# How is global commerce affecting the gender composition of employment? A firm-level analysis of the effects of exposure to gender norms via trade and FDI

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**Abstract**

Global firms – exporters and multinationals – have a higher share of female employees than domestic non-exporters, a fact that the literature has explained by economic theories of discrimination, comparative advantages, and technological upgrading. This paper proposes and tests another reason why global firms, on average, have a greater share of female employees. Our main hypothesis is that international trade and FDI are channels through which norms regarding gender (in)equality are transmitted from customers and investors to global firms. We estimate the impact of exposure to gender norms on a firm's share of female employees using a large international firm-level dataset that allows us to control for variables that account for the pre-existing theories in the literature. Our preferred specifications apply a new IV instrumenting whether a firm exports or receives FDI by the attractiveness of narrowly defined market cells to global firms. The results show a race to the top for low- and mid-level jobs: when firms are exposed to norms of gender equality, the female share of production and non-production workers is higher than it is in non-global firms. However, there is instead a race to the bottom for top managerial positions, and the positive effects of exposure to gender equality are limited to firms that are themselves in relatively gender-equal countries.

**JEL Classifications:** F66; D22; F42; J16
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# 1 Introduction

Global firms (exporters and multinationals) have been found to have more gender-equal employment and wage outcomes than domestically-owned non-exporting firms; examples include Black and Brainerd (2004), Juhn, Ujhelyi, and Villegas-Sanchez (2014), Tang and Zhang (2017), Bøler, Javorcik, and Ulltveit-Moe (2018), and Kodama, Javorcik, and Abe (2018). The literature has relied on three strands of economic theory to explain this phenomenon: Becker's (1957) thinking on discrimination and the role of competition in determining firm mark-ups; the Heckscher-Ohlin application of comparative advantage to female workers in developing countries; and technological upgrading embedded in trade models of heterogeneous firms (Juhn, Ujhelyi, and Villegas-Sanchez, 2014). These three theories have been steady workhorses in the literature explaining women's better outcomes in global firms; they are described in detail below.

The main contribution of this paper is that it proposes and tests a relatively unexplored explanation for the higher share of female employees in global firms: that the norms of gender (in)equality to which a global firm is exposed via trade and FDI affects its own gender-specific employment structure. As firms are exposed to the gender norms in other countries via customer demand for their goods or via the hiring practices and gender norms of their parent companies, they adapt their own employment structure to match those norms. We empirically evaluate how exposure to norms of gender (in)equality through trade and FDI affects the female employment share in global firms vis-à-vis non-global firms located in the same market. We measure exposure to gender (in)equality through trade and FDI by means of spatial lags, in which the gender (in)equality in a country's commercial partners is weighted by the strength of bilateral commercial links. Throughout, we control for variables that represent the three existing causal channels between a firm's global status and its share of female employees typically assumed in the literature.

Existing literature on the transmission of norms has shown that international trade and FDI are indeed channels through which social norms can be transmitted. Greenhill, Mosley, and Prakash (2009), for example, show that customers abroad demand that

sellers meet their own local standards of equality: in that study, exporters adapted their treatment of workers to comply with norms of labor rights in the countries in which their customers were located. Those findings echo the idea of Vogel's (1995) "California Effect," in which international car manufacturers were found to conform to the high environmental standards for cars driven in California. Moreover, Harrison and Scorse (2010) find that in the face of activism againt sweatshop labor conditions, exporters and multinationals raised employee wages to meet the demands of customers abroad.

The literature on norms transmission further shows that trade and FDI can internationally transmit gender norms in particular. In a paper close to our own, in that it uses spacial lags to measure exposure to gender norms, Neumayer and de Soysa (2011) show at the country level that in all but the lowest-income countries, trade serves as a link for transmission of women's social and economic rights across countries. In their results, FDI acts as a weaker channel than trade to transmit women's rights. At the firm level, Tang and Zhang (2017) find that firms in China owned by companies in more gender-equal countries have a higher share of female employees. The present paper builds on this literature to explore several new dimensions of the effect of the transmission of gender norms via trade and FDI on a firm's share of female employees, as described below.

This paper contributes to this literature in three aspects. First, we assess the effect of exposure to gender norms on the share of women employed in various classes of jobs. The analysis differentiates the effect of exposure to gender norms for production workers (such as those on assembly lines), non-production workers (such as those in offices), and top managers. The findings in Juhn, Ujhelyi, and Villegas-Sanchez (2013) show why this differentiation is important: they found that trade liberalization in Mexico increased wages and employment for women, but only for those in blue-collar jobs.

Second, we employ firm-level data in our empirical analysis. The paper thus fits into the growing literature on heterogenous firms, which is replacing classical theories of trade by recognizing that firms can fundamentally differ from each other, even in narrowly defined sectors. Global and non-global firms have different characteristics and processes that may be related to their decisions about hiring more or fewer women. Using firm-

level data is important to be able to control for the effects of the firm-level characteristics that differ by global status, such as productivity, size, industry, and location. There is already a literature studying the relationship between international trade and FDI with gender equality in employment using firm-level data, but existing studies have thus far only looked at firms in one country at a time.[1] Therefore, the third major contribution of the paper is that it studies firms in more than 100 different countries. By looking at firms in so many countries, the analysis is able to control for institutional characteristics across countries and regions that may impact the link between a firm's global status and the share of women it employs. Moreover, the large sample of countries makes the analysis less prone to concerns about the external validity of the results, as is the case in single-country studies.

We consistently find that exposure to gender norms through trade and FDI affects the hiring decisions of global firms. When looking at the female share in total employment, this exposure leads to a race to the top in gender equality, in which global firms exposed to gender equality have statistically larger female shares than non-global firms in the same market. In particular, our IV results show that when exposed to gender equality, the female employment share in multinationals is 17-18 percentage points larger than it is in non-global firms, and it is 6.6-seven percentage points larger in exporting firms. At the same time, when exposed to gender inequality, the female share of total employment in global firms is not statistically different from that in non-global firms.

However, we identify two limitations to the positive effect of exposure to gender equality via trade and FDI. The first is that it is only firms in relatively gender-equal countries that respond to this exposure. The second is that the race to the top in gender equality exists only for low- and mid-level jobs; there is instead a race to the bottom for top managerial positions.

[1]Examples include Ozler (2000) for Turkey; Klein, Moser, and Urban (2010) for Germany; Chan (2018) for Italy; Bøler, Javorcik, and Ulltveit-Moe (2015) and Bøler, Javorcik, and Ulltveit-Moe (2018) for Norway; Vahter and Masso (2019) for Estonia; Aguayo-Tellez et al. (2010), Juhn, Ujhelyi, and Villegas-Sanchez (2013), and Juhn, Ujhelyi, and Villegas-Sanchez (2014) for Mexico; Helpman et al. (2017) for Brazil; Dong and Zhang (2009), Chen et al. (2013), and Tang and Zhang (2017) for China; and Kodama, Javorcik, and Yukiko (2016) for Japan.

# 2 Data and Methods

In this section, we present the methods and data used to evaluate the impact of the global status of a firm and its exposure to gender norms on its female employment share.

## 2.1 Data

The paper employs a rich dataset of enterprise surveys from 2007-2016 for almost 30,000 firms in 104 countries, administered by the Enterprise Analysis Unit of the World Bank. A major advantage of these surveys is that they were carried out using a uniform sampling methodology and the same set of questionnaires across firms, countries, and over time. The sample scheme consists of a stratified random sample based on sector, firm size, and region. Our measure of female employment is the share of full-time, permanent positions held by women. We also use information on female employment shares in full-time, permanent positions for production and non-production workers. Finally, we use an indicator variable of whether the top manager is female. The analysis is limited to firms in the manufacturing sector, because data on several important variables (such as the number of individuals employed in full-time permanent positions in production versus non-production work and information on the skill level of the firms' production workers[2]) are scarce or unavailable for firms in other sectors. "Global" firms are identified in two ways: those whose exports make up at least 10%[3] of total sales ("exporters") and those who are completely owned by foreigners – "multinationals" or "foreign".

To account for firms' exposure to gender norms through trade and FDI, we construct a set of spatial lags, which entails two steps. The first step is to measure the norms of gender (in)equality in countries around the world, which is done using data from the Gender Inequality Index (GII) compiled by the United Nation Development Programme (UNDP).[4] The GII measure ranges from 0 to 1, where higher values correspond to higher

[2]Only manufacturing firms were asked to report the shares of employees that were "highly skilled production workers," "semi-skilled production workers," or "unskilled production workers."

[3]The 10% cut-off is standard in the literature; see e.g. Juhn, Ujhelyi, and Villegas-Sanchez (2014) and Kodama, Javorcik, and Yukiko (2016).

[4]The GII is a battery measure of five issues indicating a country's level of gender (in)equality: the share of parliamentary seats held by women; the maternal mortality ratio; the adolescent fertility rate; the share of women with at least a secondary educational degree; and women's labor market participation.

levels of gender inequality. The next step entails the creation of a firm's exposure to gender (in)equality, which is a weighted measure of the gender (in)equality in the countries with whom a firm interacts and the amount if its commerce that it does with each country. In the firm-level Enterprise Survey data, there is no direct information on the countries with whom a firm trades or the countries from whom it receives FDI. To supplement this information, country-level data on bilateral trade and FDI are employed to get a measure of the countries with whom a firm interacts, based on its country of residence.[5] The resulting exposure indicators vary across countries and over time. Given that we have information on firms in more than 100 countries, we can exploit this variation to identify the impact of exposure to gender norms on the hiring decision of global firms.

