Trade and Gender Inequality: Evidence from France*

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Abstract

This paper studies whether the gender norms of firms' trading partners affects gender inequality within exporting firms. We combine French customs data with matched employer-employee records to measure firms' exposure to the gender inequality of their export destinations. To identify causal effects, we construct two shift-share instrumental variables based on country-product demand shocks: one exploiting firms' pre-existing export networks and another exploiting firms' product mix. We find that greater exposure to trading partners from countries with worse gender equality worsens women's career outcomes within French firms. Women in more exposed firms are more likely to remain in lower-tier occupations and less likely to access intermediate and managerial positions. We also find no evidence that changes in exposure to partner-country gender inequality affect female workers' firm mobility, suggesting that the results are driven by within-firm changes in promotion dynamics rather than by workforce composition. Overall, the results show that the consequences of trade for gender inequality depend not only on how much firms trade, but also on with whom they trade.

*The views expressed in this paper are those of the authors and do not necessarily reflect the position of the Bank of Spain or the Eurosystem. All remaining errors are ours.

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1 Introduction

A large literature has shown that trade affects inequality (Harrison et al., 2011; Autor et al., 2016), and a growing body of work studies its implications for gender inequality. Trade can shape gender inequality through between-firm and within-firm channels. On the one hand, trade may reallocate activity toward sectors or firms with different female employment intensity, thereby affecting women's relative labor market outcomes through composition effects (Aguayo-Tellez et al., 2014; Sauré and Zoabi, 2014; Gaddis and Pieters, 2017; Li, 2021; Mansour et al., 2022; Wang et al., 2024).[1] On the other hand, trade may alter the organization of work within firms in ways that disproportionately disadvantage women, for example if international trading activities reward flexibility, availability for travel, or other tasks that are more difficult to combine with gendered constraints outside the workplace (Bøler et al., 2018).[2]

Yet, we know much less about whether gender inequality within firms depends on the characteristics of the countries with which firms trade. This question is increasingly important because globalization has led firms in developed countries to trade with new partners located in economies characterized by very different cultures and social norms, including countries with worse gender equality. Trading with partners from countries characterized by less equal gender norms may place women in a less favorable position in negotiations, make it harder for them to build trust, and limit their access to the informal networks through which international business relationships are often conducted. As a result, women may face greater difficulties within the firm in tasks linked to international business and, in turn, experience slower career progression.

In this paper, we study how trading with firms from countries with worse gender equality norms affects women's performances within firms in the developed world. Answering this question poses two main challenges. First, one needs firm-level data that make it possible to observe both the countries with which firms trade and the gender dynamics within firms, including wages and occupational hierarchies. Second, one needs

[1] The reaction of female and men to disruptive trade shocks can also be different as women could react by having babies (Keller and Utar, 2022).

[2] Alternatively, trade can advantage women if it stimulates the adoption of new technologies that replace physical demanding jobs (Juhn et al., 2013; Juhn et al., 2014) or decreasing discrimination as a result of tougher competition (Black and Brainerd, 2004; Ederington et al., 2024). Menon and Van der Meulen Rodgers (2009); Chen and Hu (2023) argue that competition could affect women performance when exporters face strong cost competition.

exogenous variation in firms' exposure to trade with specific countries that is not itself driven by contemporaneous changes in gender dynamics within domestic firms.

To address the first challenge, we combine French customs data with matched employer-employee data for the period 2013–2021. This allows us to observe gender gaps in wages and occupational rank within French firms together with detailed information on their export activities, including the products they export at the two-digit level and the destination countries. We focus on exporting firms, which are also the firms with the largest gender imbalances (Bøler et al., 2018), and for each firm we construct a measure of exposure to the gender inequality of its export destinations. Specifically, we compute the trade-weighted average gender inequality of the countries to which the firm exports, using the Gender Inequality Index (GII) produced by the United Nations Development Programme.

To address the second challenge, we construct two shift-share instrumental variables. Our first instrument builds on firms' pre-existing export networks. Starting from each firm's base-year exports by product and destination, we predict how its exports to each country evolve using leave-one-out growth in aggregate French exports of the same product to the same destination. These predicted flows reflect changes in foreign demand in markets where the firm was already active, while excluding shocks driven by the firm itself. We then use the predicted country-level export composition to construct a firm-level measure of exposure to destination-country gender inequality, defined as the weighted average of partner-country GII with weights given by predicted exports. The identifying variation therefore comes from external country-product demand shocks interacting with firms' initial export structure.

While the first instrument captures demand-driven changes within a firm's existing export network, firms' exposure to partner-country gender inequality can also change as the destination composition of demand for the firm's products evolves, potentially pulling exports toward new trading partners. Our second instrument exploits this product-driven reorientation channel and is based on firms' initial product mix rather than their realized destination network. For each firm, we measure in the base year the share of each product in its total exports. We then compute, for each product, the change in the average gender inequality of its export destinations at the French level, excluding the firm itself. This product-level shock captures whether aggregate exports of a given

product become more oriented toward countries with higher GII over time. We map these shocks back to the firm using its fixed base-year product shares, thereby obtaining a predicted change in the gender inequality to which the firm is exposed. Identification comes from aggregate changes in the destination composition of demand for each product, rather than from firm-specific changes in trading partners.

Our identification does not rely only on the instrumental-variable strategy, but also on a rich set of fixed effects. We begin by controlling for firm and year fixed effects. However, this specification exploits both between-firm and within-firm variation in exposure to destination-country GII. We then introduce firm-by-year fixed effects to isolate within-firm variation. Since results could still be affected by the sorting of workers across firms based on time-invariant characteristics, we further include individual fixed effects. Finally, because sorting may still arise in response to trade-related shocks, we restrict the analysis to stayers and estimate specifications with employer-employee fixed effects.

Our results show that women employed in firms trading more intensively with firms from countries with worse gender norms are more likely to be employed in lower-tier occupations, such as clerical and blue-collar positions, and less likely to hold higher-tier occupations, such as intermediate or managerial positions. Moving from exposure to the most gender-equal destination in our sample (Denmark) to the most gender-unequal (Yemen) lowers the probability that a woman becomes a manager by 8 to 30 percentage points with respect to men, depending on whether the variation is driven by changes within the pre-existing export network or by shifts across the potential set of destination countries. When we turn to wages and include individual fixed effects, we find a negative but statistically insignificant effect on the gender wage gap, consistent with the fact that promotions are relatively rare events and do not immediately materialize in wage jumps. We also find no evidence that changes in exposure to destination-country GII lead female workers to change their workplace, suggesting that our results are driven by within-firm changes in promotion dynamics rather than by changes in workforce composition.

Our treatment captures changes in the gender inequality of firms' trading partners, rather than changes in overall export intensity. To the extent that one may still worry that our identifying variation partly reflects shocks to trade intensity, the variation we exploit comes from leave-one-out country-product demand shocks that exclude the firm's own exports and therefore are not mechanically driven by the firm itself. Moreover,

although exposure to high-GII markets could in principle affect firms through changes in the scale of trade, we show that our instrumented treatment do not predict increases in export volume and employment within French firms. This suggests that our results are not driven by firm expansion, but rather by changes associated with the composition of trading partners.

Our findings are robust to a range of alternative explanations. Exposure to destination-country GII could be correlated with other dimensions of trade that matter for women's employment outcomes, such as time-zone differences or geographic distance, which may affect the availability required for international business interactions. It could also proxy for broader measures of development. However, controlling for firms' exposure to time-zone differences, distance, and the Human Development Index does not alter the results. Moreover, our findings are confirmed when we replace the UNDP Gender Inequality Index with an alternative measure of gender inequality, the Global Gender Gap Index produced by the World Economic Forum.

Literature review. Our paper first speaks to the growing literature examining how trade liberalization affects gender inequality. Early studies focused on cross-sector reallocation, with overall mixed findings. Gaddis and Pieters (2017) find no effect of trade liberalization on gender inequality in Brazil. Sauré and Zoabi (2014) model how trade expansion in female-intensive sectors can actually reduce female labor force participation when those sectors are capital-intensive, as male migrants dilute the capital-labor ratio and widen the gender wage gap. Keller and Utar (2022) find that import competition creates long-term inequality because displaced women near fertile years opt for childbirth over retraining. Mansour et al. (2022) show that Peruvian women faced persistent employment effects, sorting into non-tradable sectors or exiting the labor force. Conversely, other studies document positive effects. Black and Brainerd (2004) find that trade reduced the gender wage gap more in concentrated U.S. industries, while Ederington et al. (2024) show that Colombian plants facing tariff reductions increased their female workforce share. However, Menon and Van der Meulen Rodgers (2009) find that trade liberalization in India was associated with larger wage gaps in concentrated industries, adding to the mixed evidence. Juhn et al. (2014) show that NAFTA reduced the gender employment gap among Mexican blue-collar workers through adoption of

technology that lowers the demand for physical strength. Wang et al. (2024) find that import competition in China reduced the gender employment gap by expanding female-intensive industries and reducing discrimination. Li (2021) demonstrates that exports in female-oriented skill industries promote equal gender norms through improved female employment.

