Foreign Workers and the Choice of Export Mode

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Outline

1. Motivation
2. Theoretical Framework
3. The Data
4. Empirical Analysis
5. Conclusions

1. Motivation

Export strategies

Direct versus indirect exporting

- Large firms can internalise transaction costs and export directly.
- Others rely on trade intermediaries (wholesalers or brokers) to access and serve foreign markets.

Indirect exports

- **10-20%** of total exports in developed economies
  (Akerman, 2018; Bernard et al., 2015; Crozet et al., 2013)
- Similar (or larger) in **emerging econ.**: China (22%) ; Turkey (17%)
  (Abel-Koch, 2013; Ahn et al., 2011)

1. Motivation

Export strategies

Trade intermediaries (wholesalers and brokers)

- Reduce informational **frictions**: mitigate risks and facilitate matching between buyers and sellers. (Spulber, 1996)
- Mostly used by **small firms** unable to cover fixed costs of distribution, firms developing new products, producing low-quality goods.
  (Abel-Koch, 2013; Ahn et al., 2011; Akerman, 2018; Blum et al., 2010; Felbermayr and Jung, 2011; Grazzi and Tomasi, 2016)
- Used to serve **markets** that are **small and difficult to access**.
  (Ahn et al., 2011; Akerman, 2018; Bernard et al., 2015; Crozet et al., 2013)

1. Motivation

Export performance and foreign workers

Foreign (skilled) workers possess **valuable knowledge on foreign markets**.

- They boost **direct exports** by reducing **transaction costs** linked to cultural and institutional differences (e.g.; Andrews et al., 2017; Hiller, 2013; Ottaviano et al., 2018).
- Their impact on firms' export performance is larger for **smaller firms** (e.g.; Hatzigeorgiou and Lodefalk, 2021; Marchal and Sabbadini, 2022; Mitaritonna et al., 2017).
- Do they impact firms' **export mode** (indirect vs. direct exporting)?
  - Although immigrants may have less influence on export decisions in firms using intermediaries, they can still provide valuable knowledge on exporting, as well as connections to these wholesalers (Rauch, 2001).

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1. Motivation

Approach and results

Approach

1. **Theory**: Examine the role of foreign workers in firms' export mode decisions.
   Heterogeneous firm model with *direct and indirect* exporters, and *native and foreign workers*.

2. **Empirics**: Explore how foreign workers affect direct and indirect exports *at the industry level*.
   Customs and employer-employee data from Portugal, 2010-2021. IV-2SLS.

Main results

- Foreign workers increase the number of firms exporting directly.
  (in line with the literature)
- They also increase the number of exporting wholesalers and their export sales. New!
- **They favour more indirect exports.** New!
  At the intensive margin, the effect is driven by industries with a lot of small manuf. firms.

2. Theoretical Framework

The model

Main features of the model

- **Heterogeneous firms** engaged in monopolistic competition. (Melitz, 2003; Mrázová and Neary, 2019)
- **Indirect exporters** use trade intermediaries (wholesalers) operating on a competitive market with free entry. (Crozet et al., 2013)
- Heterogeneity in the employment of **foreign labour**.

2. Theoretical Framework

Main assumptions - Production sector

1. Firms
   - One factor of production: labour
     - Native and foreign labour (perfect substitutes)
   - Firms are **heterogeneous**
     - Marginal cost, c
     - Share of foreign labour, θ
     - Exogenous distributions, independently distributed. (Mrázová et al., 2021)

2. Theoretical Framework

Main assumptions - Production sector

1. Firms
2. Sales
   - Domestic sales (as in Melitz, 2003)
   - Export sales (as in Crozet et al., 2013)
     - **Direct exporting**: Firms face destination-specific fixed and per-unit costs.
     - **Indirect exporting**: Firms face *lower* fixed costs but *higher* per-unit costs.

2. Theoretical Framework

Main assumptions - Production sector

1. Firms
2. Sales
3. Foreign workers
   - Decrease the direct-export fixed costs, $F_D(\theta)$
   - Decrease the indirect-export fixed costs, but to **a lesser extent**, $F_I(\theta)$

2. Theoretical Framework

Conventional selection effects

- **First-order selection effects** (exporting or not)
  - Only the more efficient firms serve foreign markets.
- **Second-order selection effects** (exporting indirectly or directly)
  - More efficient firms select into activities with lower marginal costs.
  - Among exporting firms, less efficient firms select into indirect exports, and more efficient firms into direct exports.