The spatial lags ($SL_i$) take the form

$$SL_i = \sum_{j \neq i}^{P} w_{ji} * GII_j \tag{1}$$

where the exposure to gender (in)equality in country $i$ equals the sum across all commercial partner countries $P$ of the gender (in)equality $GII$ in commercial partner $j$ weighted by the bilateral share $w_{ij}$ of trade and FDI between countries $i$ and $j$. There are two different sets of weights ($w_{ji}$), depending on whether the focus is on identifying exposure to gender norms in final consumer countries ($Trade\_SL$) or in investor countries ($FDI\_SL$). In the first case, the weights account for the share of exports in country $i$ going to each of its partner countries $j$, while in the second, the weights represent the share of a country's inward FDI stocks originating from partner countries. As such, countries trading and receiving FDI mainly from gender equal countries will be exposed to gender equality, while those having commercial ties mainly with gender unequal countries will be exposed to gender inequality. Figure A1 in the appendix shows the average gender norms

[5]The data on FDI come from the United Nations Conference on Trade and Development (UNCTAD). The UNCTAD data give information on the stock of FDI in any country received from each other country. The UNCTAD data come primarily from countries' self-reports and are supplemented with data from partner countries and other international organizations, when available (UNCTAD, 2018). The data on bilateral trade come from the United Nations (COMTRADE), organized into so-called "World Trade Flows" (WTF) data by the Center for International Data (2018). These data give the total value of exports from one country to another.

to which countries are exposed via trade and FDI; the ISO country codes for the highest, lowest, and some middle values are highlighted. The Czech Republic, Hungary, Sweden, and Estonia have high exposure to norms of equality; Namibia, Eswatini, Jordan, and Bhutan have high exposure to inequality.

## 2.2 Methods

The spatial lags are employed in a model predicting the firm's female employment share. As a starting point, it is reasonable to assume that attitudes towards female work in final export markets are relevant only for exporting firms, and that the attitudes in source countries of FDI are relevant only to firms that are foreign owned. The specification thus interacts the export weighted spatial lag variable ($Trade\_SL$) with the export status dummy ($X$), while the FDI-weighted spatial lag variable ($FDI\_SL$) is interacted with the foreign-owned dummy variable ($M$):

$$\begin{aligned} G_i =& \alpha + \beta X_i + \gamma M_i + \mathbf{C}_i\zeta' + \\ & \phi Trade\_SL_c + \delta X_i * Trade\_SL_c + \\ & \varphi FDI\_SL_c + \theta M_i * FDI\_SL_c + \varepsilon_i. \end{aligned} \tag{2}$$

The coefficients of interest are $\delta$ and $\theta$, which predict the differential impact of the exposure to gender norms on the female employment share in global firms versus domestic non-exporting firms operating in the same market. The standalone spatial lag variables ($Trade\_SL$ and $FDI\_SL$), which only vary across country and over time, are dropped from the model and accounted for by the country*year effects in all specifications. As such, the country*year effects account not only for a country's own level of inequality, but also for any spatial correlation in gender norms. This is particularly relevant here, since trade and FDI are strongly influenced by geographical distance; leaving this information in the error term would certainly induce endogeneity.

Along with the estimation of $\delta$ and $\theta$ based on equation 2, some specifications further investigate the interaction effect between being global and exposure to gender norms

by splitting the sample of observations into countries exposed to gender equality versus those exposed to gender inequality. This binary measure of exposure to inequality versus equality is a relative measure of the gender norms of all levels of exposure in the data, split at the median. This portion of the analysis assesses the impact of being global for firms exposed to inequality versus the impact of being global for firms exposed to equality.

Throughout the analysis, we control for a host of issues that the literature has identified as linkages between a firm's global status and its share of female employees. Controlling for these items isolates the effect of the exposure to gender norms, which is the key question in the analysis. The first set of controls relates to Becker's (1957) theory of employers' taste for discrimination, in which firms in non-competitive markets enjoy relatively larger mark-ups and profits that can be used to "purchase" costly discrimination. By increasing market competition and lowering firms' mark-ups, increased international commerce can reduce the scope for discriminatory practices and thus improve female labor outcomes.[6] Studies which take as their theoretical starting point that globalization may reduce discrimination via greater competition include Artecona and Cunningham (2002), Black and Brainerd (2004), and Ederington, Minier, and Troske (2009). Each of these studies show that an increase in trade led to a decrease in discrimination against women in global firms. To control for the level of competition that firms face, we include information on whether a firm's working capital is financed by credit or advances. This variable is used as an indicator of the level of monopolistic power held by the firms, since only large firms with strong influence in the final market might ask suppliers for credits in advance.

The second set of controls comes out of the traditional trade theories based on comparative advantages and countries' endowments. In particular, the Heckscher–Ohlin model predicts that as an economy opens up to trade, employment and production expand in the sector that uses the most abundant factor of production more intensely. To the extent that unskilled labor by women is relatively abundant in developing economies, the theory predicts that trade liberalization will reduce the gender employment and wage gaps in

[6]Indeed Weber and Zulehner (2014) show that firms in a competitive market with a preference for discrimination against hiring women have lower survival rates.

developing countries while widening them in rich economies (Sauré and Zoabi, 2014).[7] To account for this idea, the models in this paper include controls for industry fixed-effects (ISIC codes at the 2-digit level) and the firm's skill intensity (that is, the share of skilled production workers). These controls ensure that the results are not driven by the concentration of unskilled female labor in particular sectors, such as the apparel sector, which is typically a big employer of unskilled female workers and is a prevalent example of comparative advantage in the developing and transition economies in our data.

The third set of controls shows how the use of firm-level data is crucial to properly identify the link between a firm's global status and the share of women it hires. This set of controls refers to new trade models based on firm heterogeneity and monopolistic competition (Melitz, 2003), which acknowledge that there is heterogeneity across firms even within narrowly defined sectors. Only a handful of firms export, and these exporters are larger, more productive, and invest more in new technology. The latter issue, greater investment in technology, is one key link between global status and gender equality, as shown in Juhn, Ujhelyi, and Villegas-Sanchez (2014). Their model predicts that new technology reduces the female comparative disadvantage of performing physically demanding tasks. At the same time, as a country opens up to trade, a selection of firms takes place, in which less productive firms exit the market. This process in turn increases the country's average productivity, and subsequently the number of firms in the economy that can afford the fixed costs of exporting and investing in new technology. Thus, trade liberalization leads to an increase in the number of exporting firms as well as in investment in new technology, favoring female workers.[8] This example shows that greater gender equality among exporting firms and multinationals might not stem from their global status per sé, but instead from the fact that those firms tend to be larger and

[7]However, the empirical literature does not find full support for this theory. Oostendorp (2009), for example, finds that being more globalized is related to a lower occupational-level gender wage gap only in developed countries – the opposite of what the Heckscher-Ohlin theory predicts. Moreover, the model in Brussevich (2018) predicts that in the US, where trade openness should theoretically increase gender gaps on the labor market, the high cost of switching sectors upon facing import pressure actually disproportionately negatively affected men, not women, lowering the gender wage gap.

[8]In developed countries, Weinberg (2000) shows that the increase in computer use in the US between the 1970s and 1980s can explain more than half of the growth of demand for female workers, and Black and Spitz-Oener (2010) show that the adoption of computers can explain 41% of the declining gender wage gap in West Germany between 1979 and 1999.

more technology-intensive than domestic and non-exporting firms. To account for firm heterogeneity in general and the heterogeneity in firms' use of new production technologies in particular, the models here control for firm size (measured as the total number of employees three fiscal years ago), its productivity (sales per worker three fiscal years ago), and whether the firm had invested in any fixed asset in the last year. Finally, to account for firms' use of new production technologies, the models include firms' expenditure in equipment, machinery, and vehicles in its last fiscal year.

Along with the control variables based on the three theories described above, all models further control for the region within a country in which a firm is located and a dummy variable indicating whether the firm is located in a large city. The city and region variables control for confounding factors arising from global firms being attracted to large cities, where attitudes towards female work might differ from those in rural areas. The models further control for the firm's age; if at least one of its owners is a woman; its share of temporary employees; and management quality. The latter is proxied by the number of years that the top manager has been working in the sector.[9] Finally, all models include country*year controls to account for a country's level of gender inequality and any potential policy changes at the country level over time, such as tariff cuts and those regarding labor market conditions.

### 2.2.1 IV for global status of the firm

Although we include a large set of variables to control for factors that are external to a firm's operations that could explain female employment in our OLS regression,[10] there may still be some endogeneity arising from unobserved firm heterogeneity.[11] We

[9]Bloom et al. (2018) show that better managed firms are more likely to be exporters, and the results in Heyman, Svaleryd, and Vlachos (2013) suggest that more efficiently-managed firms hire a greater share of women and have a lower gender wage gap.