While previous papers analyze trade across sectors assuming men and women sort differently, we use firm-level data controlling for sector and provide evidence of an effect of trade per se. As such, our paper relates more closely to a handful of recent studies exploring how exporting alters within-firm dynamics (Bøler et al., 2018; Bonfiglioli and De Pace, 2021; Halvarsson et al., 2022). Bøler et al. (2018) show that exporting increases the gender wage gap among college-educated workers in Norway, attributing this to exporters' greater demand for flexibility, such as working outside standard hours to coordinate across time zones, which disadvantages women who face greater constraints outside the workplace. This aligns with Goldin and Katz (2016) argument that flexibility is disproportionately rewarded. Bonfiglioli and De Pace (2021) find opposing effects in Germany. Exporting widens the gap among blue-collar workers while narrowing it among white-collar workers in interactive roles, suggesting exporting rewards interpersonal skills where women hold comparative advantage. Halvarsson et al. (2022) find that exporting goods intensive in interpersonal contacts widens the gap, attributing this to male comparative advantage in bargaining. We contribute to this literature by identifying an additional channel through which trade affects women's outcomes, demonstrating that exporting to countries with worse gender equality norms disadvantages women within domestic firms.

Finally, our work contributes more generally to a broader literature showing how gender norms shape women's labor market outcomes. Previous papers have demonstrated how differences in norms across regions within a country can shape women's labor market performance. Quasi-experimental evidence from the German reunification is particularly instructive. Boelmann et al. (2025) find that East German women's full-time work norms persist after moving to the West, while exposure to East German culture leads Western mothers to adopt more egalitarian behaviors. Similarly, Jessen et al. (2024) show that West German women increased their labor supply following East German migration, a change explained by local cultural learning. Another strand

of the literature shows that gender norms are sticky and continue to influence migrants even after they move to a new institutional context. Fernández and Fogli (2009) find that cultural proxies from ancestral countries, including female labor force participation and fertility rates, explain second-generation American women's work behavior, suggesting that deeply held beliefs persist across generations. Blau et al. (2013) similarly show that U.S. second-generation women's fertility and labor supply are influenced by their mother's source-country gender norms. While previous papers explore how norms originating within a country shape gender inequality, we demonstrate that the norms of trading partners also matter. This phenomenon grows in importance with globalization and the increasing integration of economies characterized by unequal gender norms.

2 Data and Measurement

We construct a unique dataset by linking two administrative sources from France: matched employer–employee panels and transaction-level customs. This is supplemented with country-level gender inequality indices from the United Nations Development Programme (UNDP) and the Global Gender Gap by World Economic Forum (WEF). The resulting panel covers the period 2013–2021 and provides a comprehensive view of how the gender composition of a firm's international partners affects its domestic labor outcomes.

Employee-level employment information. We use the matched employer–employee data from the *Déclaration Annuelle de Données Sociales* (DADS) Panel. This dataset follows a random sample of French employees—typically defined by birth dates (e.g., individuals born in October of even-numbered years)—and links them to their employers over time. It provides detailed information on age, tenure, detailed occupation, contract types, and annual earnings.

Firm-level trading records. Information on firms' international activities is drawn from the French Customs (*Douanes*) datasets, which report the universe of trade flows between France and foreign countries. Separate files exist for extra-EU (*DOU*) and intra-EU (*ENQ*) transactions, each distinguishing between imports and exports. Specifically, *Flux 1* and *Flux 2* refer to extra-EU imports and exports, while *Flux 3* and *Flux 4* record

intra-EU flows. Each record includes the firm identifier (SIREN), partner country of origin or destination (*PYOD*), last transit country for imports (*PAYP*), product code (NC8), transport mode, and the value and weight of the shipment. We harmonize and merge these files to obtain a firm–partner–year panel of trade flows, separately for imports and exports. This enables us to construct firm-level exposure measures that capture the geographic composition of each firm's trade portfolio.

Firm-level employment information. Although our main analysis relies on employee-level data, we also obtain firm-level labor outcomes from the *Base Tous Salariés* (BTS), which contains administrative records covering the universe of French establishments from 2009 to 2015.[3]

The reason the firm-level employment information used in this section does not fully overlap with the employee-level sample period is that we require gender-disaggregated employment measures at the firm level. To obtain this information, we rely on establishment-level records and then aggregate them to the firm level.[4]

For each establishment and year, the dataset reports the total wage bill, total hours worked, and total headcount, disaggregated by gender ($g \in \{m, f\}$) and occupational category (k).[5] We aggregate the data from the establishment level (SIRET) to the firm level (SIREN) to align it with the customs data.

Country-specific gender inequality. To capture the gender norms of trading partners, in our main analysis, we use the UNDP's *Gender Inequality Index* (GII), a composite measure ranging from 0 (equality) to 1 (high inequality) that reflects disparities in reproductive health, empowerment (political representation and education), and labor market participation.[6] We link each partner country in the customs data to its corre-

[3] A more aggregated firm-level employment dataset is available for a longer time span and overlaps with the employee-level panel. However, this dataset only reports employment aggregated across male and female workers, preventing us from constructing gender-specific employment measures at the firm level.

[4] The establishment-level dataset reports employment information separately for male and female workers, which is necessary for our analysis. However, this dataset is not available for the years 2016–2019, which explains the shorter time coverage relative to the employee-level panel.

[5] Occupations are defined using the French *Professions et Catégories Socioprofessionnelles* (PCS) classification at the one-digit level.

[6] Figure A.1 maps the global distribution of the GII in 2005. Importantly, the spatial variation in gender inequality is not mechanically correlated with standard geographic variables, such as physical distance or time zone differences from France.

sponding GII value, converting ISO3 country codes to ISO2 for consistency with the French Customs identifiers.

2.1 Outcomes and Sample Construction

The analysis is conducted at the employee-employer–year level. We restrict employees who have standard employment contracts, and excluding temporary and training contracts (see Appendix Table A.1 for additional details). We also drop farmers. For employee who have several jobs in the same year, we keep the jobs that have the highest salary. We restrict the sample to workers in private-sector firms with non-negative exports, at least one employee, excluding public entities and firms with missing data. The resulting dataset is an unbalanced panel of more than 3.8 million employees who worked in more than 1.2 million distinct firms observed between 2013 and 2021.

Measuring exposure to gender norms. Our main explanatory variable is a firm's exposure to foreign gender inequality, defined as the trade-weighted average of the GII of its partner countries. For firm f in year t, the export-weighted index is given by:

$$\text{ExpGII}_{ft} = \sum_{c \in \Omega_{ft}} \left(\frac{X_{fct}}{\sum_c X_{fct}} \times \text{GII}_{c,t-1} \right), \tag{1}$$

where X_{fct} denotes exports from firm f to country c in year t, and $\text{GII}_{c,t-1}$ is the lagged Gender Inequality Index of country c. A higher value of ExpGII_{ft} indicates that a larger share of a firm's export revenues comes from countries with more restrictive gender norms.

Measuring gender inequality within firms. We capture gender inequality inside firms using two complementary metrics that reflect potential career progression and the resulting wage effects:

1. **High-tier occupation** The probability that an individual works as CEO or in managerial or intermediate roles (see Appendix Table A.2 for a complete list of all the occupations in our dataset).

2. **Gross wage:** Total annual gross compensation "reconstructed" by aggregating all taxable monetary elements (such as base salary, overtime, and bonuses) from the

monthly social security declarations, before any deduction of employee social contributions.

2.2 Descriptive Statistics

This section presents two empirical facts that motivate the analysis. First, exporting firms exhibit systematically larger gender gaps than non-exporting firms. Second, among exporters, these gender disparities are larger in firms that are more exposed to countries with higher levels of gender inequality.

Fact 1: Exporting firms exhibit larger gender gaps. Table 1 reports firm-level summary statistics comparing trading and non-trading firms. Consistent with standard models of international trade, trading firms are substantially larger and pay higher wages on average. However, the gains from trade appear to be unevenly distributed across genders.

Exporters are significantly larger than non-exporters, with average log employment of 2.70 compared to 1.39. They also pay higher wages, with average log hourly wages of 2.84 compared to 2.58 in non-exporting firms. Despite this wage premium, exporting firms display noticeably wider gender disparities.

The gender wage gap is nearly twice as large in exporting firms (0.17 log points) as in non-exporters (0.09 log points). Differences in occupational composition are particularly striking. The share of women in managerial and executive positions falls from 40% in non-exporting firms to 28% in exporting firms, while female representation declines across nearly all occupational categories. Within exporters, these gender differences are larger within exporting firms with respect to importing firms. These patterns suggest that the benefits associated with internationalization, especially when a firm export products, may not accrue equally to male and female workers.

Fact 2: Gender gaps are larger in firms exposed to high gender-inequality markets. While Fact 1 establishes that exporting firms display larger gender gaps on average, firms differ substantially in the types of countries they trade with. If gender norms in destination markets influence firm behavior, firms more exposed to countries with higher gender inequality may exhibit systematically different gender outcomes.