2. Theoretical Framework

Conventional selection effects

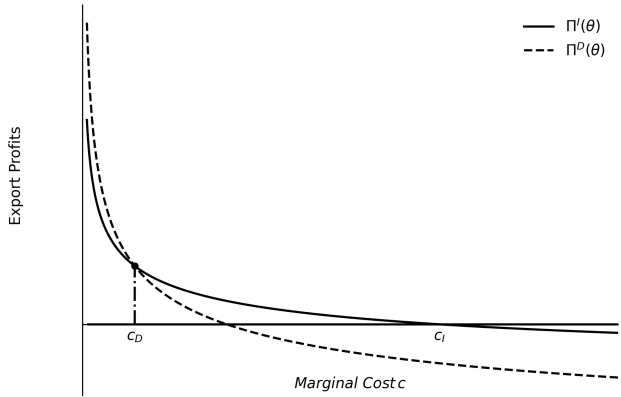
Firms choose their export strategy to maximise their profit. We find the following thresholds:

$$c_D(\theta) \leq c_I(\theta) \leq c_H$$

- c_H: Domestic marginal cost threshold
- $c_I(\theta)$: Indirect-export marginal cost threshold
- $c_D(\theta)$: Direct-export marginal cost threshold

2. Theoretical Framework

Conventional selection effects



Note: The marginal-cost thresholds c_I (entry into indirect exporting) and c_D (export mode switch) partition firms into three groups: non-exporters, indirect exporters, and direct exporters.

2. Theoretical Framework

Proposition 2: The impact of foreign workers on the choice of export mode

1. The indirect-export threshold **increases** with the share of foreign workers.

   An increase in the share of foreign workers increases the threshold at which firms are willing to export, implying that the marginal firm that self-selects into exporting is less productive.

2. Theoretical Framework

Proposition 2: The impact of foreign workers on the choice of export mode

1. The indirect-export threshold **increases** with the share of foreign workers.
2. The direct-export threshold **increases** with the share of foreign workers.

   An increase in the share of foreign workers increases the threshold at which firms are willing to export directly, implying that the marginal firm that self-selects into direct exporting is less productive.

2. Theoretical Framework

Proposition 2: The impact of foreign workers on the choice of export mode

1. The indirect-export threshold **increases** with the share of foreign workers.
2. The direct-export threshold **increases** with the share of foreign workers.
3. We cannot sign how the gap between the thresholds changes with the share of foreign workers *(for now!)*.

2. Theoretical Framework

Proposition 2: The impact of foreign workers on the choice of export mode

1. The indirect-export threshold **increases** with the share of foreign workers
2. The direct-export threshold **increases** with the share of foreign workers
3. We cannot sign how the gap between the thresholds changes with the share of foreign workers *(for now!)*.
4. **Composition effect**: At the industry level, whether foreign workers favour more indirect or direct exports must depend on the distribution of firms' marginal costs.

3. The Data

Data sources

Detailed employer-employee and customs data from Portugal from 2010 to 2021

1. The ***Quadros de Pessoal*** from the *Gabinete de Estratégia e Planeamento*
   - Payroll declarations: employees' age, gender, wage, tenure, education, country of origin (citizenship), occupation, qualification
   - Balance-sheet data: employers' total sales, location, industry (NACE Rev 2.), capital stock, % of foreign capital, etc.
2. **Customs data** from the *Serviço de Estatísticas do Comércio Internacional* of the *Departamento de Estatísticas Económicas*
   - Firms' export and import flows at the firm-product-country-year level

3. The Data

Direct and wholesale exports

- **Method**: We observe exports of manufacturing firms (NACE Rev. 2, section C) and exports of wholesalers (NACE Rev. 2, section G).
- We map 3-digit manufacturing industries into 4-digit wholesale industries

  Classification of industries
- **For each industry**, we observe the # of exporting firms and the total export sales:
  - of manufacturing firms → **Direct exports**
  - of wholesalers → **A proxy for indirect exports**

  E.g., we have the nb of firms/X sales of computer manufacturers and the nb of firms/X sales of wholesalers selling computers.