[10]Such as gender norms, labor policy, labor supply, and the factor intensity of sectors, which is captured via country*year, region within country, and industry fixed effects, among other things.

[11]One example of potential unobserved heterogeneity across firms related to both global status and the share of women employed in the firm could be managerial quality. Only highly professionalized management teams have the tools and the skills to engage in exporting and investing abroad (making management related to global status) and better managerial teams might conduct formal recruitment processes that are less prone to discrimination (making management related to female employment). The models specified here control for managerial quality proxied by the number of years the top manager spent in the industry, but this variable may not capture all variation in internal operations.

thus implement an instrumental variable to ensure a causal interpretation of the results by instrumenting the global status of the firm. An IV in this setting must explain a firm's selection into being an exporter or multinational while also being unrelated to the firm's female employment share. One of the preferred instruments for global status in the trade literature, geography,[12] cannot be used in this setting. Geography and distance in particular are powerful determinants of trade and FDI, and in most applications, they can be considered exogenous to firm-level outcomes since neither countries nor firms can modify geography. However, geography does not fulfill the condition of exogeneity in this case, since gender norms may be spatially correlated. If the distance between countries impacts not only trade and FDI but also the gender norms across countries, distance would have its own direct impact on female employment along with an indirect impact through trade and FDI.

Our strategy is to find instruments that can account for the attractiveness of a narrowly defined market cell to global firms. Over-representation of exporters and multinationals in a particular market might indicate that the market is offering especially advantageous conditions to global firms. We thus use the weights of the enterprise survey data to construct estimates of the concentration of global firms in each market cell, where a market is defined by the year, sector, and region within a country in which a firm is located.[13] To ensure that our instruments are orthogonal to a firm's own performance, we construct measures of the market concentration of global firms based on firm characteristics for which we explicitly control in the model. In particular, the "attractiveness" of a market cell is measured via two indicators: the share of all employment in the cell (three years ago) employed by global firms, and the global firms' share of all firms in the cell that invested in fixed assets in the last year. We calculate the share of exporters and the share of multinationals for each indicator separately. We thus have an over-identified

In family-run businesses, for example, managers may have experience spanning generations, but hiring practices may still be informal. Moreover, the enterprise survey is an establishment survey and as such, does not contain information on the quality and skill of the management in the parent firm that might be relevant for multinationals and multi-establishment firms.

[12] See, for instance, the seminal work of Frankel and Romer (1999).

[13] Using the weights in the Enterprise Surveys makes the observed firms in each cell representative of all firms in their cells, since the survey design is stratified by sector, region, and year and the cells are defined by exactly these characteristics.

model with four instruments for two endogenous variables. Moreover, since our instruments vary across regions, industries, and over time, we can keep the same set of fixed effects and covariates as in the OLS regressions. The instruments thus account for the attractiveness of the market that is uncorrelated to the other firm characteristics already controlled for in the model and that is independent of the region, sector, and country*year in which a firm operates.

One example of what these instruments might capture is the emergence of Export Processing Zones (EPZ) or Special Economic Zones (SEZ), which aim to attract foreign investors and promote exports.[14] A firm existing in one of these zones is much more likely to be global, but there is no reason to think that the zone itself would impact the gender-specific hiring decisions of the firms in it. Another example of what these instruments might capture is any new regional infrastructure, such as the construction of new air- and seaports within the period of analysis, which might disproportionately benefit exporting firms. Any such changes to infrastructure are unrelated to firms' gender-specific hiring decisions. Finally, the instruments capture any sectoral/industry clustering that might disproportionately attract global firms.

# 3 Results

We start by presenting the impact of exposure to gender norms on firms' female share of total employment. We then break down the analysis, investigating the impact of exposure to gender (in)equality on the female share of production and non-production workers as well as whether the top manager is a female.

[14]These zones are geographically delimited areas, which are sometimes sector-specific. According to the UNCTAD (WIR 2019), there are 5,400 SEZs today, almost one-fifth of which were created within the last five years. These zones are separate customs territories within a country that are free from customs duties and tariffs. Most zones also offer fiscal incentives and infrastructure support in order to attract foreign investors, increase exports, and diversify industrial activity.

## 3.1 Total employment

Results based on total employment are presented in tables 1-3. Table 1 shows OLS regressions, in which the female share in total employment is explained by the global status of the firm and the gender norms to which the firm is exposed. In column (1), the trade and FDI spacial lags (Trade_SL and FDI_SL, respectively) are interacted with their corresponding dummy variables for being an exporter or being foreign-owned. The measure of exposure to gender norms were centered around their means before constructing the interaction terms, so the coefficients on exporter status and being a multinational are to be interpreted as the impact of being global on the female share of total employment for firms that face average exposure to gender inequality through trade and FDI.

The coefficients on the stand-alone variables for global status show that global firms employ a higher share of female workers than domestic non-exporters, in line with the literature. The female share in exporting firms is 2.7 percentage points higher than it is in domestic non-exporting firms, and the share is 3.2 percentage points higher in multinationals than in domestic non-exporting firms.[15]

The coefficient on the interaction terms are negative and statistically significant. They indicate that exposure to greater gender inequality via trade and FDI leads to a lower share of female employment in global firms compared to non-global firms in the same market. A one standard deviation increase in a country's exposure to gender inequality through both trade and FDI is associated with a 3.3 percentage point decrease in the share of women a global firm employs. Evaluated at the average female employment share, which is 25% in the sample, this drop represents a 13% decline in the share of female employees. These results indicate a convergence in gender norms: international trade and FDI lead to either a race to the top or a race to the bottom in gender norms, depending on the level of gender (in)equality in commercial partner countries.

[15] Appendix table A1 presents and discusses the results on the impact of global status in a regression that does not account for the exposure to gender norms. The findings there confirm that global firms have a higher share of female employment. Moreover, the table shows that the weaker a firm's global ties (based on the share of its output that is exported or the share of its owners that are abroad), the weaker the relationship between these measures and the share of female employment. This result would not be surprising if the gender-specific employment structure in global firms is influenced by the gender norms to which the firm is exposed.

Table 1: Relationship between a firm's female employment share, based on its exposure to gender norms in commerical partner countries

| | | Export markets | | FDI source country | |
|---|---|---|---|---|---|
| | All obs. | Equal | Unequal | Equal | Unequal |
| | (1) | (2) | (3) | (4) | (5) |
| Exporter (≥10%) | 2.746*** | 4.315*** | 0.824 | 3.216*** | 2.770*** |
| | (0.498) | (0.783) | (0.539) | (0.676) | (0.949) |
| Foreign (100%) | 3.208*** | 5.208*** | -0.135 | 5.623*** | 0.500 |
| | (0.872) | (1.078) | (1.083) | (1.133) | (1.056) |
| Exporter (≥10%) * Trade_SL | -37.771*** | | | | |
| | (12.873) | | | | |
| Foreign (100%) * FDI_SL | -26.307* | | | | |
| | (15.798) | | | | |
| Observations | 27,833 | 13,915 | 13,918 | 13,375 | 14,458 |
| $R^2$ | 0.475 | 0.454 | 0.465 | 0.464 | 0.463 |
| Region FE | Yes | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes | Yes |

This table shows the relationship between a firm being an exporter and receiving FDI with its female employment share, based on its exposure to gender norms in its commercial partner countries. Unequal and equal gender norms mean that the exposure is in the bottom or top half of the exposure distribution, respectively. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Columns (2)-(5) in table 1 show the relationship between the norms to which global firms are exposed and their female employment shares. These columns split the sample into two groups of observations based on whether a country's exposure to gender equality is below or above the sample median.[16] Splitting the sample based on exposure in this way gives a direct test of how norms of gender equality versus norms of inequality might differently impact the effect of being a global firm on the female share. Column (2) shows the firms whose exposure to gender norms via trade is in the upper half of the equality distribution, and column (3) shows the firms whose exposure via trade is in the bottom half of the gender equality distribution. In columns (4) and (5), the sample is split based

[16]This exercise is basically the same as interacting the global status variables, as well as all the other covariates of the model, with the exposure to gender inequality in partner countries when the latter is accounted for by a binary variable.

on the exposure to gender norms from the source countries of FDI.[17]

When studying the effect of exposure to gender norms through trade, we see that global firms only have a statistically significantly higher female employment share than non-global firms when the global firms are exposed to gender equality. Exporting firms exposed to gender equality via trade have a four percentage point greater female employment share than domestic non-exporters, while multinationals exposed to gender equality via trade have a five percentage point higher female share. On the other hand, the female employment share in exporting and multinational firms exposed to unequal gender norms through trade is not different than it is in domestic non-exporting firms.

A similar pattern emerges when looking at exposure to gender norms via FDI in columns (4)-(5). When exporting firms are exposed to norms of gender equality via FDI, the female share is three percentage points higher than it is in non-global firms; multinationals exposed to equality through FDI have a 5.6 percentage points greater share of female employees.

Another interesting result from table 1 is that foreign-owned firms are very strongly affected by exposure to gender norms through trade. This result is not surprising, considering that almost half of foreign-owned manufacturers are also exporters. Not as many exporters are foreign-owned, so the effect of exposure through FDI for exporters is weaker than the effect of exposure through trade for multinationals.