Table 1: Descriptive Statistics: Trade Premia

	Traders			Exporters			Among Exporters		
Variable	No	Yes	Diff	No	Yes	Diff	Low ExpGII	High ExpGII	Diff
Log Employment	1.37	2.54	-1.179***	1.39	2.70	-1.313***	2.81	2.60	0.213***
Log Avg Hourly Wage	2.57	2.81	-0.240***	2.58	2.84	-0.268***	2.84	2.85	-0.017***
Female Shares									
Total	0.49	0.38	0.111***	0.49	0.37	0.123***	0.37	0.36	0.014***
Executives/Higher professions	0.41	0.28	0.124***	0.40	0.28	0.123***	0.29	0.27	0.015***
Intermediate professions	0.49	0.31	0.176***	0.48	0.31	0.174***	0.31	0.30	0.013***
Clerks/Employees	0.75	0.71	0.043***	0.75	0.73	0.024***	0.74	0.71	0.023***
Blue-collar workers	0.26	0.20	0.062***	0.26	0.21	0.050***	0.21	0.20	0.023***
Gender Wage Gap (Log)	0.09	0.16	-0.072***	0.09	0.17	-0.078***	0.17	0.17	-0.009***
Observations	12,424,819			12,424,819			525,752		

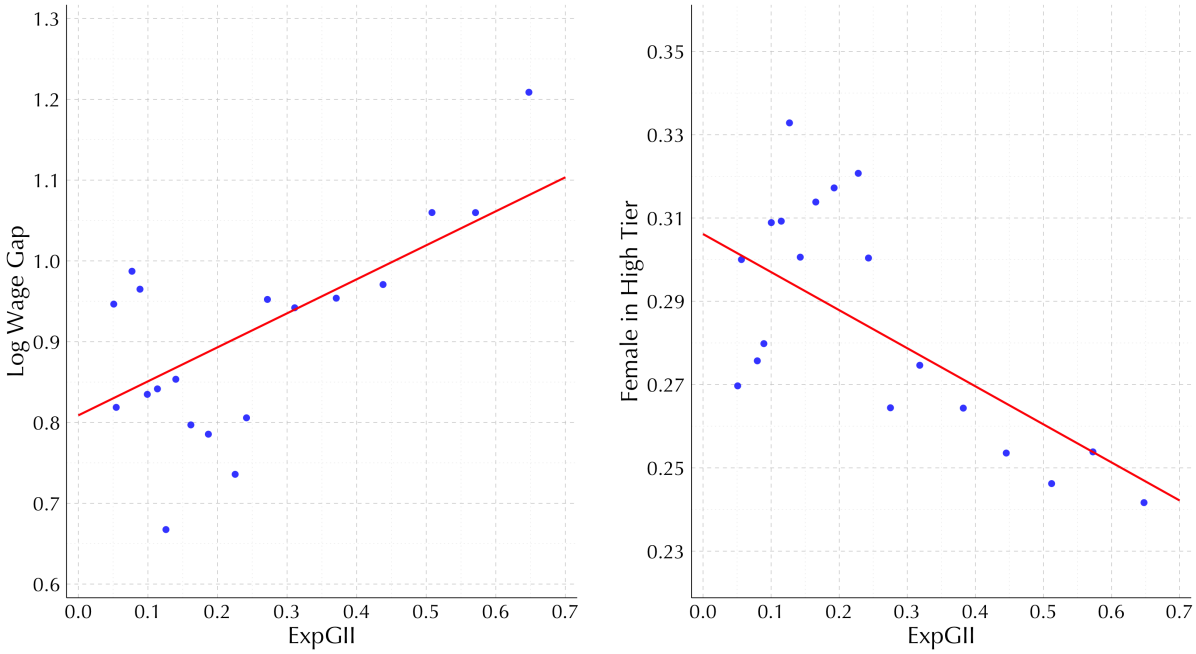
Notes: Data are sourced from the French BTS-Establissements (employment) and Customs (trade) records. Sample: Active trading firms (2009–2015). Columns "No" and "Yes" report sample means; "Diff" represents the difference in means calculated as (Non-Traders − Traders). Occupational categories follow the French PCS-ESE classification (1-digit). Categories 1 (Farmers) and 2 (CEOs and business owners) are excluded. The reported categories are: CS 3 (Executives/Higher intellectual professions: *Cadres*), CS 4 (Intermediate professions: *Professions intermédiaires*), CS 5 (Clerks/Employees: *Employés*), and CS 6 (Blue-collar workers: *Ouvriers*). The Gender Wage Gap is defined as the difference between the mean log hourly wage of men and the mean log hourly wage of women ($\ln w_m - \ln w_f$). Firm-Level GII Exposure is constructed as the weighted average of the Gender Inequality Index (GII) of the firm's trading partners, weighted by the value of the firm's trade flows (exports or imports) with each country. To mitigate simultaneity, we use the partner country's GII lagged by one year ($t-1$). High vs. Low GII: Firms are classified as "High GII" if their trade-weighted exposure is above the sample median for that year; "Low GII" firms are those at or below the median. "Diff" reports the difference in means calculated as (Low GII − High GII). A positive difference indicates that firms trading with more gender-equal partners have higher values. *** denotes statistical significance at the 1% level.

To explore this relationship, Figure 1 plots binscatters relating firm-level exposure to gender inequality and gender outcomes within firms in 2013. Exposure is measured using *ExpGII*, defined as the export-value-weighted average Gender Inequality Index of a firm's destination countries.

Panel (a) plots the gender wage gap against exposure to gender inequality. Firms that export more intensively to countries with higher gender inequality tend to exhibit larger wage gaps between male and female workers. Panel (b) examines occupational outcomes by plotting the share of women in high-tier occupations against the same exposure measure. A clear negative relationship emerges: firms more exposed to high-GII destinations employ fewer women in managerial and professional positions.

Together, these patterns suggest that firms serving markets with stronger gender biases tend to exhibit larger gender disparities internally. While these correlations are not causal, they highlight a systematic relationship between partner-country gender norms and gender outcomes within exporting firms.

The remainder of the paper investigates, using employee level data, whether this



(a) Gender Wage Gap (b) Share of Women in High-Tier Occupations

Figure 1: Binscatters of Gender Gaps on Firm-level Exposure to GII

Notes: The figure plots binscatter relationships between firm-level exposure to gender inequality and gender outcomes within exporting firms in 2013. Exposure is measured by ExpGII, defined as the export-value-weighted average Gender Inequality Index (GII) of a firm's destination countries. Panel (a) plots the gender wage gap, defined as the difference between average male and female log wages within the firm. Panel (b) plots the share of women employed in high-tier occupations (CEOs, managers and intermediate professions). Each point represents the average outcome within equally sized bins of the exposure distribution. The fitted lines correspond to linear regressions of the outcome on ExpGII.

relationship reflects a causal effect of exposure to gender-unequal markets on workplace gender inequality.

3 Employee-Level Empirical Analysis

The descriptive evidence in Section 2 shows that exporting firms display larger gender disparities, and that these disparities are particularly pronounced in firms more exposed to countries with higher gender inequality. However, these aggregate patterns cannot reveal the underlying mechanisms through which exposure to gender-unequal markets translates into workplace inequality.

Firm-level outcomes conflate two distinct adjustment margins. First, firms may adjust their workforce composition through hiring decisions, for instance by recruiting male managers to handle foreign markets. Second, firms may alter the career trajectories of existing employees, slowing promotions or wage growth for female workers.

Distinguishing between these hiring and incumbent margins is crucial for understanding how exposure to foreign gender norms affects workplace inequality.

To disentangle these mechanisms, we turn to matched employer–employee panel data from the French DADS administrative records. This micro-level dataset allows us to track individual workers over time within firms and to examine how export exposure affects both occupational allocation and wage trajectories. By conditioning on detailed worker characteristics and high-dimensional fixed effects, we can isolate differential outcomes for male and female workers within the same firm and year.

3.1 Econometric Specifications

We estimate four distinct linear probability and wage models to isolate the margins through which exposure to gender unequal markets affects female workers.

The dependent variables capture two dimensions of workplace inequality. First, we examine occupational outcomes using a binary indicator equal to one if the worker holds a high-tier occupation (executives or intermediate professions). Second, we analyze wage outcomes using the log hourly wage.

Model 1: Baseline specification. We first estimate a baseline model that exploits both cross-firm and within-firm variation:

$$Y_{i(f)t} = \alpha + \beta_1 \text{Female}_i + \beta_2 \text{ExpGII}_{ft} + \beta_3 (\text{Female}_i \times \text{ExpGII}_{ft}) + \mathbf{X}_{it}\gamma + \lambda_f + \sigma_t + \varepsilon_{i(f)t} \quad (2)$$

for every worker i, employed in firm (f), at time (t), $Y_{i(f)t}$ denotes either the worker's occupational rank or log wage. We control for age, tenure, and their squares ($\mathbf{X}_{it}$) and for firms (λ_f) and year (σ_t) fixed effects. $\varepsilon_{i(f)t}$ includes unobserved heterogeneity, and throughout all our estimations we cluster standard errors at the firm level.

β_1 identifies the difference in the dependent variable between female and male workers in firms where ExpGII equal to 0. β_2 reflect the difference in the dependent variable when ExpGII increases for men. β_3 indicate how the marginal effect of ExpGII on the dependent variable changes between men and women. A negative coefficient implies that in high-GII exposure firms, the overall gender gap is wider than in low-GII exposure

firms.

