1	0. 95
Niger-Congo	10	10	0	0	0. 86	0
Altaic	7	7	0	0	0	0
Austronesian	7	7	0. 20	0. 20	0	0

Indo-European	N^C	N^L	NG	SB	GA	GP
Romance	25	5	0. 92	1	1	0. 79
Germanic	16	7	0. 13	0. 88	0. 36	0
Slavic	12	10	0	1	1	0
Iranian	3	3	0. 33	0. 33	0. 5	0

Note. Table shows intensity indices across linguistic families and within the Indo-European subfamily. N^C denotes the number of countries for which the dominant language belongs to the family and N^L denotes the number of different languages in the family. Linguistic structures are shown to vary widely across and within families. Thus, grammatical gender structures capture more than geographical or historical forces.

Appendix 3. Principal Component Factor Analysis

We conduct principal component factor analysis on four individual language indices (SBII, NGII, GAII, and GPII), which allows us to form a single factor—the GII factor.

Individual Language Index	Factor 1 (GII Factor)	Uniqueness
NG	0. 9267	0. 1423
SB	0. 8021	0. 3567
GA	0. 8420	0. 2910
GP	0. 8747	0. 2350

Appendix 4. Countries in the sample

Table A4.1.

List of countries in our final sample

Argentina	Finland	Malta	Russian Federation
Australia	France	Mauritius	Saudi Arabia
Austria	Germany	Mexico	Singapore
Azerbaijan	Gibraltar	Monaco	Slovenia
Bahamas	Greece	Mongolia	South Africa
Barbados	Hong Kong	Morocco	Spain
Belgium	Hungary	Netherlands	Sweden
Bermuda	Iceland	New Zealand	Switzerland
Brazil	India	Nigeria	Tanzania
Cambodia	Indonesia	Norway	Thailand
Canada	Ireland	Oman	Turkey
Cayman Islands	Isle Of Man	Pakistan	Ukraine
Chile	Israel	Panama	United Arab Emirates
China	Italy	Papua New Guinea	United Kingdom
Colombia	Japan	Peru	United States
Costa Rica	Kazakhstan	Philippines	Uruguay
Croatia	South Korea	Poland	Vietnam
Cyprus	Kyrgyz Republic	Portugal	Virgin Islands British
Czech Republic	Luxembourg	Puerto Rico	Virgin Islands U.S.
Denmark	Macau	Qatar	Zambia
Egypt	Malaysia	Romania	

Table A4.2.

Matrix showing the home countries[24] of the cross-listed firms and their host countries

Home Country	**Host countries**					
	United States	**Canada**	**Germany**	**Hong Kong**	**United Kingdom**	**Total**
Canada	878				1	**879**
United Kingdom	87		38			**179**
Australia	49	23	24		44	**157**
China	11		31	59		**115**
United States		94	7		3	**109**
Total	**1,025**	**117**	**100**	**59**	**48**	

[24] Only top five (5) home countries listed in Figure 1 whose companies have most actively sought to cross-list their equity shares in foreign stock markets are reported for brevity.

Appendix 5. Securities Law

We use La Porta, Lopez-de-Silanes, and Shleifer (2006, "LLS index") as our primary institutional measure of securities law of home country and include it as an additional control variable in all of the regression models reported in the Appendix

As a measure of robustness, we also use the resource-based measures of public enforcement developed by Jackson and Roe (2009), which measure the intensity of public enforcement of security regulation based on regulators' budgetary resources and staffing level as our primary institutional measure of securities law of home country. Following Jackson and Roe (2009), who claim that their extended sample is the largest sample that provides objective measures of staffing and budgets available for security regulators each country, we also focus on the extended sample for our analysis.

Jackson and Roe (2009) further suggest that their resource-based measures are qualitatively different not only from LLS index, but also from the enforcement index developed by Djankov et al. (2008, "Djankov index"), because both the LLS and Djankov indices rely on the formally stipulated power of regulatory entities rather than the actual resources available for public enforcement of securities laws by regulatory entities. Quantitatively, they show that the correlations among those three indices are less than 0.5 and even negative (-0.11 between Djankov index and LLS index), Given that each of these measures capture different aspects of the effectiveness of public enforcement of securities law of home country, we also used Djankov index as an alternative measures of the quality of securities law of home country.

