# Institutional Discrimination Against Female Managers as a Barrier to Firm Internationalization and International Trade

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### Abstract

We show that firm internationalization is affected by the interaction between the board of directors' female share and gender-related institutions in foreign countries. The combination of a high share of female directors and gender-discriminating institutions in a destination reduces sales in that country relative to less discriminatory destinations. We deal with potential endogeneity due to omitted variable bias by including firm-year and origin-destination-year fixed effects, while an event study exploiting the appointments of new female board members addresses endogeneity due to reverse causality. This firm-level relationship transfers to the country level when using countries' aggregate share of female directors and bilateral exports in a structural gravity framework with three-way fixed effects. Our findings suggest that institutionalized discrimination against female managers is a barrier to firm internationalization on the micro level and international trade on the macro level. This might give rise to disadvantages for female managers even in non-discriminatory countries.

**JEL Classification:** F14, F23, J16, M16.
**Keywords:** Gender discrimination, international trade, firm internationalization, board composition.

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# 1 Introduction

The increasing internationalization of businesses and the empowerment of women in general and female managers in particular are two of the most relevant developments of the last decades affecting firms and societies all around the world. Accordingly, determinants, moderators and outcomes of firm internationalization and international trade, as well as gender diversity have been subject of extensive research and debate in the scientific literature. On the one hand, numerous studies investigate the influence of manager characteristics and the institutional environment on firm internationalization and international trade (Tihanyi et al., 2000; Hitt et al., 2006; Sala and Yalcin, 2015; Tan and Chintakananda, 2016; Freixanet and Renart, 2020). On the other hand, a large and fast-growing body of literature examines how gender diversity affects different areas of firm performance (Baker et al., 2020), while also recognizing the important role institutional influences play in these relationships (Zhang, 2020; Hoch and Seyberth, 2021). However, to the best of our knowledge, the only attempt to connect manager gender and internationalization while recognizing institutional influences has been made for the case of destination-specific pro-trade effects of managers with foreign nationality depending on the institutional environment in the destination (Hoch and Rudsinske, 2021).

We aim to close this gap by investigating how the interaction between the female share of directors and gender-related institutions in the destination country affects firm internationalization and international trade. Our expectation is that firms and countries with a higher share of female directors sell relatively less in destinations with formal and informal institutions that are unfavorable for female managers. Formal gender-related institutions are laws and regulations regarding women's economic activities, while informal gender-related institutions refer to cultural values and social norms with respect to gender equality. Both formal restrictions and informal bias against female managers constitute an institutional environment that deters business activity of international firms with gender-diverse boards towards a destination country. To test this hypothesis empirically on the firm level, we draw on a sample of international firms reporting foreign sales in 141 destination countries and combine it with data on the gender-related institutional environment in these

countries. We utilize firm-year and country-pair-year fixed effects to mitigate the problem of endogeneity due to omitted variable bias, while an event study addresses potential reverse causality. On the country level, we employ a structural gravity framework with three-way fixed effects and the share of female directors aggregated from firm-level board data. We find a significant interaction effect between female shares of directors and gender-related institutions in the destination on firm-level foreign sales and country-level exports. This result suggests that differences in board gender ratios affect internationalization processes as more gender-diverse firms gravitate towards markets where their female directors face less adverse institutional conditions.

Since our research question arises at the intersection of firm internationalization and gender diversity, we hope that our results contribute to both strands of literature. Notably, we are not aware of any studies connecting this nexus between gender and internationalization with an institutional perspective. First, we add nuance to the understanding of internationalization processes by introducing the interaction between the share of female board members and gender-discriminating institutions in the destination country as a relevant determinant of internationalization. To the best of our knowledge, we are not only the first to examine this particular interaction but also the first to consider the role of gender-related institutional influences on internationalization processes in general.

Second, we also contribute to the highly relevant literature on the economic outcomes of gender diversity. In this context, we enhance recent research studying the effects of gender diversity on export performance (Basuil and Datta, 2019) by providing first evidence that the relationship between board gender diversity and exports depends on the destination-country-specific institutional environment. On a similar note, Orser et al. (2010) draw on social feminism to explain gender differences in export performance with systemic differences in opportunity, and provide empirical evidence that characteristics of the exporting firm constitute such systemic factors. To the best of our knowledge, Hoch and Rudsinske (2021) provide the only empirical evidence of similar systemic gender differences in export performance connected to the institutional environment in the destination, as they find an institution-dependent and gender-specific effect of managers' personal

connections to foreign countries. We enhance and generalize these ideas by providing evidence that the effect of female managers on export performance depends on institutionalized gender-related disadvantages in the destination country.

Third, we add insights into the debate surrounding gender discrimination on the labor market (Islam et al., 2019; Klasen, 2020) and especially regarding female managers. Up to now, extensive research demonstrates that gender discriminating institutions affect the chances of women to reach managerial positions (Terjesen and Singh, 2008) as well as their performance as managers (Hoch and Seyberth, 2021). In an international setting, however, national discriminatory institutions are no isolated entities but interact with other institutional influences across borders. For instance, multinational firms from less discriminating origin countries might mitigate institutionalized discrimination in destination countries (Wu et al., 2008) and even utilize their less discriminatory hiring policy as a competitive advantage (Siegel et al., 2019). In contrast, our results imply that the ramifications of discriminatory institutions in the destination can surpass borders and spill over to the origin country. Specifically, gender discrimination in an important export destination might lead to discrimination against female managers even in a hypothetical origin country featuring completely non-discriminatory gender-related institutions.

Finally, we add to the literature on international trade as the interaction between female directors and gender-discriminating institutions extends to bilateral trade flows on the country level. An increase in the aggregate board female share is connected to lower exports to a discriminating destination as compared to less discriminatory destinations. Buyers in countries with discriminating institutions appear to be biased, whereas we do not find robust effects of that type for bilateral imports, indicating that sellers are less selective in choosing business partners. While the previous literature has focused mostly on the effects of trade on issues like the gender wage gap (Do et al., 2011; Sauré and Zoabi, 2014), to the best of our knowledge, we are the first to show effects of gender discrimination on bilateral trade. Gender-discriminating institutions in a destination constitute non-monetary trade costs when exporters rely on female managers. This has the potential to hamper international integration of gender-discriminating countries and could be detrimental

4

from a welfare perspective. In this way, our results relate to the literature on the effects of gender inequality on aggregate income and economic growth (Cuberes and Teignier, 2014, 2016).