Model 2: Workforce Allocation (Firm $\times$ Year FE). The previous model estimate the gender difference in the impact of exporting to a more gender unequal country by comparing trade between different firms and changes in trade within the same firm. To restrict attention to the latter, we estimate:

$$Y_{i(f)t} = \alpha + \beta_4 \text{Female}_i + \beta_5(\text{Female}_i \times \text{ExpGII}_{ft}) + \mathbf{X}_{it}\gamma + \delta_{ft} + \varepsilon_{i(f)t} \tag{3}$$

Crucially, this model includes Firm $\times$ Year Fixed Effects (δ_{ft}). This absorbs all time-varying firm shocks—including the main effect of export exposure, total firm size, and firm-wide wage policies. Consequently, β_5 identifies the differential effect of export exposure on women relative to men within the exact same firm and year. This captures the net result of both hiring decisions and internal promotions.

Model 3: Incumbent Trajectories (Individual FE + Firm $\times$ Year FE). To test whether the widening gap is driven by changes in the careers of existing employees rather than shifts in the composition of new hires, we augment the model with employee fixed effects (α_i):

$$Y_{i(f)t} = \alpha_i + \beta_6(\text{Female}_i \times \text{ExpGII}_{ft}) + \mathbf{X}_{it}\gamma + \delta_{ft} + \varepsilon_{i(f)t} \tag{4}$$

By including α_i, we restrict identification to variation within the same individual's career path as the firm's exposure changes. The main effect of gender (Female_i) is absorbed. In this specification, β_6 asks: "When a firm expands into high-GII markets, does the trajectory of this specific woman fall relative to her own historical average, compared to the trajectory of a specific man?" This isolates the effect on incumbents and purges any variation driven by the firm hiring a different profile of workers.

Model 4: The "Glass Ceiling" Effect (Spell FE + Firm-Year FE). While Model 3 tracks incumbents, female workers who anticipate a blocked career path at a high-GII firm may choose to leave for a different employer. If they recover their wage or managerial trajectory elsewhere, Model 3 might understate the penalty imposed by the treated firm. To strictly isolate the internal "glass ceiling," we replace the employee fixed effect with

a employer-employee match fixed effects (α_{if}):

$$Y_{i(f)t} = \alpha_{if} + \beta_7(\text{Female}_i \times \text{ExpGII}_{ft}) + \mathbf{X}_{it}\gamma + \delta_{ft} + \varepsilon_{i(f)t} \tag{5}$$

The inclusion of spell fixed effect (α_{if}) restricts the variation strictly to the duration a specific worker remains at a specific firm. Therefore, β_7 captures the pure within-firm penalty. It tests whether a woman's promotion probability or wage growth stalls while she remains employed at the firm that is increasing its exposure to sexist markets, shutting down any confounding effects from her outside options or subsequent job mobility.

3.2 Identification Strategy: Two Shift-Share Instruments

The estimation by OLS of the previous specifications is threatened by a classic endogeneity problem. The firm-level gender gap and the decision to export to high-GII markets are likely co-determined. For instance, firms with an entrenched male-dominated culture may face lower frictions when establishing networks in highly sexist countries (reverse causality). Alternatively, firms anticipating expansion into these markets might proactively hire external male managers while keeping incumbent women in their current roles, masking the true "glass ceiling" effect in standard OLS estimates.

To isolate the causal effect of exposure to foreign gender norms, we require variation in export destinations that is strictly exogenous to the firm's internal corporate culture and strategic restructuring. We achieve this by constructing two complementary shift-share instruments that exploit different dimensions of a firm's pre-determined trade capabilities: its historical exporting network and its fixed product mix.

Rather than relying on a firm's endogenous choices of where to export today, both instruments interact fixed, base-year firm characteristics with aggregate, leave-one-out global demand shocks. We formally distinguish between the firm's product portfolio (defined at the HS 2-digit level, denoted by k), its partner countries (c), and its main administrative industry (defined at the NAF 2-digit level, denoted by s).

3.2.1 Instrument 1: The Existing Network Shock (Export Network IV)

Our first instrument isolates the intensive margin of trade. Conditional on a firm's pre-existing geographic network, we exploit how aggregate demand shocks in those

specific destination countries alter the firm's GII exposure.

We anchor the firm's exporting network to the base year $t_0 = 2013$. Let X_{fck,t_0} be the value of exports of product k from firm f to country c in 2013. We measure the exogenous demand shock as the aggregate growth in French exports of product k to country c at time t. To ensure exogeneity, we employ a leave-one-out growth rate, strictly excluding firm f's own exports:

$$g_{ckt}^{-f} = \frac{X_{ckt}^{-f}}{X_{ckt_0}^{-f}}$$

where $X_{ckt}^{-f} = \sum_{j \neq f} X_{jckt}$.

We predict the counterfactual export value of firm f to country c in year t by scaling its baseline flows by these global product-destination shocks:

$$\widehat{X}_{fct}^{network} = \sum_{k} \left(X_{fck,t_0} \times g_{ckt}^{-f} \right)$$

Finally, the export network based instrument $Z_{ft}^{network}$ is constructed as the weighted average of partner-country GIIs using these predicted flows:

$$Z_{ft}^{network} = \sum_{c} \left(\frac{\widehat{X}_{fct}^{network}}{\sum_{c'} \widehat{X}_{fc't}^{network}} \times \text{GII}_{c,t-1} \right)$$

This captures the mechanical "pull" of a firm's established trading partners: if a firm historically exported to a country that suddenly experiences a demand boom, the firm's exposure to that country's gender norms exogenously intensifies.

3.2.2 Instrument 2: Reorientation Pressure Shock (Product-Mix IV)

While the first instrument locks in the firm's geography, our second instrument locks in the firm's *product capabilities*. A firm's exposure to foreign norms can change not just because its current partners buy more, but because the global center of gravity for its specific products shifts.

We construct a "product-mix" instrument to capture this exogenous reorientation pressure. First, we define the firm's fixed product mix in the base year:

$$\alpha_{fk,t_0} = \frac{X_{fk,t_0}}{\sum_{k'} X_{fk',t_0}}$$

where X_{fk,t_0} is the total value of product k exported by firm f to all destinations in 2013.

Next, we measure the exogenous shift in the gender norms associated with product k. Let $s^{-f}_{ck,t}$ denote the share of aggregate French exports of product k destined for country c at time t, calculated using a leave-one-out approach that excludes firm f. The global GII exposure of product k is the weighted average of the destination countries' GII:

$$\text{ProductGII}_{k,t} = \sum_{c} \left(s^{-f}_{ck,t} \cdot \text{GII}_{c,t-1} \right)$$

The shock is defined as the change in this product-level exposure relative to the base year:

$$\Delta\text{ProductGII}_{k,t} = \text{ProductGII}_{k,t} - \text{ProductGII}_{k,t_0}$$

If $\Delta\text{ProductGII}_{k,t} > 0$, aggregate global demand for product k has shifted toward more gender unequal countries since 2013.

Our final product mix based instrument maps these product-level shocks back to the firm using its fixed 2013 product weights:

$$Z^{product-mix}_{ft} = \sum_{k} \alpha_{fk,t_0} \times \Delta\text{ProductGII}_{k,t}$$

This shift-share IV captures the exogenous change in the gender-norm environment faced by the firm. Because the shares (α_{fk,t_0}) are fixed and the shocks rely on aggregate national flows, this instrument does not attempt to predict actual, endogenous market entry. Rather, it captures the exogenous incentive or pressure to reorient trade toward high-GII markets driven purely by aggregate sectoral trends.

3.3 2SLS Specification

Because our primary analysis is conducted at the employee level, we adapt our Two-Stage Least Squares (2SLS) specification to match the baseline OLS models. In particular, the regressions include firm fixed effects (λ_f) and year fixed effects (σ_t), which control for time-invariant firm heterogeneity and aggregate time shocks.

Our main variable of interest is the interaction between worker gender and the firm's export exposure to partner-country gender inequality, $\text{Female}_i \times \text{ExpGII}_{ft}$. Since export exposure may be endogenous to firm-level conditions that also affect labor outcomes,

we instrument both the level of exposure and its interaction with gender using our shift-share instruments.

Specifically, we use the instrument Z_{ft} to instrument ExpGII_{ft}, and the interaction $\text{Female}_i \times Z_{ft}$ to instrument $\text{Female}_i \times \text{ExpGII}_{ft}$. This approach follows the standard strategy for models with endogenous interaction terms, where both the endogenous variable and its interaction are instrumented using the corresponding interactions with the instrument.

We estimate the models separately using two instruments: the export-network-based instrument ($Z_{ft}^{network}$) and the product-mix-based instrument ($Z_{ft}^{product\text{-}mix}$), described in Section 3.2.

For our most rigorous specification (Model 4, Equation 5), which isolates the pure within-firm "glass ceiling" effect using employer-employee fixed effects (α_{if}), the 2SLS system is estimated as follows:

$$\text{First Stage:} \quad \text{Female}_i \times \text{ExpGII}_{ft} = \gamma_1 + \pi(\text{Female}_i \times Z_{ft}) + \mathbf{X}_{it}\rho + \alpha_{if} + \delta_{ft} + \eta_{ift} \tag{6}$$

$$\text{Second Stage:} \quad Y_{ift} = \gamma_2 + \beta_{IV}\left(\widehat{\text{Female}_i \times \text{ExpGII}_{ft}}\right) + \mathbf{X}_{it}\rho + \alpha_{if} + \delta_{ft} + \varepsilon_{ift} \tag{7}$$

The analogous 2SLS systems for Model 1, Model 2, and Model 3 simply replace α_{if} and α_{ft} with the respective fixed effects. For the case of Model 1, where both $ExpGII$ and its interaction with the female dummy are included, we use as instrument Z_{ft} and its interaction with the female dummies.