We repeat the analysis from columns (2)-(5) in table 2, using our IV.[18] For all specifications, the battery of tests of the quality of the IV suggest that the IV is appropriate. Column (1) shows that while there is a positive relationship between being global and the female employment share, this relationship is only precisely estimated for the effect of being a foreign-owned company. The female employment share in foreign-owned firms

[17] One by-product of this approach is that exporters and multinationals are now allowed to be influenced by both types of exposure to gender norms, that is, through both trade and FDI. This approach might be more realistic than assuming that only exporters are influenced by the norms in export markets and that only multinationals are influenced by the norms in FDI source countries, since a large share of multinationals in the manufacturing sector engages in exports (in our data, almost half (49%) of foreign-owned firms are also exporters). Thus, gender norms in export markets might have an effect not only on the hiring decisions of exporting firms but also, although to a lesser extent, on the hiring decisions of foreign-owned firms. Exporters, on the other hand, are predominantly domestically owned (89%) and are thus less likely to be influenced by the gender norms in source countries of FDI.

[18] The first stage results can be found in table A2 in the appendix.

is 13.6 percentage points greater than in similar domestic, non-exporting firms, but the coefficient on being an exporter – 2.7 percentage points – is statistically insignificant.

Table 2: The effect of a firm being global on its female employment share; IV estimates

| | | Export markets | | FDI source country | |
|---|---|---|---|---|---|
| | All obs. | Equal | Unequal | Equal | Unequal |
| | (1) | (2) | (3) | (4) | (5) |
| Exporter (≥10%) | 2.657 | 6.594*** | -5.445 | 7.013** | 0.532 |
| | (2.146) | (2.517) | (3.329) | (3.186) | (3.139) |
| Foreign (100%) | 13.605*** | 17.377*** | 4.816 | 18.052*** | 5.916 |
| | (3.642) | (4.109) | (5.695) | (5.246) | (4.522) |
| Observations | 27,833 | 13,915 | 13,918 | 13,375 | 14,458 |
| $R^2$ | 0.015 | 0.011 | 0.009 | 0.006 | 0.023 |
| Region FE | Yes | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes | Yes |
| Underind. LM test | 130.40 | 83.07 | 62.05 | 68.78 | 65.23 |
| p-value LM statistic | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hansen J statistic | 1.52 | 1.92 | 1.23 | 0.94 | 1.20 |
| p-value Hansen J stat. | 0.47 | 0.38 | 0.54 | 0.62 | 0.55 |
| Weak IV Cragg-Donald | 543.96 | 274.45 | 249.14 | 240.19 | 292.96 |
| Weak IV Kleinbergen-Paap | 162.46 | 89.50 | 107.23 | 84.96 | 94.59 |

This table shows the relationship between a firm being an exporter and receiving FDI with its female employment share, based on its exposure to gender norms via commercial links. Unequal and equal gender norms mean that the exposure is in the bottom or top half of the exposure distribution, respectively. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Results further confirm our findings from table 1. They show a race to the top in gender norms. The share of female employees in global firms is statistically significantly larger than that in domestic, non-exporting firms, but only when countries are exposed to gender equality through trade or FDI (columns (2) and (4), respectively). The gap is economically important: when exposed to gender equality, the female share of employees in exporting firms is between 6.6-7.0 percentage points larger than in non-global firms, and the female share in multinationals is 17.4-18.1 percentage points larger than in non-global firms. Again, these are relatively large numbers, considering that the average

female employment share in all firms in the sample is just 25 percent. At the same time, global firms exposed to gender inequality via trade or FDI have female shares that are never statistically different from non-global firms (columns (3) and (5)).

The results in table 2 reveal that the female employments shares in global firms are not always statistically significantly higher than in non-global firms (column (1)). However, the effect of being global on the female share for both exporters and multinationals always depends on the gender norms to which the firm is exposed (columns (2)-(5)). Those firms that are exposed to more equal gender norms have a greater female employment share.

One question that arises in the analysis is whether the *relative* level of gender inequality in the firm's home country and the norms to which it is exposed plays a role in the relationship between being global and the female employment share. One might theorize that firms in countries with relatively unequal gender norms that interact with customers or investors in countries with relatively equal gender norms could experience a larger effect of being global than, say, firms that reside in already equal countries. The question is thus if the impact of exposure to particular gender norms differs based on the relative level of gender (in)equality in the firm's country.

To address this question, table 3 further divides the sample according to the gender equality in the country a firm resides. Countries in the top half of GII distribution are labeled "unequal" and those in the bottom half "equal." Note that most countries in the sample have high GII scores (meaning that they have gender unequal norms). For the years 2005-2015, the average GII for all countries in the UNDP measure was .465, and the average GII in OECD countries was .233. In the countries in the Enterprise Survey data, the average GII was .460. Thus, the categorization "equal" in this context must be understood as relative to the other countries in the data.

For this part of the analysis, we split the sample into four cells: firms in gender equal countries that are exposed to gender equality (column (1)); those in equal countries that are exposed to inequality (column (2)); firms in unequal countries that are exposed to equality (column (3)); and firms in unequal countries that are exposed to inequality (column (4)). Using our IV specification, the top panel of the table shows the impact

of firms' exposure to gender inequality through trade, while the bottom panel shows the impact of firms' exposure to gender inequality through FDI.

Table 3: Effect of being a global firm on share of female employees, depending on own and partner country's gender equality; IV estimates

| | (1) Equal and exposed to equality | (2) Equal and exposed to inequality | (3) Unequal and exposed to equality | (4) Unequal and exposed to inequality |
|---|---|---|---|---|
| Export markets | | | | |
| Exporter (≥10%) | 8.153*** | 3.734 | 4.971 | -4.368 |
| | (2.602) | (3.611) | (6.072) | (3.496) |
| Foreign (100%) | 19.025*** | 12.523 | 5.335 | -0.732 |
| | (4.750) | (7.823) | (5.733) | (6.762) |
| Observations | 9,175 | 4,487 | 4,218 | 9,417 |
| Underind. LM test | 65.261 | 18.605 | 27.243 | 43.419 |
| p-value LM statistic | 0.000 | 0.000 | 0.000 | 0.000 |
| Hansen J-statistic | 1.241 | 2.299 | 0.066 | 0.165 |
| p-value Hansen J-stat. | 0.538 | 0.317 | 0.968 | 0.921 |
| FDI source countries | | | | |
| Exporter (≥10%) | 9.809*** | 1.849 | -3.154 | 4.959 |
| | (2.799) | (3.180) | (7.472) | (4.792) |
| Foreign (100%) | 20.398*** | 6.112 | 0.589 | 0.156 |
| | (5.587) | (5.398) | (7.187) | (6.445) |
| Observations | 8,587 | 5,075 | 4,266 | 9,369 |
| Underind. LM test | 47.983 | 26.246 | 32.218 | 39.889 |
| p-value LM statistic | 0.000 | 0.000 | 0.000 | 0.000 |
| Hansen J-statistic | 2.497 | 0.491 | 0.904 | 1.506 |
| p-value Hansen J-stat. | 0.287 | 0.782 | 0.636 | 0.471 |
| Region FE | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes |

This table shows the relationship between a firm being global (exporting or receiving FDI) with its share of female employees, divided by the level of gender equality in the firm's own country and the level of gender equality in its partner countries. The models use our IV specification and control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating in the firm is in a large city and if at leasr one owner is female, the top manager's number of years in the sector, and country*year fixed effects. Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

As in our previous results, we find signs of a race to the top in gender norms. Only global firms exposed to gender equality have statistically significantly higher female shares

than non-global firms. At the same time, the female share in global firms exposed to gender inequality is never statistically significantly different from the female share in non-global firms in the same market.

However, the table further shows that the race to the top holds only for firms in relatively equal countries. Exports and FDI are channels through which norms of gender equality are transmitted only if the firms exposed to this equality already reside in relatively gender equal countries. The results show that firms in equal countries that are exposed to gender equality have a female employment share eight to 9.8 percentage points higher than non-global firms. At the same time, multinationals in relatively equal countries have a 19-20 percentage point higher female share than non-global firms when exposed to equality. For firms in countries with relatively unequal gender norms, we observe neither a race to the top nor a race to the bottom in gender norms.

The results presented up through this point use as their outcome variable the female share of *all* jobs. Below, we replicate table 2 for the female employment share in production and non-production jobs as well as whether the top manager is female. All estimates are based on our IV specification.[19]

## 3.2 Production jobs

Table 4 shows the results for production workers only. The results are similar to the overall results for all worker types. In particular, column (1) shows that the female share of production employees in foreign-owned firms is higher than it is in domestic non-exporting firms. However, the share of female production workers employed by exporters is not statistically significantly different than it is in domestic non-exporting firms.

Columns (2)-(5) show the effect of being a global firm on the female share of production workers based on the gender norms to which a firm is exposed through trade or FDI. Similar to our previous results, we find a race to the top for production workers. Exposure to gender inequality never statistically significantly affects the hiring practices of global

[19] Appendix tables A3 - A5 present the results using OLS. They show a race to the top in gender equality for production workers and a race to the bottom for top managers. The results for non-production workers lie in between.

firms versus non-global firms. At the same time, coefficients on the global status of the firms are shown to be positive and statistically significant only when global firms are exposed to gender equality.