The following tables show that board gender diversity continues to decrease the likelihood of cross-listing even after additionally controlling for public enforcement of securities law of home countries.

Appendix 5. Securities law

Panel A. Female ratio	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Female ratio	-0.434***	-0.321***	-0.295***	-0.341***
	(-8.174)	(-5.347)	(-4.918)	(-6.136)
[Board Characteristics]				
Log (Board size)	0.120***	0.488***	0.352***	0.154***
	(5.235)	(17.556)	(12.876)	(6.393)
Independent director ratio	0.146***	0.256***	0.276***	-0.473***
	(3.590)	(5.144)	(5.471)	(-10.600)
Log (Average board time in years of directors)	0.009	-0.036***	-0.015	0.005
	(0.852)	(-3.085)	(-1.251)	(0.411)
Log (Average number of qualifications of directors)	1.049***	1.202***	1.248***	1.012***
	(33.259)	(32.954)	(33.482)	(29.512)
Log (Average network size of directors)	-0.087***	-0.341***	-0.285***	-0.004
	(-10.821)	(-38.955)	(-32.955)	(-0.471)
Log (Average age of directors)	0.346***	-0.430***	-0.400***	0.370***
	(4.391)	(-5.003)	(-4.624)	(4.558)
[Firm Characteristics]				
Sales growth rate	0.052***	-0.015*	0.018***	0.038***
	(9.846)	(-1.876)	(2.630)	(6.627)
Log (Total assets)	0.150***	0.168***	0.152***	0.164***
	(36.344)	(35.438)	(32.225)	(37.054)
Leverage	-0.252***	-0.248***	-0.251***	-0.254***
	(-7.956)	(-7.000)	(-6.961)	(-7.514)
ROA	-0.236***	-0.223***	-0.206***	-0.239***
	(-15.438)	(-12.478)	(-11.160)	(-15.580)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.023***	-0.043***	-0.037***	-0.056***
	(-19.948)	(-35.120)	(-30.437)	(-44.646)
[Securities law]				
LLS index	-1.352***			
	(-43.900)			
Log (Extended staff)		0.353***		
		(27.382)		
Log (Extended budgeting)			-0.059***	
			(-4.665)	
Djankow index				1.507***
				(96.911)
Constant	-3.880***	-1.908***	-0.263	-4.625***
	(-10.076)	(-4.656)	(-0.626)	(-11.683)
Observations	124,950	112,177	108,817	125,269
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.194	0.202	0.189	0.304

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Panel B. TW Female ratio	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
TW Female ratio	-0.557***	-0.592***	-0.539***	-0.406***
	(-10.787)	(-10.200)	(-9.260)	(-7.620)
[Board Characteristics]				
Log (Board size)	0.117***	0.489***	0.352***	0.152***
	(5.096)	(17.607)	(12.915)	(6.295)
Independent director ratio	0.145***	0.262***	0.283***	-0.477***
	(3.585)	(5.280)	(5.615)	(-10.768)
Log (Average board time in years of directors)	0.002	-0.041***	-0.019*	-0.000
	(0.227)	(-3.536)	(-1.658)	(-0.032)
Log (Average number of qualifications of directors)	1.048***	1.207***	1.254***	1.011***
	(33.209)	(33.045)	(33.549)	(29.473)
Log (Average network size of directors)	-0.086***	-0.340***	-0.284***	-0.004
	(-10.729)	(-38.788)	(-32.799)	(-0.428)
Log (Average age of directors)	0.357***	-0.433***	-0.400***	0.382***
	(4.545)	(-5.046)	(-4.636)	(4.734)
[Firm Characteristics]				
Sales growth rate	0.052***	-0.015**	0.017**	0.038***
	(9.847)	(-1.975)	(2.533)	(6.652)
Log (Total assets)	0.151***	0.170***	0.154***	0.164***
	(36.553)	(36.019)	(32.728)	(37.216)
Leverage	-0.255***	-0.252***	-0.255***	-0.256***
	(-8.033)	(-7.111)	(-7.051)	(-7.558)
ROA	-0.237***	-0.225***	-0.208***	-0.240***
	(-15.532)	(-12.603)	(-11.257)	(-15.653)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.023***	-0.043***	-0.037***	-0.056***
	(-19.828)	(-35.075)	(-30.394)	(-44.560)
[Securities law]				
LLS index	-1.351***			
	(-43.853)			
Log (Extended staff)		0.356***		
		(27.629)		
Log (Extended budgeting)			-0.058***	
			(-4.595)	
Djankow index				1.506***
				(96.768)
Constant	-3.904***	-1.917***	-0.281	-4.656***
	(-10.153)	(-4.678)	(-0.671)	(-11.778)
Observations	124,952	112,179	108,819	125,271
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.195	0.203	0.190	0.304