The validity of the instruments in this worker-level framework relies on a strict exclusion restriction: conditional on worker controls and our high-dimensional fixed effects, the shift-share instruments ($Z_{f,t-1}$) must not differentially affect the career trajectories of women relative to men within the exact same firm, except through their effect on the firm's actual exposure to high-GII markets. Because identification is derived from within-firm-year variation (δ_{ft}), any firm-level shock correlated with the aggregate global demand instruments (e.g., an industry-wide export boom that universally raises wages or managerial hiring for all workers) is entirely absorbed. The identifying assumption is thus highly restrictive: a firm's historical product mix or base-year destination network

must be orthogonal to unobserved, gender-biased internal restructuring shocks.

4 Results

4.1 OLS Results

We begin by presenting the OLS results in Table 2. Panel A reports the estimates when the dependent variable is a dummy equal to 1 if the worker holds a high-tier occupation (CEO, manager, or intermediate position) and 0 if the worker holds a low-tier occupation (clerk or blue-collar position). Column (1) presents the estimates from Model 1 in Equation 2, which includes firm and year fixed effects. Female workers employed in firms trading with countries characterized by perfect gender equality are 5 percentage points less likely than men to hold a high-tier occupation. For men, moving from trading with partners characterized by perfect gender equality to trading with partners characterized by extreme gender inequality increases the probability of holding a high-tier occupation by 3 percentage points. Equivalently, moving from exposure to the GII of the most gender-equal country, Denmark, to that of the least gender-equal trading partner country in our sample, Yemen, increases the probability that a man holds a managerial position by 2.7 percentage points.[7] However, this same increase in exposure to trading partners' gender inequality lowers women's probability of holding a high-tier occupation by an additional 6 percentage points relative to men.

Column (2) restricts identification to within-firm variation, as in Equation 3, by including firm-by-year fixed effects. The differential effect on the probability of holding a high-tier occupation is statistically similar to that in column (1), indicating that the effect of exporting to countries with worse gender inequality operates through within-firm margins of adjustment. Column (3) further includes individual fixed effects, following Equation 4. The negative differential effect between men and women remains, although its magnitude falls by a factor of four. This result suggests that time-invariant unobserved worker characteristics account for part of the relationship. Finally, column (4) adds employer-employee fixed effects, as described in Equation 5. This specification effectively restricts the analysis to workers who remain with the same employer, and the

[7] In 2023, Denmark had a GII of 0.003, whereas Yemen had a GII of 0.838. France had a value of 0.038.

Table 2: OLS Estimates of Gender Differences in Worker Outcomes

Model	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 4 (4)
	Panel A: Prob(High Tier)			
Female	-0.051***	-0.0249***		
	(0.008)	(0.0082)		
ExpGII	0.0318**			
	(0.0129)			
Female × ExpGII	-0.0774***	-0.0834***	-0.0187**	-0.0162*
	(0.0245)	(0.0052)	(0.0009)	(0.0016)
R^2	0.34	0.36	0.91	0.92
Obs	5,375,840	5,297,035	4,998,237	4,830,422
	Panel B: log Wage			
Female	-0.090***	-0.0795***		
	(0.004)	(0.0042)		
ExpGII	0.0106			
	(0.0099)			
Female × ExpGII	-0.0271*	-0.0297*	0.0001	-0.0013
	(0.0141)	(0.0030)	(0.0051)	(0.0016)
R^2	0.49	0.51	0.89	0.90
Obs	5,253,557	5,174,516	4,874,897	4,706,992
Worker Controls	Yes	Yes	Yes	Yes
Firm FE	Yes			
Year FE	Yes			
Firm-Year FE		Yes	Yes	Yes
Individual FE			Yes	
Spell FE				Yes

Notes: This table reports OLS estimates of the effect of firm-level exposure to gender inequality in export destinations on gender differences in worker outcomes. ExpGII_{ft} is constructed as the export-share-weighted average of the lagged Gender Inequality Index of destination countries. The coefficient of interest is on $\text{Female}_i \times \text{ExpGII}_{ft}$. Different specifications include different levels of fixed effects. Worker controls include age, age squared, tenure, and tenure squared. Standard errors are clustered at the firm level. The sample is restricted to workers employed in firms that export continuously throughout the sample period.
*** p<0.01, ** p<0.05, * p<0.10.

Table 3: First Stage

Dep. Var.	Female × ExpGII							
Instruments	Export Network IV				Product Mix IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female × Z	0.597***	0.619***	0.385***	0.314***	1.000***	1.017***	0.979***	0.976***
	(0.021)	(0.022)	(0.029)	(0.034)	(0.152)	(0.151)	(0.165)	(0.165)
Z	-0.111***				-0.269***			
	(0.018)				(0.059)			
Worker Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes				Yes			
Firm FE	Yes				Yes			
Individual FE			Yes				Yes	
Firm-Year FE		Yes	Yes	Yes		Yes	Yes	Yes
Spell FE				Yes				Yes
Obs	5,375,840	5,297,035	4,998,237	4,830,422	5,375,840	5,297,035	4,998,237	4,830,422

Notes: First stage. Samples are restricted to workers who are employed in firms that always export during the sample period. All results are reported with the dependent variable as prob(high tier). Standard errors are clustered at the firm level.
*** p<0.01, ** p<0.05, * p<0.10.

results remain unchanged.

Panel B reports the results when the dependent variable is log wages. Women employed in firms trading with countries characterized by perfect gender equality earn 9 percent less than comparable men in column (1). For men, working in firms that export to more gender-unequal countries has no effect on wages. For women, by contrast, wages are lower in firms exporting to such countries. Moving from exposure to the GII of the most gender-equal trading partner country in our sample to that of the least gender-equal country reduces women's wages by 2 percent with respect to men. While this result remains when firm-by-year fixed effects are included in column (2), it loses statistical significance once individual fixed effects are added in columns (3) and (4).

4.2 IV Results

First stage. As discussed in Section 3.2, the OLS estimates may be biased. To address this concern, we develop two instrumental-variable strategies. Table 3 assesses the relevance of these instruments by reporting the first-stage estimates.

The first instrument is based on firms' existing export networks. It exploits demand shocks in destination countries with which the firm was already trading at baseline. The estimates in columns (1) to (4) show that positive demand shocks originating from countries with worse gender inequality increase firms' exposure to trading partners' gender

inequality.

The second instrument is based on firms' product mix rather than on their realized export destinations. Whereas the first instrument exploits variation in demand shocks from countries to which the firm was already exporting, the second exploits variation in the potential set of destination countries associated with the firm's products. Columns (5) to (8) show that positive demand shocks from countries with worse gender inequality toward which the firm's products are disproportionately exported also increase firms' exposure to trading partners' gender inequality.

Second stage. In Tables 4 and 5, we turn to the second-stage results, estimating the effect of instrumented exposure to trading partners' GII on the probability of holding a high-tier occupation (Panel A) and on log wages (Panel B). Overall, the IV estimates qualitatively confirm the OLS results and suggest even stronger effects.

We begin with the instrument based on the existing export network, which exploits variation within firms' pre-existing set of trading partners. In Table 4, Panel A, column (1), which combines within- and between-firm variation, we find that female workers employed in firms trading with countries characterized by perfect gender equality are not statistically less likely than men to hold a high-tier occupation. For men, greater exposure to more gender-unequal trading partners increases the probability of holding a high-tier occupation, whereas for women the effect is negative. Relative to the OLS estimates, the IV coefficients are roughly twice as large. Columns (2) to (4) show that this pattern is robust when identification comes only from within-firm variation and after introducing individual fixed effects and employer-employee fixed effects.

The magnitudes are economically meaningful. In column (4), focusing on variation in GII exposure within the existing trade network, we estimate that moving from the least to the most gender-unequal trading partners lowers women's probability of holding a high-tier occupation by 8 percentage points. This is a sizeable effect, especially given that only about one-third of high-tier occupations are held by women.