The rest of the paper is structured as follows. In Section 2, we describe the data, set out how we construct board female shares on the firm and the country level, and discuss descriptive statistics regarding the main variables of interest. Building upon this data, we line out our empirical strategy for the two levels in Section 3. Section 4 presents the empirical results for both the firm- and the country-level analyses as well as for several robustness checks. The final Section 5 discusses implications, limitations and potential for further research.

# 2   Data

## 2.1   Female Directors

We assess the prevalence of female managers based on the share of female members of the board of directors in large, publicly listed companies. For the firm-level analysis, we obtain the share of female board members from the BoardEx database provided by Wharton Research Data Services (2022). BoardEx is a common source for data on board composition and characteristics of individual board members (e.g. Adams, 2016). For the country-level analysis, we aggregate this measure as the number of board seats occupied by female managers divided by the total number of board seats. In addition, we obtain the available country-level data on the female share of seats on boards of the largest publicly listed companies from the OECD (2022) for 37 OECD-countries between 2003 and 2019. Due to this restriction to OECD-countries, we only utilize the OECD database as a robustness test to ensure the validity of the main analysis based on our more comprehensive, self-constructed measure.

## 2.2   Firm Internationalization and International Trade

As a proxy for firm internationalization, we use country-specific foreign sales. We obtain the data on foreign sales from sales by geographic segments reported in the commercial database Osiris

provided by Bureau van Dijk (2022). Osiris in general, as well as the data on geographic segments, are well-established data sources and regularly utilized in business research on internationalization (e.g. Banalieva and Dhanaraj, 2013). Since we investigate countries as destinations of firm internationalization, we only include geographic segments that can be clearly matched to country names.[1]

For the country-level analysis, we employ data on bilateral trade (BACI database) and common regional trade agreements (gravity database) from CEPII (2021). We use the BACI trade flows. Missing trade values are replaced with zeros if both countries exist in a given year. BACI reconciles trade flows taken from the United Nations Comtrade database reported by both the exporter and the importer to provide a harmonized trade flow (Head et al., 2010; Head and Mayer, 2014).

We neither include firm-level sales in the home country nor countries' internal trade. First of all, our research question concerns internationalization processes. Furthermore, we believe that institutions in the origin country affect the outcomes of management gender differently than institutions in the destination country for several reasons. One is the natural predisposition to sell domestically. Another one is that domestic institutions already heavily influence the manager selection before even turning to their trade effects.

## 2.3  Gender-Related Institutions

We apply different institutional variables distinguishing between formal and informal gender-related institutions. In general, institutions constitute rules defining human-made constraints for the members of a given society (North, 1990, 1991). Formal institutions are formally codified rules such as laws and regulations (Scott, 1995), while informal institutions are non-codified rules such as social norms and values (Peng et al., 2008).

As a measure for formal gender-related institutions, we use the *Women, Business and the Law Index* (WBL, World Bank, 2021). The $WBL$ is compiled by the World Bank and measures "laws and regulations that restrict women's economic opportunities" (World Bank, 2021, p. 2). A higher

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[1]For a detailed description of the matching process see Hoch and Rudsinske (2021).

index value implies fewer institutional restrictions against women.

To assess informal gender-related institutions, we utilize the *Gender Social Norms Index* ($GSNI$) provided by the United Nations Development Programme (United Nations Development Programme, 2020). The $GSNI$ captures culturally institutionalized bias against women based on questions regarding gender equality in the World Values Survey. More specifically, we employ the $GSNI$ based on the intersection approach, which measures the percentage of respondents who revealed at least two biases against women in their answers. Furthermore, we use $GSNIECON$, the economic dimension of the $GSNI$, which measures the percentage of people with a bias against women in business contexts. This dimension of social bias seems particularly relevant to our research question as it explicitly includes the bias that "men make better business executives than women" (United Nations Development Programme, 2020, p. 8).

## 2.4 Descriptive Statistics

Our final firm-level sample contains data from 2008 to 2017 on all firms in BoardEx that additionally report foreign sales on the country level in Osiris to at least one destination country with available institutional data. The resulting database comprises $31,377$ observations on foreign sales of $3,368$ firms in $141$ destination countries. However, the number of observations that can be used in the regression analysis is limited by the availability of the different institutional variables.

Table A-1 provides summary statistics for all variables in the firm-level analysis. On average, $12\%$ of the board members in our sample are female and there exist completely male but no completely female boards. The ranges and standard deviations of all three institutional variables indicate that our sample covers a variety of countries with different gender-related institutional environments. To further illustrate the composition of our international sample, Figure A-1 maps the number of observations by origin country and Figure A-2 does the same by destination country.

Table A-2 provides summary statistics for the country-level database. The data-set features the ten years from 2008 until 2017, with trade flows for $198$ origins and $198$ destinations, as well as female shares for $104$ countries. We observe female shares between $0\%$ and $53\%$, with an average

of 11%. The median value is 10%, while the interquartile range spans from 5% to 15%. For an overview of country-level female shares in the year 2017 see Figure A-3. The alternative female shares for OECD countries are a little higher on average with a mean of 17% and a median of 14%.

Regarding our institutional variables, there is substantial variation in the level of institutional discrimination both for the formal ($WBL$) and the informal ($GSNI$) institutions. Figures A-4 and A-5 depict this variation by mapping the values of $WBL$ in 2017 and of the time-invariant $GSNI$ for each country.

As we use the same country-level data to construct institutions and female shares of both the origin and the destination, summary statistics are the same in these cases. 18% of the country-pair-year observations feature a common regional trade agreement. The average trade flow is around 600 million USD, although the distribution is skewed with a median value of only 1.2 million USD. Zero trade flows account for at least a quarter of the observations.

# 3  Empirical Strategy

## 3.1  Firm Level

To investigate the interaction effect between board female shares and gender-related institutions in the destination country on firm-level internationalization, we estimate the following fixed effects regression model.

$$log(ForeignSales_{id,t}) = \beta_1 FemaleShare_{i,t} \times Institutions_{d,t} + \gamma_{i,t} + \nu_{od,t} + \epsilon_{id,t}$$

The dependent variable $ForeignSales_{id,t}$ represents the foreign sales of firm $i$ in destination country $d$ and year $t$. The only explanatory variable is the interaction term between our measures for the board gender ratio, $FemaleShare_{i,t}$, and the gender-related institutional variables, $Institutions_{d,t}$. The firm-year fixed effects, $\gamma_{i,t}$, control for all unobserved firm-level variables.