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Panel C. Female director (yes/no)	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Female director (yes/no)	-0.136***	-0.131***	-0.119***	-0.114***
	(-10.500)	(-9.219)	(-8.283)	(-8.236)
[Board Characteristics]				
Log (Board size)	0.166***	0.531***	0.391***	0.192***
	(7.050)	(18.780)	(14.043)	(7.764)
Independent director ratio	0.140***	0.264***	0.283***	-0.477***
	(3.462)	(5.311)	(5.620)	(-10.779)
Log (Average board time in years of directors)	0.010	-0.033***	-0.012	0.006
	(0.955)	(-2.881)	(-1.075)	(0.526)
Log (Average number of qualifications of directors)	1.054***	1.208***	1.253***	1.018***
	(33.432)	(33.167)	(33.659)	(29.674)
Log (Average network size of directors)	-0.086***	-0.339***	-0.283***	-0.002
	(-10.718)	(-38.719)	(-32.765)	(-0.266)
Log (Average age of directors)	0.365***	-0.423***	-0.396***	0.386***
	(4.652)	(-4.941)	(-4.589)	(4.795)
[Firm Characteristics]				
Sales growth rate	0.051***	-0.015*	0.017***	0.038***
	(9.739)	(-1.926)	(2.591)	(6.592)
Log (Total assets)	0.150***	0.169***	0.153***	0.164***
	(36.462)	(35.854)	(32.584)	(37.286)
Leverage	-0.251***	-0.247***	-0.250***	-0.254***
	(-7.929)	(-6.972)	(-6.946)	(-7.511)
ROA	-0.235***	-0.223***	-0.207***	-0.239***
	(-15.440)	(-12.502)	(-11.195)	(-15.581)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.023***	-0.043***	-0.037***	-0.056***
	(-19.863)	(-35.083)	(-30.443)	(-44.521)
[Securities law]				
LLS index	-1.340***			
	(-43.480)			
Log (Extended staff)		0.352***		
		(27.248)		
Log (Extended budgeting)			-0.057***	
			(-4.512)	
Djankow index				1.505***
				(96.694)
Constant	-4.038***	-2.036***	-0.393	-4.762***
	(-10.527)	(-4.973)	(-0.938)	(-12.082)
Observations	124,952	112,179	108,819	125,271
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.195	0.203	0.190	0.305