Panel B of Table 4 presents the corresponding wage results. These estimates are consistent with the OLS findings. In the specification with firm-by-year and employer-employee fixed effects (column 4), the effect of exposure to more gender-unequal countries on women's wages gap is negative, but not statistically significant. There are at least

Table 4: Second Stage: Exposure to Gender Inequality and Gender Gaps with Export Network IV

Model	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 4 (4)
	Panel A: Prob(High Tier)			
Female	-0.0125	-0.0107		
	(0.0138)	(0.0143)		
ExpGII	0.0684**			
	(0.0283)			
Female × ExpGII	-0.1502***	-0.1572***	-0.0751***	-0.0983***
	(0.0502)	(0.0527)	(0.0206)	(0.0320)
KP F-Stat	52.15	790.49	178.64	87.00
Obs	5,375,840	5,297,035	4,998,237	4,830,422
	Panel B: log Wage			
Female	-0.0726***	-0.0728***		
	(0.0063)	(0.0064)		
ExpGII	0.0774*			
	(0.0407)			
Female × ExpGII	-0.0653**	-0.0646**	0.0028	-0.0054
	(0.0281)	(0.0292)	(0.0106)	(0.0126)
KP F-Stat	61.51	782.08	175.68	85.66
Obs	5,253,557	5,174,516	4,873,897	4,706,992
Worker Controls	Yes	Yes	Yes	Yes
Firm FE	Yes			
Year FE	Yes			
Firm-Year FE		Yes	Yes	Yes
Individual FE			Yes	
Spell FE				Yes

Notes: IV estimates using the export network based instrument. Standard errors clustered at the firm level. The table reports the second-stage coefficients for the interaction Female × ExpGII, along with main effects where identified. In columns (1) and (2), the main effects of Female and ExpGII are included; they are absorbed by higher-dimensional fixed effects in columns (3) and (4). KP F-statistics are reported for each specification; the first number corresponds to the log Wage model, the second to the Prob(High Tier) model.
*** p<0.01, ** p<0.05, * p<0.10.

two possible explanations for this result. First, promotions are relatively rare and may not translate in large immediate wage jumps, so the wage consequences of weaker career progression for women may unfold only gradually. In our sample, the probability of being promoted from a low-tier to a high-tier occupation is only 2.6 percent. Moreover, the wage premium associated with promotions within French firms is relatively modest, likely reflecting substantial wage compression. For example, moving from a clerical or blue-collar occupation to an intermediate occupation is associated with a wage increase of only about 1 percent.[8] Second, the average wage effect may mask important heterogeneity across occupations. As shown in Appendix Table A.3, although women become less likely to move into managerial and intermediate occupations, within low-tier occupations they become more likely to work as clerks and less likely to hold blue-collar jobs, which tend to be lower paid. One possible interpretation is that, when exporting to partners in countries with worse gender inequality, women face additional barriers in tasks associated with blue-collar positions, particularly when export relationships require technical assistance or other forms of direct operational interaction.

Finally, Table 5 reports results using our product-mix IV, which extends the analysis beyond variation within the existing export network to include exogenous shifts that may also affect the set of potential trading partners. The estimates in Panel A qualitatively confirm the previous findings and suggest that this broader channel can further amplify the effects of exposure to partner-country gender inequality. When changes in a firm's exposure to destination-country GII are driven both by its existing network and by the reorientation of demand toward new potential destinations, moving from the least to the most gender-unequal trading partners reduces women's probability of holding a high-tier occupation by 30 percentage points relative to men.

4.3 Interpretation of the Results

Promotions vs. Sorting. The fact that women are less likely than men to hold high-tier occupations within the same firm could reflect two distinct mechanisms. First, women may face slower career progression within the firm. Second, women may be more likely to leave the firm in order to obtain better positions elsewhere. The inclusion of em-

[8]This estimate is obtained by regressing log wages in our sample on an indicator for promotion across these occupational categories, controlling for industry and year fixed effects.

Table 5: Second Stage: Exposure to Gender Inequality and Gender Gaps with Product Mix IV

Model	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 4 (4)
	Panel A: Prob(High Tier)			
Female	0.1242**	0.1553**		
	(0.0562)	(0.0605)		
ExpGII	-0.2567			
	(0.2710)			
Female × ExpGII	-0.8621***	-1.0208***	-0.3909***	-0.3557***
	(0.2639)	(0.2872)	(0.0773)	(0.0793)
KP F-Stat	3.46	45.01	35.28	35.00
Obs	5,375,840	5,297,035	4,998,237	4,830,422
	Panel B: log Wage			
Female	0.0243	0.0338		
	(0.0249)	(0.0250)		
ExpGII	-0.3125			
	(0.3565)			
Female × ExpGII	-0.5704***	-0.6194***	-0.0134	-0.0010
	(0.1200)	(0.1222)	(0.0380)	(0.0386)
KP F-Stat	3.44	44.60	33.77	33.63
Obs	5,253,557	5,174,516	4,873,897	4,706,992
Worker Controls	Yes	Yes	Yes	Yes
Firm FE	Yes			
Year FE	Yes			
Firm-Year FE		Yes	Yes	Yes
Individual FE			Yes	
Spell FE				Yes

Notes: IV estimates using the product mix instrument. Standard errors clustered at the firm level. The table reports the second-stage coefficients for the interaction Female × ExpGII, along with main effects where identified. In columns (1) and (2), the main effects of Female and ExpGII are included; they are absorbed by higher-dimensional fixed effects in columns (3) and (4). KP F-statistics are reported for each specification.
*** p<0.01, ** p<0.05, * p<0.10.

ployer–employee fixed effects already limits concerns that our estimates are driven by sorting across firms. We nevertheless provide additional evidence that the results are primarily driven by within-firm promotion dynamics by examining whether changes in firms' exposure to partner-country gender inequality affect workers' probability of switching employers, differentially by gender.

To do so, we estimate a modified version of Model 3 (Equation 4) in which the dependent variable is an indicator for switching firms, and the key regressor is the exporting firm's exposure to partner-country GII in the previous year. We restrict identification to workers employed in the same firm in the previous year by including lagged firm-by-year fixed effects ($\delta_{f,t-1}$), so that the variation comes from differences in workers' switching decisions following changes in exposure within the same firm. We estimate the model by IV as in Equation 8, instrumenting lagged exposure using the lagged versions of our two shift-share instruments: the export-network instrument and the product-mix instrument (first-stage estimates are reported in columns 2 and 3 of Table 6).

$$Switch_{it} = \beta_8(Female_i \times ExpGII_{f,t-1}) + X_{it}\gamma + \alpha_i + \delta_{f,t-1} + \epsilon_{it} \tag{8}$$

Table 6 reports the results. The OLS estimates already suggest that female workers do not have a differential probability of switching firms in response to changes in their employer's prior-year exposure to partner-country gender inequality (column 1). The IV estimates in columns (4) and (5) confirm this conclusion. Using the existing-network instrument, we find no statistically significant effect of past exposure on switching. The product-mix instrument yields an effect that is only marginally significant at the 10 percent level. Overall, these findings indicate that the occupational effects documented above are unlikely to be driven by differential firm-leaving behavior and instead primarily reflect within-firm changes in promotion and occupational progression.

Exporting Partners vs. Exporting Intensity. Table A.4 examines whether our instrumented measure of exposure to partner-country gender inequality is associated with broader changes in firms' scale or workforce composition. The dependent variables are the overall value of trade, the number of employees, and the female share of employment in Panels A, B, and C, respectively. To do this, we use data at the firm level and estimate the following regression. We instrument exposure using the same two shift-

Table 6: Probability of Switching Firms

	OLS	2SLS			
		First Stage		Second Stage	
		Export Network IV	Product Mix IV	Export Network IV	Product Mix IV
	(1)	(2)	(3)	(4)	(5)
Female × LagExpGII	-0.0063			-0.0035	0.0394*
	(0.0039)			(0.0225)	(0.0110)
Female × LagZ		0.3385***	0.9263***		
		(0.0299)	(0.2317)		
Worker Controls	Yes	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes	Yes
LagFirm-Year FE	Yes	Yes	Yes	Yes	Yes
R^2	0.60				
KP F-Stats				128.36	15.98
Obs	3,719,238	3,719,238	3,719,238	3,719,238	3,719,238

Notes: This table reports the differential probability of exiting a firm based on gender and firm-level GII exposure. Worker controls include age, age squared, and tenure. LagExpGII stands for the individual's origin firm's exposure in the case of switching. Standard errors are clustered at the origin firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

share instruments described in Section 3.2, as the variation they generate is between firms.[9]

$$Y_{ft} = \alpha + \beta_9 \text{ExpGII}_{ft} + \lambda_f + \sigma_t + \varepsilon_{ft} \tag{9}$$

We find that our instrumented treatment—whether based on the existing export network IV or on the product-mix IV—has no statistically significant effect on these outcomes (see columns 3 and 5).[10]

These results are important for the interpretation of our main findings. Our treatment is designed to capture changes in who firms trade with, rather than changes in how much they trade. Although shifts in partner-country GII could in principle operate through changes in export scale, the identifying variation comes from leave-one-out country-product demand shocks that exclude the firm's own exports and are therefore not mechanically driven by firm-level trade performance. Consistent with this interpretation, we find no evidence that changes in instrumented exposure to partner-country gender inequality lead firms to expand trade, increase employment, or alter the female

[9]We also report the OLS estimates in column (1) as well as the firm-level first-stage results in columns (2) and (4) of Table A.4.

[10]The only exception is a positive significant effect at the 10% significance value for the total value of exports using the export network IV.

share of their workforce. This suggests that our results are not driven by firm growth or changes in workforce composition, but rather by changes associated with the composition of trading partners.

4.4 Robustness

Our measure of exposure based on partner-country GII plausibly captures differences in gender inequality across trading partners. However, GII may also be correlated with other country characteristics that could independently affect gender dynamics within French firms. A first concern is that GII could proxy for geography: countries with worse gender equality may also be systematically farther from France. As discussed in Bøler et al. (2018), physical distance—and especially time-zone distance—may disproportionately disadvantage women if trading relationships require greater flexibility for travel or meetings outside standard working hours. A second concern is that GII may be correlated with broader measures of economic development, so that our estimates could reflect development differences rather than gender-related social norms per se.