3. The Data

Summary statistics

59,815 jdc, t **obs.** (industry-region-country-year)

- 2010-2021; 31 industries; 7 NUTS-2 regions
- 61 country groups (firms' export destination & workers' origin country)

296 firms (av. over the period)

- 39.79% of firms are wholesalers (the rest are manufacturers)
  Wholesalers' sales account for 43.84% of all firms' sales
- 21.36% of manufacturing firms export; 21.09% of wholesalers export.

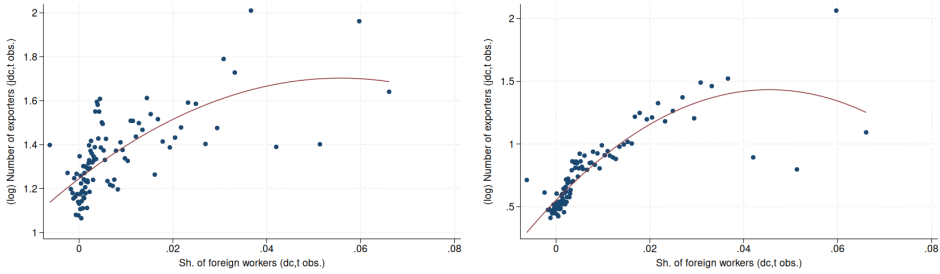
Summary statistics on *jd*-cells

806,200 workers employed in these 31 industries (av. over the period)

- **2.03% of foreign workers**; 0.04% of foreign workers from a given country
- 1.50% of skilled foreign workers Distribution of foreign workers

3. The Data

Stylised fact I: Foreign workers & the number of exporting firms



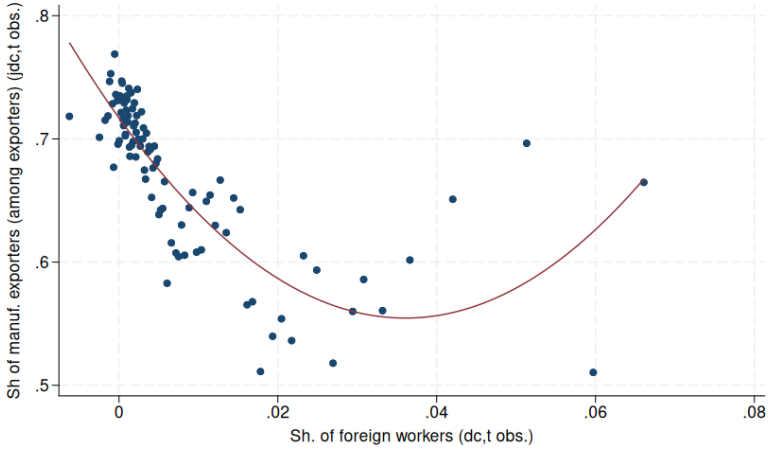
(a) Manufacturing (b) Wholesale

Note: Residualised bins, accounting for dt fixed effects and with clustering at the d level. Grubbs correction removing outliers.

Intensive margin: Export sales

3. The Data

Stylised fact II: Foreign workers & the share of **direct** exporters

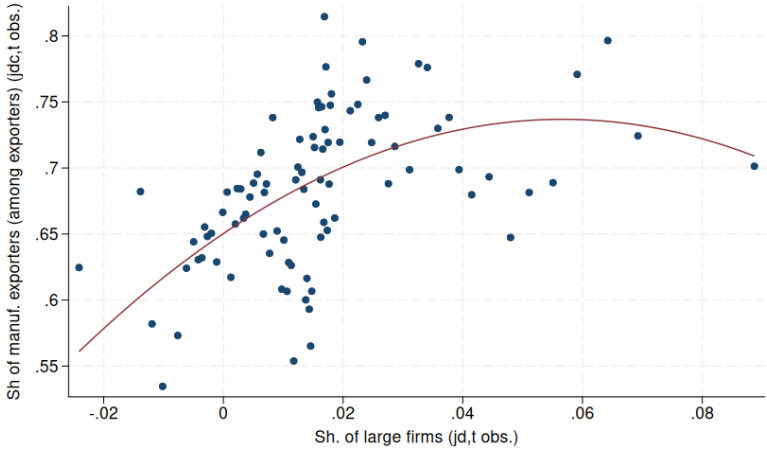


Note: Residualised bins, accounting for *dt* fixed effects and with clustering at the *d* level. Grubbs correction removing outliers.