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Panel D. Female director>1 (yes/no)	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Female director>1 (yes/no)	-0.078***	-0.071***	-0.055***	-0.031**
	(-5.800)	(-4.804)	(-3.690)	(-2.156)
[Board Characteristics]				
Log (Board size)	0.140***	0.506***	0.364***	0.160***
	(5.964)	(17.865)	(13.058)	(6.494)
Independent director ratio	0.117***	0.246***	0.264***	-0.508***
	(2.899)	(4.962)	(5.249)	(-11.513)
Log (Average board time in years of directors)	0.008	-0.036***	-0.015	0.004
	(0.797)	(-3.113)	(-1.295)	(0.311)
Log (Average number of qualifications of directors)	1.042***	1.199***	1.245***	1.005***
	(33.037)	(32.855)	(33.393)	(29.309)
Log (Average network size of directors)	-0.087***	-0.341***	-0.285***	-0.005
	(-10.808)	(-38.957)	(-32.977)	(-0.527)
Log (Average age of directors)	0.377***	-0.418***	-0.386***	0.410***
	(4.803)	(-4.877)	(-4.474)	(5.082)
[Firm Characteristics]				
Sales growth rate	0.053***	-0.014*	0.018***	0.039***
	(10.032)	(-1.835)	(2.684)	(6.799)
Log (Total assets)	0.148***	0.167***	0.151***	0.161***
	(35.965)	(35.348)	(32.071)	(36.472)
Leverage	-0.251***	-0.247***	-0.250***	-0.252***
	(-7.934)	(-6.987)	(-6.935)	(-7.462)
ROA	-0.237***	-0.224***	-0.207***	-0.240***
	(-15.570)	(-12.560)	(-11.212)	(-15.599)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.023***	-0.043***	-0.037***	-0.056***
	(-19.737)	(-35.103)	(-30.361)	(-44.382)
[Securities law]				
LLS index	-1.350***			
	(-43.798)			
Log (Extended staff)		0.354***		
		(27.498)		
Log (Extended budgeting)			-0.059***	
			(-4.652)	
Djankow index				1.508***
				(96.882)
Constant	-4.037***	-1.998***	-0.340	-4.772***
	(-10.508)	(-4.882)	(-0.812)	(-12.094)
Observations	124,952	112,179	108,819	125,271
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.194	0.202	0.189	0.304

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Appendix 6. Critical Mass

We test the critical mass hypothesis after constructing three critical mass variables as follows

1. Female director>2 (yes/no) which has a value of 1 if a company has at least three women directors on the board.
2. Female ratio_30% which has a value of 1 if a company has more than 30% women directors on the board.
3. Gender_critical_mass which has a value of 1 if a company has either at least three women directors or more than 30% women directors on the board or both.

Next, we re-estimate our baseline multivariate regression model in Eq. (1) where we use each of three critical mass variables interchangeably as the board gender diversity measure of interest. As shown in the table below, all three critical mass variables carry negative coefficients, implying that the deterrent effect of board gender diversity continues to hold on cross-listing decisions, when women establish a strong representation on the board.

Table A6.1. Critical mass

Critical mass	(1)	(2)	(3)
[Gender diversity on Board]			
Female director>2 (yes/no)	-0.030*		
	(-1.647)		
Female ratio_30%		-0.060***	
		(-2.907)	
Gender critical mass			-0.044***
			(-2.629)
[Board Characteristics]			
Log (Board size)	0.120***	0.110***	0.119***
	(5.130)	(4.781)	(5.165)
Independent director ratio	0.096**	0.104***	0.101**
	(2.406)	(2.590)	(2.514)
Log (Average board time in years of directors)	0.006	0.006	0.006
	(0.580)	(0.584)	(0.607)
Log (Average number of qualifications of directors)	1.036***	1.037***	1.036***
	(32.902)	(32.959)	(32.915)
Log (Average network size of directors)	-0.089***	-0.089***	-0.089***
	(-11.071)	(-11.110)	(-11.065)
Log (Average age of directors)	0.402***	0.395***	0.395***
	(5.129)	(5.030)	(5.037)
[Firm Characteristics]			
Sales growth rate	0.053***	0.053***	0.053***
	(10.090)	(10.046)	(10.069)
Log (Total assets)	0.146***	0.146***	0.146***
	(35.568)	(35.746)	(35.652)
Leverage	-0.248***	-0.248***	-0.249***
	(-7.855)	(-7.856)	(-7.877)
ROA	-0.235***	-0.235***	-0.236***
	(-15.467)	(-15.436)	(-15.491)
[Home country Characteristics]			
Log (Market capitalization of listed domestic companies)	-0.022***	-0.022***	-0.022***
	(-19.424)	(-19.507)	(-19.471)
LLS index	-1.347***	-1.350***	-1.350***
	(-43.714)	(-43.761)	(-43.752)
Constant	-4.054***	-4.005***	-4.029***
	(-10.552)	(-10.408)	(-10.481)
Observations	124,952	124,952	124,952
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
Pseudo R-squared	0.193	0.193	0.193

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Appendix 7. Non-executive women directors