We address these concerns in Table A.5. For each firm, we compute the time-zone difference with France, the physical distance, and the Human Development Index (HDI) of each destination country, and construct firm-level exposure measures as export-value-weighted averages across the firm's trading partners. We then sequentially control for exposure to time-zone distance, physical distance, and HDI, and finally include all three controls simultaneously. The results remain robust to these additions,[11] indicating that our main findings are not driven by geographic frictions or by correlated differences in economic development.

Finally, we verify that our findings are not specific to the UNDP GII by using an alternative measure of gender inequality: the Global Gender Gap Index produced by the World Economic Forum (WEF). In Tables A.6 and A.7, we replicate our main specifications replacing GII with this alternative index and obtain qualitatively similar results. This confirms that our conclusions are robust to the choice of gender inequality measure and that our exposure index indeed captures differences in gender inequality across partner countries.

[11] The only exception is a loss of statistical significance when controlling for HDI in the export-network IV specification. This reflects weak-instrument concerns in that setting and does not arise when using the product-mix IV.

5 Conclusion

This paper examines whether the gender norms prevailing in export destination countries affect gender inequality within French exporting firms. We provide novel evidence that the gender norms of international trading partners causally shape gender inequality within domestic exporting firms. While a large literature has focused on how trade liberalization affects domestic labor markets through sectoral reallocation, we highlight a distinct, within-firm channel: the cultural and social norms of the destination markets to which firms export. By combining French customs data with matched employer-employee records, we measure firms' exposure to the gender inequality of their export destinations. To identify the causal impact of this exposure, we leverage two complementary shift-share instrumental variable strategies—one exploiting firms' pre-existing export networks and another exploiting their fixed product mix—to isolate exogenous country-product demand shocks.

Our results document a significant "glass ceiling" effect induced by trade with gender-unequal countries. We find that as firms increase their export exposure to markets with worse gender equality, women within those domestic firms experience a relative decline in career progression. Specifically, female workers become substantially less likely to access intermediate and managerial positions, and are more likely to remain in lower-tier clerical roles compared to their male colleagues. Crucially, we find no evidence that this exposure affects female workers' mobility across firms, indicating that the widening gender gap is driven by internal promotion dynamics rather than by the compositional sorting of the workforce.

Furthermore, we demonstrate that these effects operate independently of general trade expansion. Our instrumented treatment does not predict broader increases in export volume or employment within French firms, confirming that our estimates capture shifts in the composition of trading partners rather than changes in the overall scale of trade. The results are also robust to controlling for a variety of alternative mechanisms, including time-zone differences, geographic distance, and the broader economic development of partner countries, as well as alternative indices for global gender gaps.

These findings carry important implications for our understanding of the distributional consequences of globalization. As developed economies increasingly integrate

with partners characterized by disparate social norms, the economic gains from internationalization may accrue unevenly across genders. If navigating business relationships in highly sexist markets limits women's access to the informal networks through which international business is often conducted, trade can inadvertently import foreign gender biases into domestic corporate hierarchies. Ultimately, our analysis shows that the consequences of international trade for workplace equality depend not only on how much firms trade, but fundamentally on with whom they trade.

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A Data

Table A.1: Classification of Contract Types in DADS Data

Code	Contract Description	Sample Decision
Standard Employment Contracts		
01	Contrat à durée indéterminée (CDI)	Keep
02	Contrat à durée déterminée (CDD)	Keep
27	CDD à objet défini	Keep
28	CDD pour les seniors	Keep
Temporary and Training Contracts (Excluded)		
03	Contrat de travail temporaire (Mission / Intérim)	Drop
04	Apprentissage (Entreprises artisanales / $<$10 salariés)	Drop
05	Apprentissage (Entreprises non artisanales $>$10 salariés)	Drop
93	Contrat aidé	Drop
Non-Standard / Occasional Work (Excluded)		
20	Élus (Elected officials)	Drop
90	Sans contrat de travail	Drop
92	Assistant(e) maternel(le) et familial(e)	Drop
95	Travail occasionnel (Saisonnier)	Drop
96	Travail à l'acte (Vacataire, Intermittent, Domicile)	Drop

Notes: Data from DADS (Déclaration Annuelle de Données Sociales). For the empirical analysis, we restrict the sample to "Core Workforce" employees, defined as those holding Permanent (CDI) or Fixed-Term (CDD) contracts. Apprentices, temporary agency workers, and non-standard seasonal workers are excluded to ensure comparability of promotion probabilities and wages.

Table A.2: Definition of Occupations

CODE1	Category1	CODE2	Category2
1	Farmers	10	Farmers
2	CEOs and business owners	21	CEOs and business owners of artisan firms with less than 10 employees
		22	CEOs and business owners of sales/service firms with less than 10 employees
		23	CEOs of firms with more than 10 employees
3	Managers and professionals; Engineers	31	Doctors, lawyers, accountants and other professional
		33	Managers in the public administration
		34	Professors, researchers, scientific occupations
		35	Journalists and media/arts/entertainment superior occupations
		37	Administrative/commercial managers
		38	Engineers and technical managers
4	Intermediate occupations	42	Teachers, librarians, and other occupations in education
		43	Healthcare (eg. Nurses, midwives) and social services occupations
		44	Clergy and religious occupations
		45	Intermediate administrative occupations in the public administration
		46	Intermediate administrative and commercial occupations in firms
		47	Technicians (eg. Programmers, lab technicians, land surveyors)
		48	Foremen
5	Clerical support, sales, and service occupations	52	Clerical support in the public administration
		53	Surveillance and security
		54	Clerical support
		55	Sales and related occupations
		56	Personal service and personal care workers
6	Blue collar occupations	62	Industrial skilled workers
		63	Artisan skilled workers
		64	Drivers
		65	Maintenance, repair and transport skilled workers
		67	Industrial non skilled workers
		68	Artisan non skilled workers
		69	Agricultural workers

Notes: This table reports the detailed classification of occupations used in the analysis, according to the French Socio-Professional Classification (PCS-ESE). Column `CODE1` indicates the 1-digit occupational category, while `CODE2` provides the corresponding 2-digit subcategories. The descriptions in `Category1` and `Category2` specify the roles included in each category.

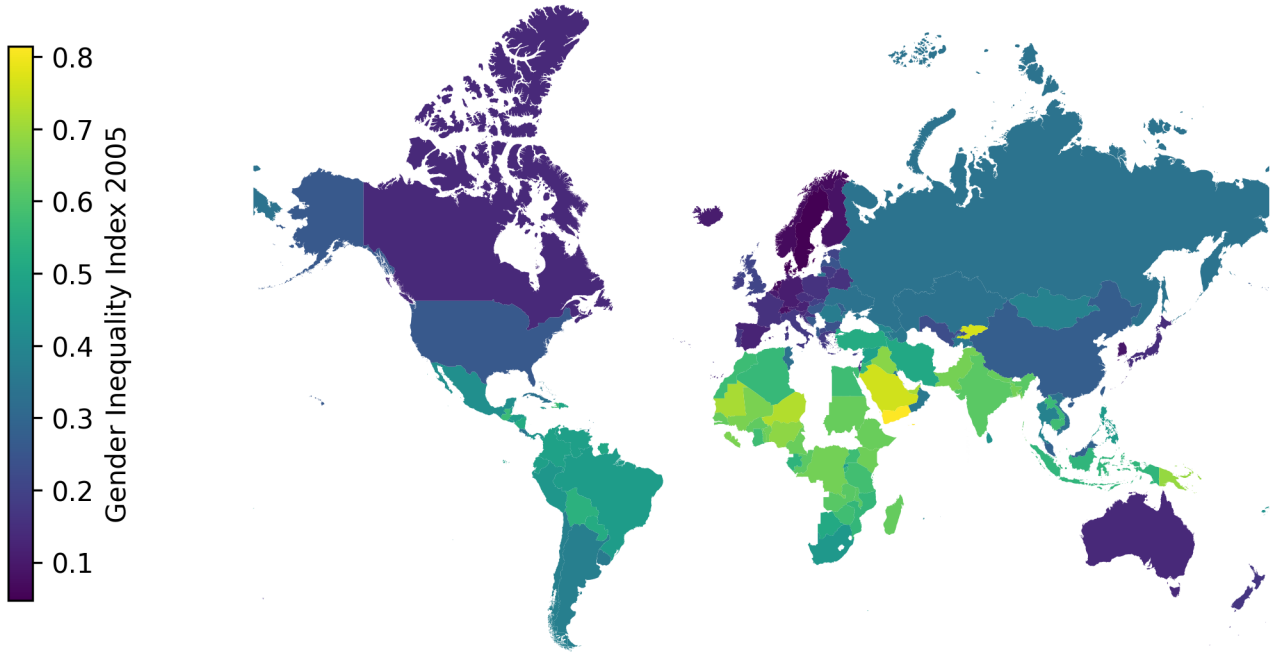

Figure A.1: Map of Gender Inequality Index

Notes: This figure displays the Gender Inequality Index (GII) across countries in 2005. The GII measures disparities between women and men in reproductive health, empowerment, and labor market participation. Higher values indicate greater gender inequality.