Table 4: The effect of a firm being global on its female share of production workers; IV estimates

| | | Export markets | | FDI source country | |
|---|---|---|---|---|---|
| | All obs. | Equal | Unequal | Equal | Unequal |
| | (1) | (2) | (3) | (4) | (5) |
| Exporter (≥10%) | 1.836 | 5.289 | -6.024 | 8.467** | -2.031 |
| | (2.643) | (3.602) | (4.147) | (3.817) | (3.687) |
| Foreign (100%) | 12.596*** | 16.029*** | 4.243 | 15.754** | 6.077 |
| | (4.256) | (4.885) | (7.554) | (6.410) | (5.393) |
| Observations | 27,795 | 13,891 | 13,904 | 13,352 | 14,443 |
| $R^2$ | 0.010 | 0.011 | 0.003 | 0.005 | 0.010 |
| Region FE | Yes | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes | Yes |
| Underind. LM test | 131.38 | 83.49 | 62.00 | 69.76 | 65.37 |
| p-value LM statistic | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hansen J statistic | 0.33 | 1.03 | 0.75 | 0.24 | 1.02 |
| p-value Hansen J stat. | 0.85 | 0.60 | 0.69 | 0.89 | 0.60 |
| Weak IV Cragg-Donald | 543.31 | 274.45 | 248.65 | 239.76 | 292.83 |
| Weak IV Kleinbergen-Paap | 163.12 | 89.68 | 107.00 | 85.92 | 94.90 |

This table shows the relationship between a firm being an exporter and receiving FDI with its female share of production workers, based on its exposure to gender norms via commercial links. Unequal and equal gender norms mean that the exposure is in the bottom or top half of the exposure distribution, respectively. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. Clustered standard errors in parentheses. $^{***}$ $p < 0.01$, $^{**}$ $p < 0.05$, $^{*}$ $p < 0.10$.

## 3.3 Non-production jobs

Table 5 shows that the race to the top persists in non-production jobs. Only exposure to gender equality statistically significantly affects the female employment share in global firms, while exposure to gender inequality never does. However, the size of the effects of being a global firm are smaller compared to those found for the female share in total

employment and production workers. For example, in multinationals exposed to equality through FDI, the coefficient on foreign status in the analysis of all employees is 18, while it is 15.8 for production workers and just nine for non-production workers.

Table 5: The effect of a firm being global on its female share of non-production workers; IV estimates

| | | Export markets | | FDI source country | |
|---|---|---|---|---|---|
| | All obs. | Equal | Unequal | Equal | Unequal |
| | (1) | (2) | (3) | (4) | (5) |
| Exporter (≥10%) | 2.312 | 5.111** | -1.651 | 4.078* | 0.695 |
| | (1.902) | (2.349) | (2.433) | (2.462) | (2.874) |
| Foreign (100%) | 4.902 | 6.208 | 1.293 | 9.043** | 0.961 |
| | (3.344) | (4.013) | (5.401) | (4.420) | (5.038) |
| Observations | 26,056 | 12,980 | 13,076 | 12,401 | 13,655 |
| $R^2$ | 0.014 | 0.015 | 0.011 | 0.012 | 0.016 |
| Region FE | Yes | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes | Yes |
| Underind. LM test | 125.86 | 81.19 | 57.06 | 65.45 | 64.75 |
| p-value LM statistic | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hansen J statistic | 1.54 | 0.51 | 4.16 | 1.43 | 0.73 |
| p-value Hansen J stat. | 0.46 | 0.77 | 0.12 | 0.49 | 0.70 |
| Weak IV Cragg-Donald | 517.51 | 256.54 | 241.29 | 223.44 | 282.07 |
| Weak IV Kleinbergen-Paap | 151.37 | 82.17 | 100.74 | 74.40 | 94.66 |

This table shows the relationship between a firm being an exporter and receiving FDI with its female share of non-production workers, based on its exposure to gender norms via commercial links. Unequal and equal gender norms mean that the exposure is in the bottom or top half of the exposure distribution, respectively. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. Clustered standard errors in parentheses. $^{***}$ $p < 0.01$, $^{**}$ $p < 0.05$, $^{*}$ $p < 0.10$.

## 3.4 Top manager positions

Finally, table 6 shows the results of the analysis studying the probability that a firm's top manager is female. The striking result is that we now find a statistically significant *negative* relationship between being global and the probability of having a female top manager. Exporters are four percentage points less likely to have a female as

a top manager and multinationals are 6.7 percentage points less likely to have a female top manager (column (1)). This negative effect is driven by firms' exposure to gender inequality. Exporters exposed to gender inequality are between 4.5-6.1 percentage points less likely than non-global firms to have a female top manager, and multinationals are between 11-13 percentage points less likely to do so (columns (3) and (5)). However, when exposed to gender equality, results are never statistically significant. Therefore, the race to the top that we have observed so far is flipped. When considering top management positions, there is instead a race to the bottom. For these jobs, global commercial links never serve as a catalyst to spread equality, but they do spread inequality.

Table 6: The effect of a firm being global on its indicator of whether the top manager is female; IV estimates

| | | Export markets | | FDI source country | |
|---|---|---|---|---|---|
| | All obs. | Equal | Unequal | Equal | Unequal |
| | (1) | (2) | (3) | (4) | (5) |
| Exporter (≥10%) | -0.040** | -0.033 | -0.061* | -0.036 | -0.045* |
| | (0.019) | (0.024) | (0.031) | (0.028) | (0.024) |
| Foreign (100%) | -0.067* | -0.030 | -0.131** | -0.050 | -0.110** |
| | (0.038) | (0.049) | (0.062) | (0.055) | (0.047) |
| Observations | 25,523 | 13,129 | 12,394 | 12,320 | 13,203 |
| $R^2$ | 0.124 | 0.147 | 0.097 | 0.136 | 0.112 |
| Region FE | Yes | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes | Yes |
| Underind. LM test | 127.95 | 80.37 | 62.56 | 77.72 | 51.21 |
| p-value LM statistic | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hansen J statistic | 0.59 | 1.01 | 0.36 | 1.96 | 1.06 |
| p-value Hansen J stat. | 0.74 | 0.60 | 0.83 | 0.38 | 0.59 |
| Weak IV Cragg-Donald | 515.57 | 265.98 | 231.68 | 236.07 | 270.87 |
| Weak IV Kleinbergen-Paap | 146.01 | 84.52 | 90.72 | 88.43 | 69.04 |

This table shows the relationship between a firm being an exporter and receiving FDI with its indicator of whether the top manager is female, based on its exposure to gender norms via commercial links. Unequal and equal gender norms mean that the exposure is in the bottom or top half of the exposure distribution, respectively. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

# 4 Discussion and Conclusions

This paper has studied how trade and FDI transmit gender norms across countries and impact the female employment share in global firms. The paper has contributed to the literature by using firm-level data for a large number of countries. We assessed how the impact of exposure to gender norms depends on the class of worker in question – production, non-production, or top manager. Finally, the paper introduced a novel IV for a firm's global status into the literature.

The central finding of the paper is that the gender norms to which a firm is exposed via trade and FDI impact its female share of employees. We find a race to the top in gender norms when looking at total employment. The results show that global firms exposed to norms of gender equality employ a higher share of women than non-global firms. When global firms are exposed to inequality, on the other hand, their female employment share does not differ from that of non-global firms in the same market.

However, the paper has identified two clear limitations to global trade and FDI as a conveyor of gender equality. First, moving up the occupational ladder from production to non-production to top managerial positions, the positive effect of exposure to gender equality fades and is even reversed. While there was a race to the top in the employment of women in production and non-production positions, there is instead a race to the bottom when it comes to top manager positions. One reason for the asymmetry in the findings regarding production and non-production versus top manager positions may be that even in developed and relatively gender equal countries, women are much less likely to hold top managerial jobs. Until firms in these circumstances can break their own glass ceilings, there is no gender equality norm regarding top managers to transmit abroad.

The second important limitation to the ability of trade and FDI to spread gender equality is that global firms only react to their exposure to equality if they themselves are in gender-equal countries. These findings imply that for norms of equality to spread across countries, there must already be some common ground of norms or values in place.

The paper has been silent on the issue of potential spillover effects onto non-global firms. If these firms imitate the hiring practices of their global counterparts in the same

market, the global firms' exposure to gender norms might also indirectly affect female employment in non-global firms. Considering this type of spillover would be a fruitful area for future research.

# References


Aguayo-Tellez, Ernesto et al. (July 2010). *Did Trade Liberalization Help Women? The Case of Mexico in the 1990s*. NBER Working Papers 16195. National Bureau of Economic Research, Inc. URL: http://ideas.repec.org/p/nbr/nberwo/16195.html.

Artecona, Raquel and Wendy Cunningham (2002). *Effects of trade liberalization on the gender wage gap in Mexico*. Policy research report on gender and development working paper series 21. Washington D.C.: The World Bank.

Becker, Gary S. (1957). *The Economics of Discrimination*. Google-Books-ID: 50qHcSNVVEMC. University of Chicago Press. 178 pp. ISBN: 978-0-226-04104-9.