Non-executive female ratio	(1)	(2)
[Gender diversity on Board]		
Female non-executive ratio	**-0.337*** **	
	(-7.543)	
TW Female non-executive ratio		**-0.438*** **
		(-10.015)
[Board Characteristics]		
Log (Board size)	0.112***	0.121***
	(4.708)	(5.156)
Independent director ratio	-0.041	-0.017
	(-0.791)	(-0.324)
Log (Average board time in years of directors)	0.009	0.003
	(0.841)	(0.277)
Log (Average number of qualifications of directors)	1.053***	1.045***
	(33.327)	(33.126)
Log (Average network size of directors)	-0.087***	-0.086***
	(-10.822)	(-10.700)
Log (Average age of directors)	0.353***	0.355***
	(4.477)	(4.529)
[Firm Characteristics]		
Sales growth rate	0.052***	0.052***
	(9.868)	(9.896)
Log (Total assets)	0.151***	0.151***
	(36.686)	(36.747)
Leverage	-0.255***	-0.254***
	(-8.050)	(-8.009)
ROA	-0.241***	-0.237***
	(-15.764)	(-15.528)
[Home country Characteristics]		
Log (Market capitalization of listed domestic companies)	-0.023***	-0.023***
	(-19.917)	(-19.900)
	-1.355***	-1.352***
	(-43.959)	(-43.872)
Constant	-3.734***	-3.748***
	(-9.722)	(-9.777)
Observations	124,707	124,952
Year FE	YES	YES
Industry FE	YES	YES
Pseudo R-squared	0.194	0.194

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Appendix 8: Cross-sectional analysis

To test our hypothesis using cross-sectional data, we conduct the following propensity score matching (PSM) analysis. We first identify specific years of cross-listing for 823 cross-listed firms that initially cross-listed equity shares on foreign stock market in the middle of our sample. Using the predicted likelihood or propensity score estimated in the first-stage logit model, we one-to-one match each firm in our treatment group with one non-cross-listed firm in our control group that has the closest propensity score within 0.1% width without replacement. Our matching is based on the same four (4) firm-level characteristics, in addition to the same 2-digit SIC industry code, as used in the PSM shown in table 6. Therefore, our treatment and control firms are virtually identical in terms of observable firm-level characteristics. The only difference is that firms in the treatment group began cross-listing their shares in the middle of our sample period while those in the control group did not cross-list during any year during our sample period.

To check for the validity of matching procedure, we also conducted a mean different test, with results shown in Panel A in Appendix 8. Table 1, which shows no statistical differences in the means of all four firm-level control variables between firms in the treatment and control groups, suggesting that firms in both groups are identical in observable firm-level financial characteristics in terms of growth potential, firm size, capital structure and profitability.

As shown in Panel B, which reports results of probit regression analysis using this cross-sectional PSM subsample, the coefficient of each key board gender diversity measure of interest remains significantly negative. The results reconfirm that greater gender diversity in the boardroom leads to lower likelihood of cross-listing, even in the cross-sectional data analysis.

Table A8.1. Cross Sectional Analyses

Panel A: Mean difference tests of the control variables between the treatment and control group				
	Treated Group	Control group	Mean Difference	t-statistic
Sales growth rate	0.758	0.805	-0.047	-0.873
Log (Total assets)	7.000	7.055	-0.055	-0.508
Leverage	0.212	0.208	0.004	0.378
ROA	-0.031	-0.033	0.002	0.065