This controls for time-invariant characteristics such as firm age as well as time-varying factors such as board composition or firm performance and also includes higher-level fixed effects such as industry-year fixed effects and origin country fixed effects. Likewise, the directional country-pair-year fixed effects $\nu_{od,t}$ control for all bilateral factors on the country-level such as geographic and institutional distance or free trade agreements and also include destination-year fixed effects. We do not include the main effect of $FemaleShare_{i,t}$ and $Institutions_{d,t}$, since these are already included in $\gamma_{i,t}$ and $\nu_{od,t}$ respectively. $\epsilon_{id,t}$ represents the error term.

While the institutional variables can be treated as exogenous in our setting, the relationship between the female share of directors and foreign sales to destinations with different institutions might work in two directions. First, female managers might actually be discriminated against in the destination, which would result in their firms selling less in discriminating countries. Likewise, it is possible that firm owners only expect such discriminatory effects and do not hire female managers when discriminating countries are important destinations for their firm. Both of these causal mechanisms would result in relatively less sales to countries with discriminating institutions for firms with a relatively high female share. However, the chronology of events would be different since discrimination could either take place after a female director is hired, or during the hiring decision if the detrimental effect of discriminating institutions is already anticipated by the firm. In the latter case, firms hiring a female manager would already sell relatively less in countries with discriminatory institutions before the event of a new female manger entering the board.

Hence, we conduct an event-study to investigate whether discrimination actually takes place in the destination country or is only anticipated by the firm in the origin country. The variable $Event$ takes a value of one if a firm's number of female board members increased relative to the previous year, and a value of zero otherwise. Hence, $Event$ captures the event of at least one new, additional female director on the board.

$$log(ForeignSales_{id,t}) = \beta_1 Event_{i,t+2*} \times Institutions_{d,t} + \beta_2 Event_{i,t} \times Institutions_{d,t}$$
$$+ \beta_3 Event_{i,t-1} \times Institutions_{d,t} + \beta_4 Event_{i,t-2*} \times Institutions_{d,t} + \gamma_{i,t} + \nu_{od,t} + \epsilon_{id,t} \tag{1}$$

We utilize an ordinary least squares regression specification similar to the one used before, but now include the event variable instead of the female share. Equation 1 shows the specification, where an index time with an asterisk indicates that all further available years in that time direction are included for the indicator construction. Hence, $Event_{i,t+2*}$ will not only equal one if an event takes place two years ahead but also if it takes place three or more years ahead. The first lead (one year prior to the event), $Event_{i,t+1}$, is not included and serves as point of reference.

## 3.2 Country Level

On the country-level we employ a structural gravity framework (Eaton and Kortum, 2002; Anderson and Van Wincoop, 2003). After including origin-year ($\eta_{o,t}$), destination-year ($\nu_{d,t}$), and directional country-pair ($\omega_{od}$) fixed effects to control for all potentially time-varying exporter- and importer-specific characteristics as well as time-invariant country-pair factors, and with $\epsilon_{od,t}$ as error term, we can write country $o$'s exports to country $d$ in period $t$ as

$$Exports_{od,t} = exp[\beta_1 FemaleShare_{o,t} \times Institution_{d,t} + \beta_2 RTA_{od,t} + \eta_{o,t} + \nu_{d,t} + \omega_{od}] + \epsilon_{od,t}.$$

The existence of a common regional trade agreement ($RTA$) is included as control variable. $Institution$ can be, for example, $GSNI$ or $WBL$. An alternative specification substitutes $FemaleShare_{o,t} \times Institution_{d,t}$ with $FemaleShare_{d,t} \times Institution_{o,t}$. This can be interpreted as the effect on imports instead of exports. We employ a Poisson pseudo maximum likelihood (PPML) estimator for the above equation to keep observations with zero trade flows and to avoid potential problems of biased estimates under heteroskedasticity (Silva and Tenreyro, 2006).

# 4 Results

## 4.1 Firm Level

Table 1 shows the results of our main analysis on the firm level. We provide two models for the interactions between $FemaleShare$ and the institutional moderators: Models (1) and (2) include $GSNI$, Models (3) and (4) include $GSNIECON$, and Models (5) and (6) include $WBL$. For each of these interactions, we provide one model with $FemaleShare$ in the current year and one with $FemaleShare$ lagged by one year since the effects of a newly appointed female director might not take place immediately.

**Table 1:** Firm Level Results

| Dep. Var.: $log(ForeignSales_t)$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $FemaleShare \times GSNI$ | −0.05*** | | | | | |
| | (0.01) | | | | | |
| $FemaleShare_{t-1} \times GSNI$ | | −0.05*** | | | | |
| | | (0.02) | | | | |
| $FemaleShare \times GSNIECON$ | | | −0.04*** | | | |
| | | | (0.01) | | | |
| $FemaleShare_{t-1} \times GSNIECON$ | | | | −0.04*** | | |
| | | | | (0.02) | | |
| $FemaleShare \times WBL$ | | | | | 0.08*** | |
| | | | | | (0.02) | |
| $FemaleShare_{t-1} \times WBL$ | | | | | | 0.10*** |
| | | | | | | (0.02) |
| Firm-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.71 | 0.69 | 0.71 | 0.69 | 0.72 | 0.70 |
| Observations | $26,405$ | $17,912$ | $26,405$ | $17,912$ | $31,222$ | $21,087$ |

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Standard errors (two-way clustered by firm and country-pair) in parentheses.

All models reveal a significant interaction between $FemaleShare$ and the respective institutional variable. At that, the interaction effect is negative for $GSNI$ as well as for $GSNIECON$ and positive for $WBL$. According to that, the effect of gender diversity on foreign sales depends on the formal gender-related environment as its effect size is smaller in destinations with an insti-

tutionalized social bias against women and larger in destinations where women face less formal restrictions in the labor market. Taken together, these results provide evidence in favor of our main hypothesis that the effect of gender diversity on foreign sales depends on the gender-related institutions in the host country.

For an intuitive illustration of this finding consider the following numerical example. An international firm starts with an equal value of $ForeignSales$ in two different host countries A and B with $GSNI_A = 25$ and $GSNI_B = 65$, which is approximately equivalent to the $25^{th}$ and $75^{th}$ percentile of $GSNI$, and experiences an increase in $FemaleShare$ by 10 percentage points (0.1 units). According to our estimate for the interaction between $GSNI$ and $FemaleShare$ in Model (1), the effect of an increase in $FemaleShare$ by one unit on foreign sales depends on $GSNI$ as it changes by $100 * (e^{-0.05} - 1) \approx -4.88$ percentage points for every additional unit in $GSNI$. Hence, in our example, an increase in $FemaleShare$ by 0.1 is associated with a percent change in $ForeignSales$ that is 19.52 percentage points smaller in country B compared to country A. Note that this difference occurs regardless of the size and direction of a possible main effect of $FemaleShare$ on foreign sales. For instance, if the main effect of $FemaleShare$ (i.e. the effect when $GSNI = 0$) would be zero, a ten percentage points $FemaleShare$ increase would be connected to a decrease in foreign sales to A by $12.2\%$ and a decrease in foreign sales to B by $31.72\%$.