Black, S. E. and A. Spitz-Oener (2010). "Explaining women's success: Technological change and the skill content of women's work". In: *The Review of Economics and Statistics* 92.1, pp. 187–194.

Black, Sandra E. and Elizabeth Brainerd (July 2004). "Importing Equality? The Impact of Globalization on Gender Discrimination". In: *Industrial & labor relations review* 57.4, pp. 540–559.

Bloom, Nicholas et al. (2018). *Managing Trade: Evidence from China and the US*. NBER Working Papers 24718. National Bureau of Economic Research, Inc. URL: https://www.nber.org/papers/w24718.

Bøler, Esther Ann, Beata Smarzynska Javorcik, and Karen Helene Ulltveit-Moe (2015). *Globalization: A Woman's Best Friend? Exporters and the Gender Wage Gap*. Economics Series Working Paper 743. University of Oxford, Department of Economics. URL: https://ideas.repec.org/p/oxf/wpaper/743.html (visited on 05/17/2017).

— (2018). "Working across Time Zones: Exporters and the Gender Wage Gap". In: *Journal of International Economics* 111, pp. 122–133.

Brussevich, Masha (2018). "Does trade liberalization narrow the gender wage gap? The role of sectoral mobility". In: *European Economic Review* 109, pp. 305–333.

Center for International Data (2018). *World Trade Flows (WTF) bilateral data*. URL: http://cid.econ.ucdavis.edu/Html/WTF_bilateral.html.

Chan, Jeff (2018). "Does import competition worsen the gender pay gap? Evidence from matched employee-employer data". In: *Economics Letters* 165, pp. 13–16.

Chen, Zhihong et al. (Apr. 1, 2013). "Globalization and Gender Wage Inequality in China". In: *World Development* 44, pp. 256–266.

Dong, Xiao-yuan and Liqin Zhang (Jan. 1, 2009). "Economic transition and gender differentials in wages and productivity: Evidence from Chinese manufacturing enterprises". In: *Journal of Development Economics* 88.1, pp. 144–156. ISSN: 0304-3878. DOI: 10.1016/j.jdeveco.2008.02.006. URL: http://www.sciencedirect.com/science/article/pii/S0304387808000321 (visited on 06/27/2017).

Ederington, Josh, Jenny Minier, and Kenneth Troske (Apr. 2009). *Where the Girls Are: Trade and Labor Market Segregation in Colombia*. 4131. Institute for the Study of Labor (IZA). URL: https://ideas.repec.org/p/iza/izadps/dp4131.html (visited on 07/03/2017).

Feenstra, Robert and John Romalis (2014). "International Prices and Endogenous Quality". In: *The Quarterly Journal of Economics* 129.2, pp. 477–527. URL: https://EconPapers.repec.org/RePEc:oup:qjecon:v:129:y:2014:i:2:p:477-527.

Frankel, Jeffrey A. and David H. Romer (1999). "Does Trade Cause Growth?" In: *American Economic Review* 89.3, pp. 379–399. DOI: 10.1257/aer.89.3.379. URL: http://www.aeaweb.org/articles?id=10.1257/aer.89.3.379.

Greenhill, Brian, Layna Mosley, and Assem Prakash (2009). "Trade-based Diffusion of Labor Rights: A Panel Study, 1986-2002". In: *American Political Science Review* 4 (103), pp. 669–690.

Harrison, Ann and Jason Scorse (2010). "Multinationals and Anti-Sweatshop Activism". In: *The American Economic Review* 100.1, pp. 247–273.

Helpman, Elhanan et al. (2017). "Trade and Inequality: From Theory to Estimation". In: *The Review of Economic Studies* 84.1, pp. 357–405.

Heyman, Fredrik, Helena Svaleryd, and Jonas Vlachos (2013). "Competition, Takeovers, and Gender Discrimination". In: *ILR Review* 66.2, pp. 409–432. DOI: 10.1177/001979391306600205. eprint: https://doi.org/10.1177/001979391306600205. URL: https://doi.org/10.1177/001979391306600205.

Juhn, Chinhui, Gergely Ujhelyi, and Carolina Villegas-Sanchez (2013). "Trade Liberalization and Gender Inequality". In: *American Economic Review: Papers and Proceedings* 103.3, pp. 269–73.

— (2014). "Men, women, and machines: How trade impacts gender inequality". In: *Journal of Development Economics* 106, pp. 179–193.

Klein, Michael W., Christoph Moser, and Dieter M. Urban (2010). *The Contribution of Trade to Wage Inequality: The Role of Skill, Gender, and Nationality*. Working Paper 15985. National Bureau of Economic Research.

Kodama, Naomi, Beata S. Javorcik, and Yukiko Abe (2018). "Transplanting Corporate Culture across International Borders: Foreign Direct Investment and female employment in Japan". In: *World Economy* 41.

Kodama, Naomi, Beata S. Javorcik, and A. B. E. Yukiko (Feb. 2016). *Transplanting Corporate Culture across International Borders: FDI and female employment in Japan*. 16015. Research Institute of Economy, Trade and Industry (RIETI). URL: https://ideas.repec.org/p/eti/dpaper/16015.html (visited on 06/12/2017).

Melitz, Marc J. (2003). "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity". In: *Econometrica* 71.6.

Neumayer, Eric and Indra de Soysa (2011). "Globalization and the Empowerment of Women: An Analysis of Spatial Dependence via Trade and Foreign Direct Investment". In: *World Development* 39.7, pp. 1065 –1075.

Oostendorp, Remco H. (2009). "Globalization and the Gender Wage Gap". In: *The World Bank Economic Review* 23.1, pp. 141–161.

Ozler, Sule (2000). "Export Orientation and Female Share of Employment: Evidence from Turkey". In: *World Development* 28.7, pp. 1239–1248.

Sauré, Philip and Hosny Zoabi (2014). "International trade, the gender wage gap and female labor force participation". In: *Journal of Development Economics*. Special Issue: Imbalances in Economic Development 111, pp. 17–33.

Tang, Heiwai and Yifan Zhang (2017). *Do Multinationals Transfer Culture? Evidence on Female Employment in China*. CESifo Working Paper 6295.

UNCTAD (2018). *Bilateral FDI Statistics*. URL: https://unctad.org/en/Pages/DIAE/FDI%20Statistics/FDI-Statistics-Bilateral.aspx.

Vahter, Priit and Jaan Masso (2019). "The contribution of multinationals to wage inequality: foreign ownership and the gender pay gap". In: *Review of World Economics* 155, pp. 105–148.

Vogel, D. (1995). *Trading up: Consumer and Environmental Regulation in a Global Economy*. London: Harvard University Press.

Weber, Andrea and Christine Zulehner (2014). "Competition and gender prejudice: Are discriminatory employers dommed to fail?" In: *Journal of the European Economic Association* 12.2, pp. 492–521.

Weinberg, B. A. (2000). "Computer use and the demand for female workers". In: *Industrial and Labor Relations Review* 53.2, pp. 290–308.

# A Appendix

## A.1 Is the female employment share higher in global firms?

The empirical background of the analysis in this paper is that the female employment share is higher in global versus domestic non-exporting firms. The section confirms that this is true in the Enterprise Survey data used.

A firm's female employment share ($G$) is predicted based on the firm's global status, namely, a dummy variable ($X$) equal to 1 if a firm exports and a dummy variable ($M$) that identifies multinationals. The models include the vector ($C$) containing the control variables described in section 2. The model takes the form

$$G_i = \alpha + \beta X_i + \gamma M_i + \mathbf{C}_i\zeta' + \varepsilon_i. \tag{3}$$

Table A1 presents the results, confirming the common finding in the literature that there is a positive relationship between being a global firm and having a greater share of female employees. The first column shows that, relative to domestic, non-exporting firms, the female share employees in firms whose sales comprise at least 10% exports is 2.9 percentage points higher, while the share in foreign-owned firms is 3.4 percentage points higher.

Column (2) looks at whether there are synergies between being an exporter and being foreign owned. Almost half (49%) of foreign-owned firms in the data are also exporters; 11% of exporting firms are foreign-owned. The coefficient on the interaction term between these two measures of being a global firm reveals that it is the completely foreign-owned exporting companies that have the strongest relationship between being global and the female employment share. Compared to domestically-owned non-exporters (i.e. the base group), the female share in domestically-owned exporters is 2.6 percentage points higher (first row in column (2)), and the share in non-exporting multinationals is 1.5 percentage points higher (second row). It is, however, the foreign-owned exporters with the biggest difference in female employment: the female share of employees in these firms is 8.1 percentage points higher than in the base-group firms.

To see another dimension of these results, column (3) gives a variety of measures for the "degree" to which the firm is global. The lower the share of output that is exported and the lower the percentage of the firm that is foreign-owned, the weaker the relationship between these measures and the share of female employees. Indeed for the measure of exports, only firms that export at least half of their output hire a greater share of women than domestically-owned, non-exporting companies; especially firms that export all of their output employ a greater share of women. In terms of FDI, it is only firms that are completely foreign-owned that employ a significantly higher share of women than domestic, non-exporting firms do.