Panel B. PSM analysis	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Female ratio	-1.135***			
	(-2.928)			
TW female ratio		-0.866**		
		(-2.393)		
Female director (yes/no)			-0.221**	
			(-2.570)	
Female director>1 (yes/no)				-0.199**
				(-2.050)
[Board Characteristics]				
Log (Board size)	0.021	0.021	0.090	0.087
	(0.131)	(0.132)	(0.543)	(0.520)
Independent director ratio	0.149	0.087	0.068	0.095
	(0.491)	(0.286)	(0.223)	(0.313)
Log (Average board time in years of directors)	-0.185**	-0.197***	-0.186**	-0.195***
	(-2.454)	(-2.635)	(-2.470)	(-2.599)
Log (Average number of qualifications of directors)	1.007***	0.986***	1.003***	0.981***
	(4.415)	(4.359)	(4.419)	(4.351)
Log (Average network size of directors)	-0.185***	-0.189***	-0.185***	-0.184***
	(-3.190)	(-3.245)	(-3.181)	(-3.160)
Log (Average age of directors)	-0.538	-0.455	-0.442	-0.448
	(-1.088)	(-0.923)	(-0.896)	(-0.906)
[Firm Characteristics]				
Sales growth rate	0.040	0.041	0.039	0.043
	(1.070)	(1.099)	(1.059)	(1.156)
Log (Total assets)	0.019	0.016	0.017	0.012
	(0.683)	(0.563)	(0.610)	(0.438)
Leverage	0.107	0.100	0.119	0.117
	(0.499)	(0.466)	(0.554)	(0.543)
ROA	0.015	0.019	0.016	0.015
	(0.151)	(0.192)	(0.164)	(0.152)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	-0.030***	-0.029***	-0.029***	-0.030***
	(-3.018)	(-2.937)	(-2.985)	(-3.036)
LLS index	-1.616***	-1.586***	-1.575***	-1.574***
	(-7.007)	(-6.917)	(-6.840)	(-6.851)
Constant	4.895**	4.560**	4.339**	4.260**
	(2.290)	(2.127)	(2.014)	(1.972)
Observations	1,531	1,531	1,531	1,531
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.214	0.212	0.212	0.211

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Appendix 9. Moderating role of local culture

. GE (GLOBE)	(1)	(2)	(3)	(4)
[Gender diversity on the board]				
Interaction with GE	**8.989*** **	**7.585*** **	**1.734*** **	**2.204*** **
	(15.993)	**(12.379)**	**(13.638)**	**(15.012)**
Female ratio	-31.739***			
	(-16.120)			
TW female ratio		-27.124***		
		(-12.603)		
Female director (yes/no)			-6.139***	
			(-13.880)	
Female director>1 (yes/no)				-7.692***
				(-15.149)
GE	**4.842*** **	**5.168*** **	**4.766*** **	**5.184*** **
	(45.768)	**(51.562)**	**(42.838)**	**(53.279)**
[Board Characteristics]				
Log (Board size)	0.172***	0.164***	0.243***	0.235***
	(3.402)	(3.252)	(4.719)	(4.550)
Independent director ratio	1.286***	1.290***	1.249***	1.213***
	(13.766)	(13.854)	(13.445)	(13.087)
Log (Average board time in years of directors)	0.018	0.002	0.015	0.016
	(0.797)	(0.102)	(0.673)	(0.707)
Log (Average number of qualifications of directors)	1.894***	1.895***	1.866***	1.846***
	(29.247)	(29.288)	(28.971)	(28.546)
Log (Average network size of directors)	-0.127***	-0.128***	-0.130***	-0.128***
	(-7.460)	(-7.556)	(-7.696)	(-7.570)
Log (Average age of directors)	1.368***	1.404***	1.414***	1.381***
	(7.931)	(8.179)	(8.241)	(8.053)
[Firm Characteristics]				
Sales growth rate	0.074***	0.074***	0.074***	0.075***
	(6.770)	(6.764)	(6.767)	(6.853)
Log (Total assets)	0.304***	0.309***	0.300***	0.299***
	(35.856)	(36.600)	(35.946)	(35.440)
Leverage	-0.412***	-0.412***	-0.405***	-0.411***
	(-6.463)	(-6.463)	(-6.372)	(-6.449)
ROA	-0.436***	-0.436***	-0.437***	-0.441***
	(-14.791)	(-14.767)	(-14.910)	(-14.969)
[Home country Characteristics]				
Log (Market capitalization of listed domestic companies)	0.071***	0.070***	0.070***	0.071***
	(24.412)	(24.255)	(24.227)	(24.642)
LLS index	-5.550***	-5.509***	-5.509***	-5.562***
	(-66.171)	(-65.752)	(-65.782)	(-66.718)
Constant	-28.088***	-29.411***	-28.082***	-29.360***
	(-29.923)	(-31.711)	(-29.682)	(-31.651)
Observations	121,890	121,892	121,892	121,892
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Pseudo R-squared	0.303	0.302	0.302	0.303

Robust z-statistics in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

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