Table A-3 contains the regression output from our event study, which Figure 1 illustrates graphically. The estimate plotted for year 2 prior to an event is the one for the interaction of the independent variable $Event_{i,t+2*}$ that also contains all available years before the second year prior to the event. There are no significant pre-trends. Likewise, contemporary effects are insignificant. This is plausible since firms often have to fulfill contracts from previous years and a new manager does not upset the sales structure within a few months. The lagged values are significant for the informal institutions, indicating that informal gender attitudes in the destination indeed affect firm sales after a new female member entered the board.

However, the one-year lagged effect is not significant for formal institutions. A potential reason
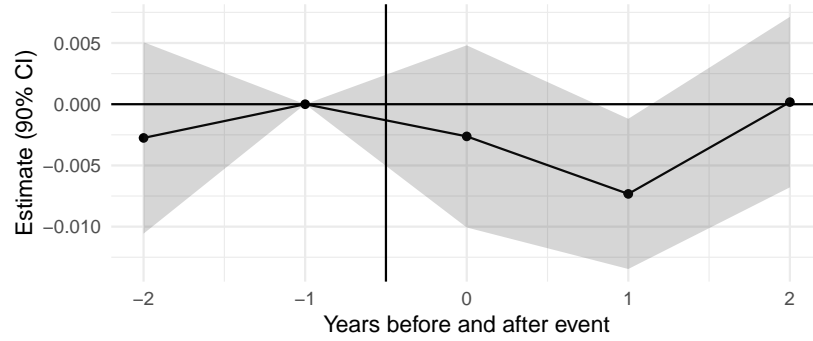
(a) GSNI
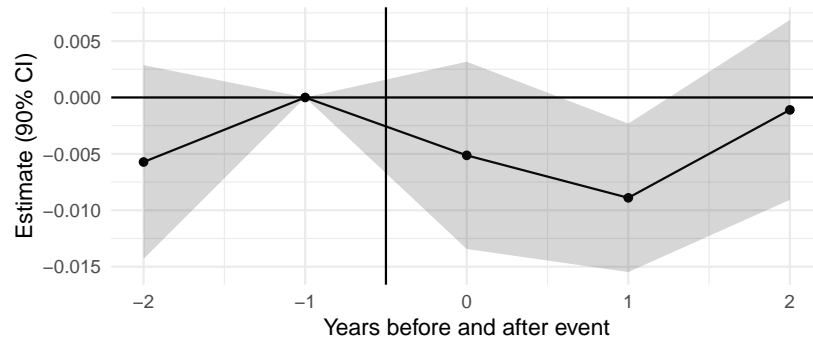


(b) GSNIECON
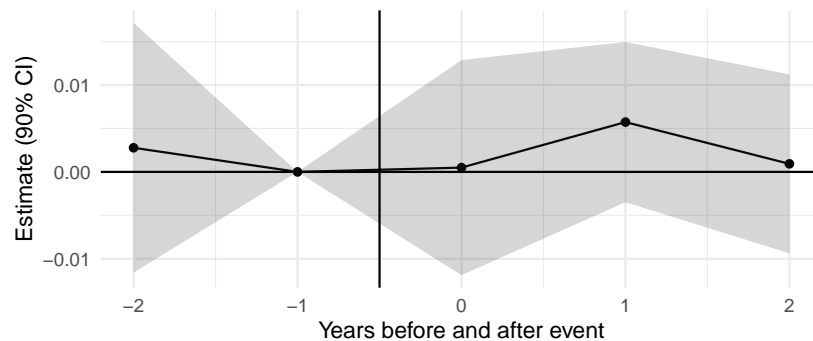


(c) WBL

Event study coefficient estimates for the $Event$ interactions with 90% confidence interval. Dependent variable: $log(ForeignSales)$.

**Figure 1:** Firm-Level Event Study Plots

for not being able to establish a chronology here could be that firms are able to anticipate problems due to formal institutions better than in the case of informal institutions. This would either decrease the likelihood of appointing a new female director in the first place or at least the likelihood of that exact manager being selected to negotiate contracts with firms from discriminatory countries. In

this case, the effect identified in the main analysis would be between firms rather than within firms. Accordingly, systematic discrimination in important sales destinations could transfer to firms hiring decisions in the origin countries.

The long-term effects for all three institutional variables are insignificant. These are the coefficient estimates plotted for year 2 after the event. However, the underlying independent variable $Event_{i,t-2*}$ also contains all available years following the second year after the event. Therefore, conclusions should only be drawn with caution as, for example, a female manager might have left the firm already some years after having been hired. Especially in the case of informal institutions it is also possible that firms only learn about that type of discrimination after their female managers have experienced it or they merely recognize worse performance measures and, as a result, choose other managers to negotiate future contracts with firms from such countries. It is even conceivable that prejudices of managers in discriminatory countries wane as a consequence of the experience from interacting with female business partners. We leave the identification of mechanisms for potential long-term adjustments for future research.

## 4.2   Country Level

Table 2 shows the results of the related analysis on the country-level. Models (1)-(3) can be interpreted as the export effect. Here, all interactions remain significant just like in the firm-level regressions. Accordingly, gender discrimination matters also on the aggregate level. When it comes to buying other firms' products, trust in quality and in-time delivery matters. Individuals in countries with gender-discriminating institutions are less inclined to import from female-run businesses.

Following Model (1), $100 * (e^{\beta} - 1) * GSNI_d \approx -1.98 * GSNI_d$ gives the percentage point difference of the percentage change in exports following a one unit change in the $FemaleShare_o$ as compared to a non-discriminatory destination ($GSNI_d = 0$). The absolute effect is unknown from this specification, as the main effect is captured by the origin-year fixed effect. Looking at a 10 percentage points increase in the female share (0.1 units), this roughly amounts to $-0.2 * GSNI_d$. Consequently, exports to a destination with the average $GSNI$ in our sample of 59 will change

by $11.8$ percentage points less as compared to a destination with a $GSNI$ of zero. If the main effect would be zero for example, this results in an $11.8\%$ reduction in bilateral exports. This is comparable to no longer being member of a common regional trade agreement, which has a positive effect of $100 * (e^{0.1} - 1)\% \approx 10.5\%$ in that specification (which is not ideal for estimating $RTA$ effects).