Table A1: Relationship between a firm's global status and its female employment share

| | (1) | (2) | (3) |
|---|---|---|---|
| Measure of globalization | | | |
| Exporter (≥10%) | 2.909*** | 2.610*** | |
| | (0.572) | (0.595) | |
| Foreign (100%) | 3.398*** | 1.524* | |
| | (0.958) | (0.907) | |
| Exporter (≥10%)*Foreign (100%) | | 4.040*** | |
| | | (1.532) | |
| Exporter (≥10%, <50%) | | | 0.593 |
| | | | (0.473) |
| Exporter (≥50%, <100%) | | | 2.686*** |
| | | | (0.904) |
| Exporter (100%) | | | 10.997*** |
| | | | (1.501) |
| Foreign (≥10%, <50%) | | | -0.626 |
| | | | (0.941) |
| Foreign (≥50%, <100%) | | | 0.345 |
| | | | (0.815) |
| Foreign (100%) | | | 2.595*** |
| | | | (0.885) |
| Observations | 27,833 | 27,833 | 27,833 |
| $R^2$ | 0.474 | 0.474 | 0.477 |
| Region FE | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes |

This table shows the relationship between a firm being an exporter and receiving FDI with its female employment share. The two measures of whether a firm is global - being an exporter or being foreign owned - are presented by the percentage of total sales exported or the share of firm that is owned by foreign companies. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

## A.2 First-stage IV results

Table A2: First stage IV results, corresponding to results in table 2

| | | Export markets | | FDI source country | |
|---|---|---|---|---|---|
| | All obs. | Equal | Unequal | Equal | Unequal |
| Panel A: Exporters | | | | | |
| Exporters share in Permanent, full-time workers, three FY ago | 0.003*** | 0.003*** | 0.003*** | 0.003*** | 0.003*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Exporters share in new investment | 0.002*** | 0.002*** | 0.002*** | 0.002*** | 0.002*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Multinationals share in Permanent, full-time workers, three FY ago | -0.000* | -0.001 | -0.000 | -0.001* | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Multinationals share in new investment | 0.000* | 0.001* | 0.000 | 0.001* | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Age | 0.000 | -0.000 | 0.001*** | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| At least one female owner? (1 yes, 0 no) | 0.000 | 0.010 | -0.010 | 0.006 | -0.007 |
| | (0.006) | (0.007) | (0.009) | (0.008) | (0.009) |
| Permanent, full-time workers, three FY ago | 0.005*** | 0.004*** | 0.005*** | 0.004*** | 0.007*** |
| | (0.001) | (0.001) | (0.002) | (0.001) | (0.002) |
| Sales per worker, 3 FY ago | -0.001*** | -0.002*** | 0.023*** | -0.002*** | 0.023*** |
| | (0.000) | (0.000) | (0.006) | (0.000) | (0.006) |
| Temporary workers share (rounded) | 0.000 | 0.001* | 0.000 | 0.001** | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Share of skilled production workers (rounded) | -0.000 | -0.000 | 0.000 | -0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Purchase of new equipment (US 2009) | 0.000*** | 0.000*** | 0.027 | 0.000*** | -0.025 |
| | (0.000) | (0.000) | (0.019) | (0.000) | (0.054) |
| Purchase of new equipment? (yes=1, no=0) | 0.032*** | 0.021*** | 0.044*** | 0.030*** | 0.032*** |
| | (0.006) | (0.007) | (0.008) | (0.008) | (0.008) |
| Working Capital Purchased On Credit/Advances | 0.000** | 0.000* | 0.000 | 0.000 | 0.000** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Main business/large city | 0.010 | 0.002 | 0.018 | 0.002 | 0.018 |
| | (0.008) | (0.011) | (0.012) | (0.010) | (0.012) |
| Years of top manager's experience in sector | -0.000 | -0.000 | 0.000 | 0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Observations | 27,833 | 13,915 | 13,918 | 13,375 | 14,458 |

| | | Export markets | | FDI source country | |
|---|---|---|---|---|---|
| | All obs. | Equal | Unequal | Equal | Unequal |
| Panel B: Foreign-owned | | | | | |
| Exporters share in Permanent, full-time workers, three FY ago | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Exporters share in new investment | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Multinationals share in Permanent, full-time workers, three FY ago | 0.003*** | 0.002*** | 0.003*** | 0.003*** | 0.003*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Multinationals share in new investment | 0.002*** | 0.003*** | 0.002*** | 0.002*** | 0.003*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Age | -0.000*** | -0.001*** | -0.000 | -0.001** | -0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| At least one female owner? (1 yes, 0 no) | -0.036*** | -0.042*** | -0.029*** | -0.041*** | -0.031*** |
| | (0.007) | (0.011) | (0.006) | (0.012) | (0.005) |
| Permanent, full-time workers, three FY ago | 0.001*** | 0.001** | 0.001 | 0.001** | 0.001* |
| | (0.000) | (0.000) | (0.001) | (0.000) | (0.001) |
| Sales per worker, 3 FY ago | 0.000 | -0.000 | 0.032*** | -0.000 | 0.032*** |
| | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) |
| Temporary workers share (rounded) | -0.000 | -0.000 | -0.000 | -0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Share of skilled production workers (rounded) | 0.000** | 0.000 | 0.000 | 0.000 | 0.000* |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Purchase of new equipment (US 2009) | -0.000 | -0.000 | 0.022 | -0.000 | 0.040 |
| | (0.000) | (0.000) | (0.042) | (0.000) | (0.032) |
| Purchase of new equipment? (yes=1, no=0) | 0.005 | 0.006 | 0.004 | 0.003 | 0.008** |
| | (0.003) | (0.005) | (0.004) | (0.006) | (0.003) |
| Working Capital Purchased On Credit/Advances | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Main business/large city | 0.004 | 0.001 | 0.002 | 0.010 | -0.005 |
| | (0.005) | (0.012) | (0.004) | (0.010) | (0.005) |
| Years of top manager's experience in sector | -0.001*** | -0.001*** | -0.001** | -0.001*** | -0.001*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Observations | 27,833 | 13,915 | 13,918 | 13,375 | 14,458 |

*Notes:* This table shows the results of the first stage IV regression, that is, it predicts a firm's global status.

## A.3 Additional specifications: OLS results without IV

### A.3.1 Production workers

Table A3: Relationship between a firm's female share of production workers, based on its exposure to gender norms in commerical partner countries

| | Export markets | | FDI source country | |
|---|---|---|---|---|
| | Equal | Unequal | Equal | Unequal |
| | (1) | (2) | (3) | (4) |
| Exporter (≥10%) | 4.699*** | 0.840 | 3.718*** | 2.756*** |
| | (0.797) | (0.649) | (0.777) | (0.935) |
| Foreign (100%) | 5.045*** | -0.733 | 5.187*** | 0.289 |
| | (1.248) | (1.342) | (1.273) | (1.350) |
| Observations | 13,891 | 13,904 | 13,352 | 14,443 |
| $R^2$ | 0.420 | 0.401 | 0.426 | 0.400 |
| Region FE | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes |

This table shows the relationship between a firm being an exporter and receiving FDI with its female share of production workers, based on its exposure to gender norms in its commercial partner countries. Unequal and equal gender norms mean that the exposure is in the bottom or top half of the exposure distribution, respectively. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

### A.3.2 Non-production workers

Table A4: Relationship between a firm's female share of non-production workers, based on its exposure to gender norms in commerical partner countries

| | Export markets | | FDI source country | |
|---|---|---|---|---|
| | Equal | Unequal | Equal | Unequal |
| | (1) | (2) | (3) | (4) |
| Exporter (≥10%) | 2.362*** | 1.298** | 2.085*** | 1.911*** |
| | (0.706) | (0.610) | (0.648) | (0.726) |
| Foreign (100%) | 2.551*** | -2.210* | 2.581** | -1.333 |
| | (0.972) | (1.234) | (1.175) | (1.043) |
| Observations | 12,980 | 13,076 | 12,401 | 13,655 |
| $R^2$ | 0.281 | 0.359 | 0.293 | 0.352 |
| Region FE | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes |

This table shows the relationship between a firm being an exporter and receiving FDI with its female share of non-production workers, based on its exposure to gender norms in its commercial partner countries. Unequal and equal gender norms mean that the exposure is in the bottom or top half of the exposure distribution, respectively. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. $^{***}$ $p < 0.01$, $^{**}$ $p < 0.05$, $^{*}$ $p < 0.10$.

### A.3.3 Top managers

Table A5: Relationship between a firm's indicator of whether the top manager is female, based on its exposure to gender norms in commerical partner countries

| | Export markets | | FDI source country | |
|---|---|---|---|---|
| | Equal | Unequal | Equal | Unequal |
| | (1) | (2) | (3) | (4) |
| Exporter (≥10%) | 0.006 | -0.002 | 0.005 | -0.000 |
| | (0.008) | (0.007) | (0.008) | (0.007) |
| Foreign (100%) | 0.011 | -0.026* | -0.002 | -0.009 |
| | (0.014) | (0.016) | (0.014) | (0.013) |
| Observations | 13,129 | 12,394 | 12,320 | 13,203 |
| $R^2$ | 0.237 | 0.185 | 0.235 | 0.190 |
| Region FE | Yes | Yes | Yes | Yes |
| ISIC 2-digit FE | Yes | Yes | Yes | Yes |
| Firm Size FE | Yes | Yes | Yes | Yes |
| Country*Year FE | Yes | Yes | Yes | Yes |

This table shows the relationship between a firm being an exporter and receiving FDI with its indicator of whether the top manager is female, based on its exposure to gender norms in its commercial partner countries. Unequal and equal gender norms mean that the exposure is in the bottom or top half of the exposure distribution, respectively. The models control for the firm's region, 2-digit ISIC code, size, age, share of skilled employees, share of temporary employees, investment in technology, as well as dummy variables indicating if the firm is in a large city and if at least one owner is female, the top manager's number of years in the sector, and country*year fixed effects. $^{***}$ $p < 0.01$, $^{**}$ $p < 0.05$, $^{*}$ $p < 0.10$.