B Additional Results

Table A.3: IV results with Detailed Classification of Occupations

	Prob(CEO) (1)	Prob(Manager) (2)	Prob(Intermediate) (3)	Prob(Clerk) (4)	Prob(Blue Collar) (5)
			Panel A: Export Network IV		
Female × ExpGII	0.0006	-0.0295**	-0.0694**	0.1887***	-0.0904**
	(0.0017)	(0.0118)	(0.0279)	(0.0554)	(0.0423)
KP F-Stats	87.00	87.00	87.00	87.00	87.00
Obs	4,830,422	4,830,422	4,830,422	4,830,422	4,830,422
			Panel B: Product Mix IV		
Female × ExpGII	0.0058*	-0.0568	-0.3057***	0.9154***	-0.5610***
	(0.0040)	(0.0482)	(0.0782)	(0.0946)	(0.0852)
KP F-Stats	35.00	35.00	35.00	35.00	35.00
Obs	4,830,422	4,830,422	4,830,422	4,830,422	4,830,422
Worker Controls	Yes	Yes	Yes	Yes	Yes
Firm-Year FE	Yes	Yes	Yes	Yes	Yes
Spell FE	Yes	Yes	Yes	Yes	Yes

Notes: This table provides the second stage results of exposure to high gender norms countries on the probablitity of detailed occupation classifications. We focus on the most strict fixed effects level. Panel A reports the outcomes using the export network IV, while Panel B reports the outcomes using the product mix IV.
*** p<0.01, ** p<0.05, * p<0.10.

Table A.4: Exposure on Firm-level Outcomes

		Export Network IV		Product Mix IV	
	OLS	First Stage	Second Stage	First Stage	Second Stage
	(1)	(2)	(3)	(4)	(5)
			Panel A: Total Exports		
ExpGII	-1.2070***		4.4230*		207.2212
	(0.4533)		(2.6805)		(198.6221)
ExpZ		0.2279***		0.1731***	
		(0.0027)		(0.0279)	
R^2	0.95				
KP F-Stats			7,373.92		38.43
Obs	431,505	431,505	431,505	431,505	431,505
			Panel B: Total Employment		
ExpGII	1.0716		28.3489		-798.0036
	(12.1645)		(63.4262)		(2630.4529)
ExpZ		0.2317***		0.1846***	
		(0.0029)		(0.0317)	
R^2	0.87				
KP F-Stats			6,319.44		33.88
Obs	376,329	376,329	376,329	376,329	376,329
			Panel C: Female Share Employment		
ExpGII	0.0020		0.0052		0.3351
	(0.0023)		(0.0091)		(0.2585)
ExpZ		0.2309***		0.1902***	
		(0.0030)		(0.0325)	
R^2	0.90				
KP F-Stats			6,035.80		34.32
Obs	366,767	366,767	366,767	366,767	366,767
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Notes: This table examines whether exposure to partner-country gender inequality is associated with changes in firms' scale or workforce composition. Panel A reports results for total exports (measured in millions of euros), Panel B for total employment, and Panel C for the female share of employment. Column (1) reports OLS estimates, while columns (2)–(5) present IV estimates using two shift-share instruments described in Section 3.2: a export-network-based instrument and a product-mix-based instrument.
All specifications include firm and year fixed effects. Standard errors are clustered at the firm level. Columns (2) and (4) report the first-stage relationship between the instrument and exposure, while columns (3) and (5) report the corresponding second-stage estimates. The Kleibergen–Paap F-statistic for weak identification is reported for the second-stage specifications.
*** p<0.01, ** p<0.05, * p<0.10.

C Robustness

Table A.5: Robustness to Other Potential Mechanisms

Potential Mechnisms	Time Zones		Distance		HDI		All	
Dep. Var.	lnWage	Prob(High Tier)	lnWage	Prob(High Tier)	lnWage	Prob(High Tier)	lnWage	Prob(High Tier)
				Panel A: Export Network IV				
Female × ExpGII	-0.0044**	-0.0066*	-0.0046**	-0.0069*	-0.0167	-0.0176	-0.0210	-0.0235
	(0.0022)	(0.0037)	(0.0023)	(0.0038)	(0.0102)	(0.0129)	(0.0135)	(0.0164)
Female × ExpTZ	0.0005	-0.0012					-0.0087	-0.0154**
	(0.0011)	(0.0016)					(0.0058)	(0.0066)
Female × ExpDistance			0.0009	0.0006			0.0088	0.0133**
			(0.0008)	(0.0012)			(0.0056)	(0.0064)
Female × ExpHDI					-0.0163	-0.0143	-0.0204	-0.0201
					(0.0105)	(0.0125)	(0.0137)	(0.0161)
KP F-Stats	130.80	134.49	120.92	124.38	13.17	13.38	8.80	8.85
Obs	5,267,908	5,406,169	5,267,908	5,406,169	5,267,908	5,406,169	5,267,908	5,406,169
				Panel B: Product Mix IV				
Female × ExpGII	-0.0002	-0.0666***	-0.0002	-0.0652***	-0.0002	-0.1691***	-0.0004	-0.1713***
	(0.0071)	(0.0154)	(0.0070)	(0.0160)	(0.0188)	(0.0462)	(0.0186)	(0.0429)
Female × ExpTZ	-0.0001	0.0062					-0.0011	-0.0692***
	(0.0014)	(0.0039)					(0.0071)	(0.0171)
Female × ExpDistance			0.0001	0.0104***			0.0010	0.0692***
			(0.0014)	(0.0038)			(0.0072)	(0.0171)
Female × ExpHDI					-0.0001	-0.1632***	-0.0003	-0.1648***
					(0.0185)	(0.0456)	(0.0181)	(0.0419)
KP F-Stats	60.09	60.07	65.89	66.18	37.57	38.99	49.72	50.47
Obs	4,706,992	4,830,422	4,706,992	4,830,422	4,706,992	4,830,422	4,706,992	4,830,422
Worker Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spell FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table examines alternative mechanisms by including additional firm-level exposure measures constructed analogously to ExpGII_{ft}, including exposure to time zone differences and geographic distance. Each exposure variable is standardized at the country level prior to aggregation. Panel A uses the export network based instrument; Panel B uses the product mix based instrument. Standard errors are clustered at the firm level.

*** p<0.01, ** p<0.05, * p<0.10.

Table A.6: Second Stage: Export Network IV Estimates with WEF Global Gender Gap Measure

Model	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 4 (4)
	Panel A: Prob(High Tier)			
Female	-0.0555***	0.0557***		
	(0.0060)	(0.0062)		
ExpWEF	0.0112*			
	(0.0060)			
Female × ExpWEF	-0.0298**	-0.0314**	-0.0072***	-0.0048*
	(0.0133)	(0.0142)	(0.0025)	(0.0026)
KP F-Stat	323.69	540.69	238.20	134.06
Obs	4,795,304	4,725,632	4,399,643	4,221,828
	Panel B: log Wage			
Female	-0.0907***	-0.0915***		
	(0.0039)	(0.0041)		
ExpWEF	-0.0002			
	(0.0051)			
Female × ExpWEF	-0.0099*	-0.0116*	-0.0011	-0.0021
	(0.0058)	(0.0064)	(0.0017)	(0.0020)
KP F-Stat	319.55	532.97	229.96	129.88
Obs	4,690,798	4,620,935	4,293,480	4,117,449
Worker Controls	Yes	Yes	Yes	Yes
Firm FE	Yes			
Year FE	Yes			
Firm-Year FE		Yes	Yes	Yes
Individual FE			Yes	
Spell FE				Yes

Notes: This table reports the second stage of the export network IV estimates using the World Economic Forum Global Gender Gap Index (WEF) as an alternative measure of gender inequality in destination countries. Exposure is constructed analogously to the baseline specification. Standard errors clustered at the firm level. KP F-statistics are reported for each specification. Standard errors are clustered at the firm level.
*** p<0.01, ** p<0.05, * p<0.10.

Table A.7: Second Stage: Product Mix IV Estimates with WEF Global Gender Gap Measure

Model	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 4 (4)
	Panel A: Prob(High Tier)			
Female	-0.0353	-0.0277		
	(0.0342)	(0.0566)		
ExpWEF	-0.0920			
	(0.1131)			
Female × ExpWEF	0.0189	0.0360	-0.0324***	-0.0334***
	(0.0707)	(0.1234)	(0.0092)	(0.0100)
KP F-Stat	10.09	7.94	11.49	12.77
Obs	4,795,304	4,725,632	4,399,643	4,221,828
	Panel B: log Wage			
Female	-0.1011***	-0.0933***		
	(0.0147)	(0.0169)		
ExpWEF	-0.2356			
	(0.1922)			
Female × ExpWEF	-0.0347	-0.0159	-0.0028	-0.0042
	(0.0387)	(0.0380)	(0.0045)	(0.0041)
KP F-Stat	10.03	7.68	11.00	12.25
Obs	4,690,798	4,620,935	4,293,480	4,117,449
Worker Controls	Yes	Yes	Yes	Yes
Firm FE	Yes			
Year FE	Yes			
Firm-Year FE		Yes	Yes	Yes
Individual FE			Yes	
Spell FE				Yes

Notes: This table reports the second stage of the product mix IV estimates using the World Economic Forum Global Gender Gap Index (WEF) as an alternative measure of gender inequality in destination countries. Exposure is constructed analogously to the baseline specification. Standard errors clustered at the firm level. KP F-statistics are reported for each specification. Standard errors are clustered at the firm level.
*** p<0.01, ** p<0.05, * p<0.10.