**Table 2:** Country-Level Results

| Dep. Var.: $Exports$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $FemaleShare_o \times GSNI_d$ | −0.02*** | | | | | |
| | (0.00) | | | | | |
| $FemaleShare_o \times GSNIECON_d$ | | −0.02*** | | | | |
| | | (0.00) | | | | |
| $FemaleShare_o \times WBL_d$ | | | 0.03*** | | | |
| | | | (0.00) | | | |
| $FemaleShare_d \times GSNI_o$ | | | | −0.01 | | |
| | | | | (0.00) | | |
| $FemaleShare_d \times GSNIECON_o$ | | | | | −0.01 | |
| | | | | | (0.00) | |
| $FemaleShare_d \times WBL_o$ | | | | | | −0.00 |
| | | | | | | (0.01) |
| $RTA$ | 0.10*** | 0.10*** | 0.10*** | 0.09*** | 0.09*** | 0.10*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Origin-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. Pseudo $R^2$ | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 | 0.99 |
| Observations | 58,417 | 58,417 | 137,348 | 58,364 | 58,364 | 136,905 |

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Standard errors (clustered on the country-pair level) in parentheses. Estimation method: PPML.

Models (4)-(6) test something that we cannot analyze on the firm-level. They take the female share of the importing country and the institutions of the exporting country as elements of the interaction term. As such, results can be interpreted as the effect of the original interaction term on imports instead of exports. Interestingly, we find no significant effects here. This indicates that individuals in discriminating countries do not severely differ in their business activities with female-run firms when it comes to selling their own products. This observation seems reasonable, since

the role of trust and reputation is more important for the buyer than for the seller when information asymmetries are present. In that sense, earning money seems to dominate gender biases.

## 4.3   Robustness Checks

As described in Section 2, the coverage of origin countries on the firm level is limited by the data availability in *BoardEx* and *Osiris* which leads to a composition that is slightly skewed towards industrial countries. To ensure that our results are not driven by this selection of countries, we run two subsample analyses based on the classification of countries as *High Income* by the OECD. The results for the subsample excluding all high-income origin countries, presented in Table B-1, confirm the results of our main analysis. The results of the subsample analysis of only high-income countries, reported in Table B-2, overall also support our main findings, albeit the interaction between the two versions of $GSNI$ and the lagged female share become insignificant. Similar analyses on the country level are reported in Table B-3 and reveal a pattern that is broadly consistent with the firm level. While our results are robust to a sample excluding high-income countries in Models (4)-(6), only $GSNIECON$ and $WBL$ remain significant in a sample consisting of high-income countries only (Models (1)-(3)). Although the interaction with $GSNI$ is no longer significant in that subsample (p-value $\approx 16\%$), the estimated coefficient is still negative.

Although we believe the chosen standard error clusters to be appropriate for our analysis, we are not aware of any standards or best practice for similar settings in the international business literature. Thus, we run robustness tests for the firm-level analysis with differently clustered standard errors. Table B-4 features one-way clustered standard errors on the firm level as is common in the business literature (e.g. Martincus and Carballo, 2008) and Table B-5 adopts standard errors clustered on the country-pair level, which emerged as the standard for gravity models (Yotov et al., 2016) in comparable settings. Our results remain highly significant in all of these alternative specifications. On the country-level, we apply the error-correction for gravity models proposed by Weidner and Zylkin (2021). We do not display the results here as the bias correction only concerns decimal places for the coefficient estimates and the estimated standard errors that are not displayed

in our tables, such that significance levels continue to hold and our results are basically unaffected.

Table B-6 presents results from the country-level regressions once the lagged female share is included instead of the contemporary one. Results remain almost unchanged for exports, while for imports the interactions with the two $GSNI$ variables now become marginally significant with coefficient estimates that are roughly half the size of those for exports.

Finally, we repeat the country-level regressions with an alternative, although less extensive data source for the share of female top managers in publicly listed firms in OECD countries from OECD (2022). Accordingly, we have much less available observations and the panel is now restricted to a special set of country-pairs. As presented in Table B-7, the effect on exports of the interaction with the overall $GSNI$ remains negative but no longer exceed usual levels of significance (p-value $\approx 18\%$). However, results are stable for the interactions with $GSNIECON$ and $WBL$. Additionally, the interaction with $WBL$ now becomes significantly positive for imports as well. Given the special OECD sample characteristics (note for example that RTA becomes insignificant), we generally consider this as indication of the reliability of our female share data.

# 5  Discussion and Conclusion

## 5.1  Implications

Our results show that discriminatory gender-related institutions deteriorate firm-level foreign sales and country-level exports in the face of high shares of female directors. These findings have important implications for our understanding of the interplay between firm internationalization, managers' gender, and the institutional environment but also practical implications for international business firms and national law makers.

Firstly, gender-discriminating institutions in destination countries also affect female managers in the origin country. Hence, female managers in otherwise less discriminatory countries might still suffer from discrimination in other countries. This imported discrimination, in turn, might affect both the performance of female managers and the chances of women to reach these managerial

positions in the first place.

Our findings also have serious implications for the destination countries. In the face of a slowly but constantly rising share of female managers, countries with gender-discriminating institutions do not only harm local firms with female managers but also deter international firms and trade, which can hinder economic growth, economic integration and, thus, reduce welfare.

In that respect, gender as an individual characteristic of large firms' top managers has notable macro-level export effects, which stresses the role of firms and micro-level factors for aggregate outcomes. However, our country-level results regarding imports indicate that sellers are less selective in choosing business partners since we do not find strong evidence for gender discrimination in this direction.

## 5.2   Limitations and Future Research

Our sample is restricted to large, publicly listed firms that already act on an international level. While this is a valid and particularly relevant sample for our research question, internationalization of small businesses might be different. For instance, smaller firms experience larger difficulties in the internationalization process and react more sensitive to unfavorable host-country institutions (Lskavyan and Spatareanu, 2008). Hence, the influence of gender-related host-country institutions might also depend on firm characteristics such as firm size or international experience. Likewise, the interplay between gender diversity, gender-related institutions and other important factors of internationalization processes such as entry mode might be worth further investigation.