## A.4 Further details on spacial lag construction

To improve the time and country coverage in the construction of our spacial lag variables, we take the following steps. Although we have yearly information on the Gender Inequality Index (GII) since 2010, the index is only available in 5-year intervals prior to 2010. Most countries (60%) have information for all years and very few countries have large data gaps. However, 36% of countries are missing data for one to three years.

To construct a balanced panel database of the GII index between 1995 and 2015, we interpolate the information to fill data gaps between years using the ipolate command in Stata. In the few cases in which it was necessary and for which we had data on the GII for at least two points in time, we extrapolated indicator values for each country by regressing a country's GII on a time trend.

The main source of bilateral trade data is the Center for International Data (CID). Bilateral exports between 2000 and 2012 were directly download from the yearly database published on the CID website.[20] Trade data from 2013 to 2016 were instead drawn directly from COMTRADE[21] to account for recent revisions on trade figures. The data were then processed using the Stata codes developed by Robert Feenstra and John Romalis in order to account for mirror flows (see step 1 of https://www.robertcfeenstra.com/data.html, based on Feenstra and Romalis (2014)). All missing bilateral export values are assumed to be real zero flows.

The quality of the bilateral FDI inward stock data, however, is not comparable with that on bilateral trade flows. To the best of our knowledge, only the United Nations Conference on Trade and Development (UNCTAD) publishes bilateral FDI stocks data for developing and developed economies. However, these data are only available between 2001 and 2012. Moreover, the data clearly show an improvement in the country coverage over time, with the number of non-zero bilateral stock figures more than doubling between 2001 and 2011. Even in 2011, the year with the best coverage, only 13 percent of the receiving and sending country pairs have valid non-zero values and many of the missing values cannot be assumed to be actual zero bilateral stocks. In an attempt to improve the data coverage and to reduce the distortions arising from missing values over time, we calculate bilateral inward shares, averaging FDI information from 2006 onward.

Our resulting indicators of exposure to gender (in)equality constructed using these three datasets vary across countries and over time. While the variation over time for the exposure to gender inequality through trade comes from both the variation in the GII index in trading partner countries and the variation of bilateral exports over time, the time variation for the exposure through FDI only comes from changes in the GII index in source countries of investment. Finally, in all specifications, we lag our exposure variables by one year.

[20] https://cid.econ.ucdavis.edu/Html/WTF_bilateral.html
[21] https://comtrade.un.org/db/default.aspx

## A.5 Distribution of exposure to gender norms

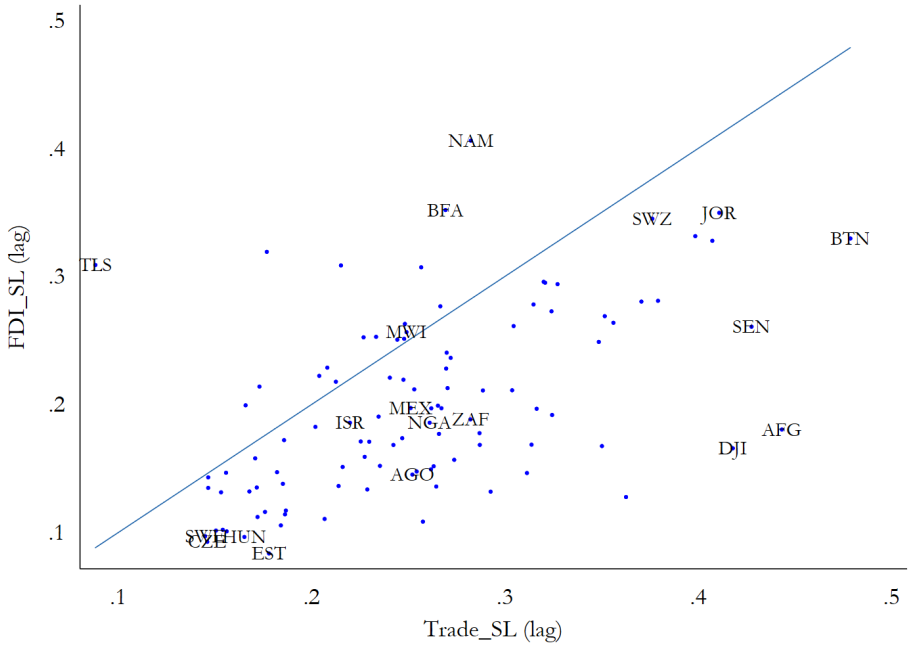


Figure A1: Exposure to gender norms through trade and FDI

## A.6 Additional Information on the Enterprise Survey data

Information on firm characteristics are drawn from the Enterprise Survey from the World Bank. In particular, the analysis draws on the Standardized (Comprehensive) Database from October 2017, complemented by the Indicators Database from September 2017.

The questions used in the analysis are listed below.

- Female employment and female share were constructed based on:

  **l1** At the end of fiscal year [insert last complete fiscal year], how many permanent, full-time employees did this establishment employ? Please include all employees and managers

  **l3a, l3b** At the end of fiscal year [insert last complete fiscal year], how many permanent, full-time employees were: **Production** employees - l3a; **Non-production** employees- l3b

  **l5a, l5b** At the end of fiscal year [insert last complete fiscal year], how many permanent full-time employees of this establishment for the following categories were female?: **Female** permanent full-time **production** employees- l5a; **Female** permanent full-time **non-production** employees- l5b

  **b7a** Is the Top Manager female? (yes, no)

- The global status of the firm was constructed based on:

  **d3c** In fiscal year, what percentage of this establishment's sales were: **Direct exports**

  **b2b** What percent of this firm is owned by each of the following: **Private foreign individuals, companies or organizations**

- Control variables and fixed effects were constructed based on:

  **b4 / b4a** [*Female ownership*] Amongst the owners of the firm, are there any females? / Percentage of female ownership

  **b5** [*Age*] In what year did this establishment begin operations in this country?

  **l2** [*Retrospective question on full-time, permanently employed workers*] Looking back, at the end of fiscal year [insert last complete fiscal year minus two], how many permanent, full-time individuals worked in this establishment? Please include all employees and managers

  **n3, l2** [*Sales per worker based on retrospective questions*]

  **l2** See above

**n3** Looking back at the end of fiscal year [insert last complete fiscal year minus two], what were total annual sales for this establishment?

**other** Amounts were deflated and converted into US dollars

**l1, l8, l6** [*Temporary workers share*]

**l1** See above

**l6** How many full-time seasonal or temporary employees did this establishment employ during the fiscal year? (Full-time, temporary workers are all short-term (i.e. for less than a year) employees with no guarantee of renewal of employment and work full-time)

**l8** What was the average length of employment of all full-time temporary employees in the fiscal year?

**l4b** [*Share of skilled production workers*] At the end of fiscal year, how many permanent, full-time individuals working in this establishment were: Workers in unskilled production jobs, whose tasks involve no specialized knowledge

**n5a** [*Purchase of new equipment (US 2009)* ] In fiscal year, how much did this establishment spend on purchases of: New or used machinery, vehicles, and equipment? (Amounts were deflated and converted into US dollars)

**k4** [*New investment (yes/no)*] In fiscal year [insert last complete fiscal year], did this establishment purchase any new or used fixed assets, such as machinery, vehicles, equipment, land or buildings, including expansion and renovations of existing structures?

**k3f** [*Working Capital Purchased On Credit/Advances*] Over fiscal year, please estimate the proportion of this establishment's working capital, that is the funds available for day-to-day operations, that was financed from each of the following sources? **Purchases on credit from suppliers and advances from customers**

**a3/a3c** Size of locality (Over 250.000 inhabitants or city is the capital or main business center)

**a3a** [*Region FE*] Screener Region (region within country)

**d1a2** [*ISIC 2-digit FE*] Code of the main product and activity (ISIC, revision 3.1)

**Screener Size** [*Firm Size FE*] Micro < 5 employees, Small >= 5 and <= 19, Medium >= 20 and <= 99, Large >= 100

**Country*Year FE** based on the year of the survey.

The four IVs to instrument firms' exporter status and firms' foreign ownership are based on l2 and k4. In particular, they are weighted averages by sector, region, and year of:

- Exporters' share in permanent, full-time workers, three fiscal years ago
- Share of exporters among firms making new investments during last fiscal year
- Multinationals' share in permanent, full-time workers, three fiscal years ago
- Share of multinationals among firms making new investments during last fiscal year

These averages were taken from firms not restricted to the regression sample, but based on all observations for which l2 and k4 were available.