Furthermore, our work is subject to the typical limitations of real world data. Firstly, data quality and availability differs around the globe. While our firm-level sample covers 141 destination countries featuring a large variety of institutional environments, it is still biased towards countries with high levels of institutional and economical development and a similar bias arises for the coverage of home countries. Although we are confident that this bias does not threaten the validity of our results, developing economies constitute a particularly interesting setting both as host countries for international firms and as home countries for internationalization processes. For instance, the

concept of institutional escapism (Wu and Deng, 2020) might also apply to gender diverse firms escaping from gender-discriminating home countries.

Due to our conservative fixed effects setting to avoid omitted variable bias, we can only estimate the interaction effect between gender diversity and host country institutions. However, we cannot estimate the overall or marginal effects of the share of female directors depending on the institutional moderator. Future research could further investigate the size and direction of the relationship between the board gender ratio and internationalization depending on institutional moderators.

Despite our efforts to address endogeneity we cannot claim providing terminal evidence for a causal relationship let alone identifying the exact causal mechanism. In particular, unobserved factors on the firm-destination level, which are the only factors our fixed effects in the firm-level analysis do not control for, might still cause omitted variable bias. For instance, a change in the female share of directors might be connected with a changing cultural distance between firm culture and destination culture that, in turn, affects the foreign sales to this destination. Moreover, we cannot disentangle the different possible reasons for a direct causal effect of the female share of directors. A relative reduction in foreign sales in the face of discriminatory institutions might occur either because potential buyers avoid the firm or because the firm avoids discriminatory markets be it due to the anticipated difficulties or due to personal preferences. Future research could further examine these potential causal mechanisms by applying different methods such as qualitative analyses.

## 5.3 Conclusion

Our results provide evidence that the interaction between the share of female board members and gender-related host country institutions affects firm internationalization and international trade. Gender-discriminating institutions in the destination country deteriorate both foreign sales of international firms and exports of countries with a high share of female directors. Our findings illustrate the complex interactions between individual manager characteristics and national institutions in international business and international trade as they imply that the detrimental effects of institu-

tionalized gender-discrimination do not stop at national borders.
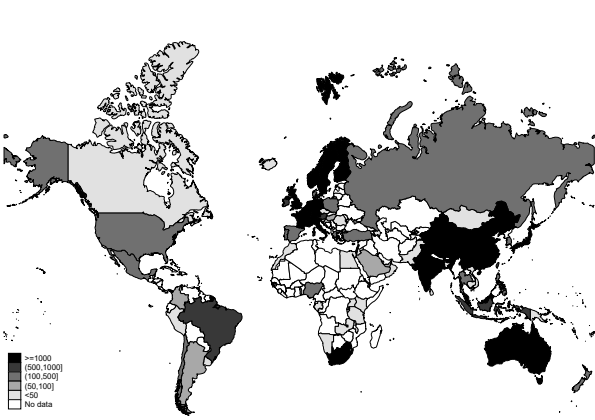
# A    Descriptive Statistics


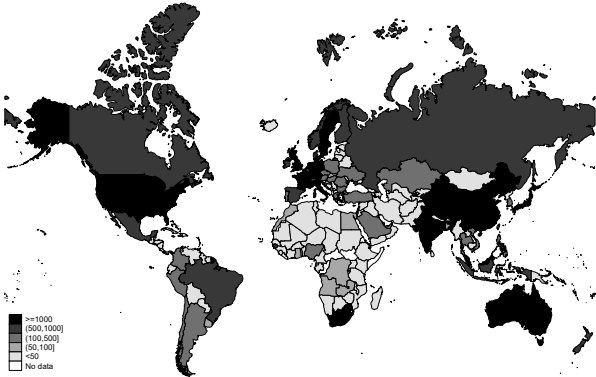
**Figure A-1:** Observations by Origin Country



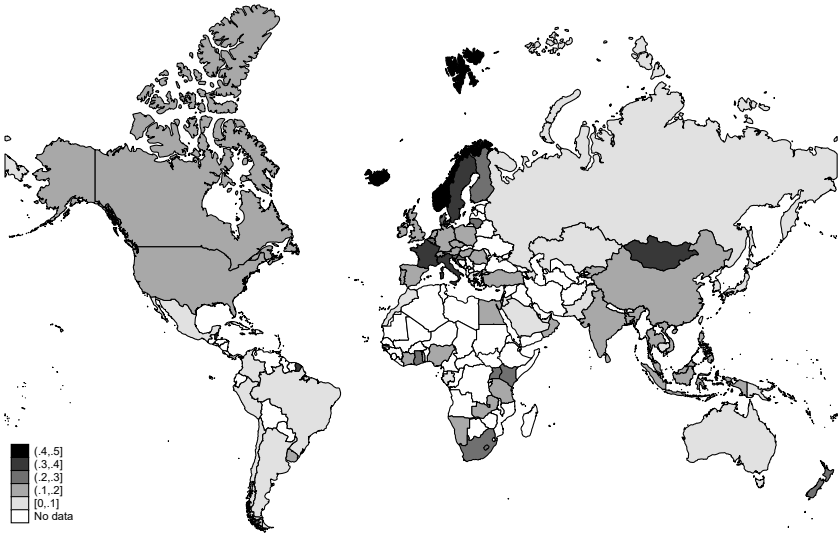**Figure A-2:** Observations by Destination Country



**Figure A-3:** Country-Level Female Shares in 2017
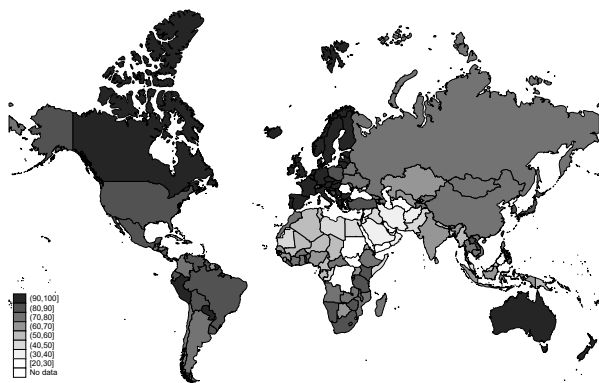
**Figure A-4:** $WBL$ (2017) by Country
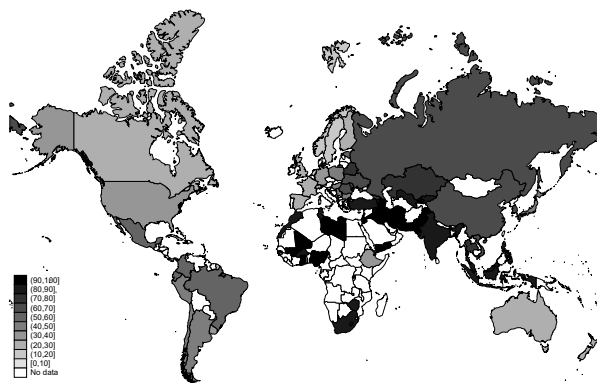


**Figure A-5:** $GSNI$ by Country

**Table A-1:** Firm-Level Summary Statistics

|  | n | Mean | SD | Min | P25 | Median | P75 | Max |
|---|---|---|---|---|---|---|---|---|
| $FemaleShare$ | 31,377 | 0.12 | 0.14 | 0 | 0 | 0.1 | 0.2 | 0.67 |
| $log(ForeignSales)$ | 31,377 | 17.63 | 2.62 | 4.86 | 16.1 | 17.85 | 19.44 | 25.21 |
| $WBL$ | 31,222 | 83.5 | 12.92 | 23.75 | 73.63 | 83.75 | 94.38 | 100 |
| $GSNI$ | 26,405 | 43.97 | 22.03 | 10.75 | 26.81 | 33.07 | 64.42 | 98.07 |
| $GSNIECON$ | 26,405 | 35.56 | 19.61 | 9.16 | 18.06 | 29.8 | 54.87 | 91.97 |

**Table A-2:** Country-Level Summary Statistics

|  | n | Mean | SD | Min | P25 | Median | P75 | Max |
|---|---|---|---|---|---|---|---|---|
| $Exports$ | 263,122 | 611.5 | 5,743.0 | 0.0 | 0.0 | 1.2 | 46.0 | 452,286.9 |
| $FemaleShare$ | 169,702 | 0.11 | 0.09 | 0.00 | 0.05 | 0.10 | 0.15 | 0.53 |
| $GSNI$ | 112,989 | 59.1 | 26.6 | 7.4 | 35.1 | 60.8 | 84.8 | 98.1 |
| $GSNIECON$ | 112,989 | 49.8 | 24.0 | 8.7 | 28.4 | 50.9 | 72.1 | 92.0 |
| $RTA$ | 263,122 | 0.18 | 0.39 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| $WBL$ | 245,158 | 73.4 | 18.3 | 23.8 | 63.1 | 76.3 | 86.9 | 100.0 |

Exports shown in 1,000,000 current USD, but used in 1,000 current USD in the regressions.

# B   Event Study Regression Results

**Table A-3:** Firm-Level Event Study

| Dep. Var.: $log(ForeignSales_t)$ | (1) | (2) | (3) |
|---|---|---|---|
| $Event_{t+2*} \times GSNI$ | $-0.00$ | | |
| | $(0.00)$ | | |
| $Event_t \times GSNI$ | $-0.00$ | | |
| | $(0.00)$ | | |
| $Event_{t-1} \times GSNI$ | $-0.01^{**}$ | | |
| | $(0.00)$ | | |
| $Event_{t-2*} \times GSNI$ | $0.00$ | | |
| | $(0.00)$ | | |
| $Event_{t+2*} \times GSNIECON$ | | $-0.01$ | |
| | | $(0.01)$ | |
| $Event_t \times GSNIECON$ | | $-0.01$ | |
| | | $(0.01)$ | |
| $Event_{t-1} \times GSNIECON$ | | $-0.01^{**}$ | |
| | | $(0.00)$ | |
| $Event_{t-2*} \times GSNIECON$ | | $-0.00$ | |
| | | $(0.00)$ | |
| $Event_{t+2*} \times WBL$ | | | $0.00$ |
| | | | $(0.01)$ |
| $Event_t \times WBL$ | | | $0.00$ |
| | | | $(0.01)$ |
| $Event_{t-1} \times WBL$ | | | $0.01$ |
| | | | $(0.01)$ |
| $Event_{t-2*} \times WBL$ | | | $0.00$ |
| | | | $(0.01)$ |
| Firm-year FE | Yes | Yes | Yes |
| Origin-destination-year FE | Yes | Yes | Yes |
| Adj. $R^2$ | 0.71 | 0.71 | 0.73 |
| Observations | $9,693$ | $9,693$ | $11,486$ |

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Standard errors (clustered on the firm and the country-pair level) in parentheses. An index time with an asterisk indicates that all further available years in that time direction are included for the indicator construction.

# C Robustness Checks

**Table B-1:** Firm-Level Subsample Analysis: Without High Income Countries

| Dep. Var.: $log(ForeignSales_t)$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $FemaleShare \times GSNI$ | $-0.07^{***}$ | | | | | |
| | $(0.03)$ | | | | | |
| $FemaleShare \times GSNI_{t-1}$ | | $-0.09^{***}$ | | | | |
| | | $(0.03)$ | | | | |
| $FemaleShare \times GSNIECON$ | | | $-0.06^{**}$ | | | |
| | | | $(0.03)$ | | | |
| $FemaleShare \times GSNIECON_{t-1}$ | | | | $-0.08^{**}$ | | |
| | | | | $(0.03)$ | | |
| $FemaleShare \times WBL$ | | | | | $0.09^{**}$ | |
| | | | | | $(0.04)$ | |
| $FemaleShare \times WBL_{t-1}$ | | | | | | $0.14^{***}$ |
| | | | | | | $(0.04)$ |
| Firm-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.52 | 0.46 | 0.52 | 0.46 | 0.54 | 0.49 |
| Observations | $9,374$ | $6,314$ | $9,374$ | $6,314$ | $10,805$ | $7,195$ |

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Standard errors (two-way clustered by firm and country-pair) in parentheses.

**Table B-2:** Firm-Level Subsample Analysis: Only High Income Countries

| Dep. Var.: $log(ForeignSales_t)$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $FemaleShare \times GSNI$ | −0.03* | | | | | |
| | (0.02) | | | | | |
| $FemaleShare \times GSNI_{t-1}$ | | −0.02 | | | | |
| | | (0.02) | | | | |
| $FemaleShare \times GSNIECON$ | | | −0.03** | | | |
| | | | (0.02) | | | |
| $FemaleShare \times GSNIECON_{t-1}$ | | | | −0.02 | | |
| | | | | (0.02) | | |
| $FemaleShare \times WBL$ | | | | | 0.07*** | |
| | | | | | (0.02) | |
| $FemaleShare \times WBL_{t-1}$ | | | | | | 0.06*** |
| | | | | | | (0.02) |
| Firm-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 |
| Observations | 17,031 | 11,598 | 17,031 | 11,598 | 20,417 | 13,892 |

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Standard errors (two-way clustered by firm and country-pair) in parentheses.

**Table B-3:** Country-Level Subsamples

| Dep. Var.: $Exports$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $FemaleShare_o \times GSNI_d$ | −0.01 | | | −0.03** | | |
| | (0.00) | | | (0.01) | | |
| $FemaleShare_o \times GSNIECON_d$ | | −0.01* | | | −0.03** | |
| | | (0.01) | | | (0.01) | |
| $FemaleShare_o \times WBL_d$ | | | 0.02*** | | | 0.03** |
| | | | (0.00) | | | (0.02) |
| $RTA$ | 0.11*** | 0.11*** | 0.12*** | 0.03 | 0.02 | 0.03 |
| | (0.03) | (0.03) | (0.03) | (0.05) | (0.05) | (0.04) |
| Origin-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 | 0.99 |
| Observations | 33,034 | 33,034 | 78,626 | 22,685 | 22,685 | 52,707 |

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Standard errors (clustered on the country-pair level) in parentheses. Estimation method: PPML. Models (1)-(3) use a sample restricted to high-income origin countries, while Models (4)-(6) are based on a sample excluding high-income origins.

**Table B-4:** Firm-Level Results with SE Clustered on the Firm-Level

| Dep. Var.: $log(ForeignSales_t)$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $FemaleShare \times GSNI$ | $-0.05^{***}$ | | | | | |
| | $(0.02)$ | | | | | |
| $FemaleShare \times GSNI_{t-1}$ | | $-0.05^{**}$ | | | | |
| | | $(0.02)$ | | | | |
| $FemaleShare \times GSNIECON$ | | | $-0.04^{***}$ | | | |
| | | | $(0.02)$ | | | |
| $FemaleShare \times GSNIECON_{t-1}$ | | | | $-0.04^{**}$ | | |
| | | | | $(0.02)$ | | |
| $FemaleShare \times WBL$ | | | | | $0.08^{***}$ | |
| | | | | | $(0.03)$ | |
| $FemaleShare \times WBL_{t-1}$ | | | | | | $0.10^{***}$ |
| | | | | | | $(0.03)$ |
| Firm-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.71 | 0.69 | 0.71 | 0.69 | 0.72 | 0.70 |
| Observations | $26,405$ | $17,912$ | $26,405$ | $17,912$ | $31,222$ | $21,087$ |

$^{***}p < 0.01;\ ^{**}p < 0.05;\ ^{*}p < 0.1$. Standard errors (one-way clustered by firm) in parentheses.

**Table B-5:** Firm-Level Results with SE Clustered on the Country-Pair-Level

| Dep. Var.: $log(ForeignSales_t)$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $FemaleShare \times GSNI$ | $-0.05^{***}$ | | | | | |
| | $(0.02)$ | | | | | |
| $FemaleShare \times GSNI_{t-1}$ | | $-0.05^{**}$ | | | | |
| | | $(0.02)$ | | | | |
| $FemaleShare \times GSNIECON$ | | | $-0.04^{***}$ | | | |
| | | | $(0.02)$ | | | |
| $FemaleShare \times GSNIECON_{t-1}$ | | | | $-0.04^{**}$ | | |
| | | | | $(0.02)$ | | |
| $FemaleShare \times WBL$ | | | | | $0.08^{***}$ | |
| | | | | | $(0.02)$ | |
| $FemaleShare \times WBL_{t-1}$ | | | | | | $0.10^{***}$ |
| | | | | | | $(0.03)$ |
| Firm-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.71 | 0.69 | 0.71 | 0.69 | 0.72 | 0.70 |
| Observations | $26,405$ | $17,912$ | $26,405$ | $17,912$ | $31,222$ | $21,087$ |

$^{***}p < 0.01;\ ^{**}p < 0.05;\ ^{*}p < 0.1$. Standard errors (one-way clustered by country-pair) in parentheses.

**Table B-6:** Country-Level Results with Lags

| Dep. Var.: $Exports_t$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $FemaleShare_{o,t-1} \times GSNI_d$ | −0.02*** | | | | | |
| | (0.00) | | | | | |
| $FemaleShare_{o,t-1} \times GSNIECON_d$ | | −0.02*** | | | | |
| | | (0.00) | | | | |
| $FemaleShare_{o,t-1} \times WBL_{dt}$ | | | 0.02*** | | | |
| | | | (0.00) | | | |
| $FemaleShare_{d,t-1} \times GSNI_o$ | | | | −0.01* | | |
| | | | | (0.00) | | |
| $FemaleShare_{d,t-1} \times GSNIECON_o$ | | | | | −0.01* | |
| | | | | | (0.01) | |
| $FemaleShare_{d,t-1} \times WBL_{ot}$ | | | | | | 0.01 |
| | | | | | | (0.01) |
| $RTA$ | 0.10*** | 0.10*** | 0.10*** | 0.09*** | 0.09*** | 0.10*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Origin-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 |
| Observations | $51,575$ | $51,575$ | $121,191$ | $51,534$ | $51,534$ | $120,787$ |

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Standard errors (clustered on the country-pair level) in parentheses. Estimation method: PPML.

**Table B-7:** Country-Level Results using OECD Female Shares

| Dep. Var.: $Exports$ | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| $oecdShare_o \times GSNI_d$ | −0.00 | | | | | |
| | (0.00) | | | | | |
| $oecdShare_o \times GSNIECON_d$ | | −0.01* | | | | |
| | | (0.00) | | | | |
| $oecdShare_o \times WBL_d$ | | | 0.02*** | | | |
| | | | (0.00) | | | |
| $oecdShare_d \times GSNI_o$ | | | | −0.00 | | |
| | | | | (0.00) | | |
| $oecdShare_d \times GSNIECON_o$ | | | | | −0.00 | |
| | | | | | (0.00) | |
| $oecdShare_d \times WBL_o$ | | | | | | 0.01** |
| | | | | | | (0.01) |
| $RTA$ | −0.04 | −0.04 | −0.02 | −0.01 | −0.01 | −0.00 |
| | (0.06) | (0.06) | (0.05) | (0.05) | (0.05) | (0.04) |
| Origin-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Destination-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Origin-destination FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Observations | $31,346$ | $31,346$ | $75,136$ | $31,330$ | $31,330$ | $74,621$ |

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. Standard errors (clustered on the country-pair level) in parentheses. Estimation method: PPML.

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