Intensive margin: Export sales

3. The Data

Stylised fact III: Share of **direct** exporters & share of large manuf. firms (+250 emp.)



Note: Residualised bins, accounting for *jt* fixed effects and with clustering at the *j* level. Grubbs correction removing outliers.

Intensive margin: Export sales

4. Empirical Analysis

Identification strategy

Impact of the share of foreign workers on exporting:

$$y_{jdc,t} = \beta_0 + \beta_1 \text{For}_{dc,t-1} + \Gamma' X_{jd,t-1} + \gamma_{j,t} + \gamma_{d,t} + \gamma_{c,t} + \varepsilon_{jdc,t}$$

- j: industry; d: NUTS-2 region; c: foreign country group
- LHS
  - (log) # of exporting firms
  - (log) Export value
  - Direct export shares (# of firms, export value)

- $\text{For}_{dc,t-1}$: Sh. of foreign workers
- $X_{jd,t-1}$ (sector-region characteristics)
  - (log) average manufacturers' K stock
  - (log) average wholesalers' K stock
  - Sh of large manuf. firms (+250 empl.)
- Cluster: d, t and c, t

Use of a shift-share IV due to endogeneity concerns related to foreign workers Go

4. Empirical Analysis

Baseline results

	Extensive margin			Intensive margin		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Sh of for. w. (dc,t-1)	2.421***	4.381***	-0.298**	0.217	7.397***	-0.768**
	(0.762)	(0.691)	(0.147)	(2.823)	(2.067)	(0.347)
Observations	46,045	46,045	46,045	20,304	20,304	20,304
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
1st stage	0.419	0.419	0.419	0.319	0.319	0.319
	(0.047)	(0.047)	(0.047)	(0.064)	(0.064)	(0.064)
K-Paap F Stat	80.625	80.625	80.625	24.790	24.790	24.790

Note: We exclude *jdc*, *t* observations for which we observe either no manufacturers or no wholesalers.

OLS results

4. Empirical Analysis

Robustness tests and heterogeneity analysis

Robustness tests

- **Placebo**: Foreign workers from other countries than c Go
- Removing **COVID** years (2020 and 2021 excl.) Go

Heterogeneity analysis

- At the intensive margin, industries with below-average concentration of large firms drive the effect. Go
- At both margins, the effects are driven by **qualified workers**. Go
- The effect is driven by **low- and middle-income** countries at the extensive margin (more difficult markets to access), and by **high-income** countries at the intensive margin. Go

5. Conclusions

- **Theory**: Disentangle the effect of foreign workers on firms' export mode.
  - An increase in the share of foreign workers increases the threshold at which firms are willing to export both indirectly and directly.

- **Empirical analysis**: Industry-level evidence that foreign workers increase indirect exports.
  1. Foreign workers increase the number of firms exporting directly.
     In line with the literature on the extensive margin (Hatzigeorgiou and Lodefalk, 2021).
  2. They also increase the number of exporting wholesalers and their export sales. New!
  3. **They favour more indirect exports.** New!
     At the intensive margin, the effect is driven by industries with a low concentration of large firms. In line with the fact that foreign workers matter for smaller firms (Marchal and Sabbadini, 2022; Mitaritonna et al., 2017).

- **Our results indicate that the positive effect of foreign workers on exports has been underestimated until now.**

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Thank you for your attention.
Work in progress; comments welcome.

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3. The Data

Classification of industries

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Group of Section C	Class of Section G	Industry classification	Group of Section C	Class of Section G	Industry classification	Group of Section C	Class of Section G	Industry classification
10.1	46.32	4632	20.4	46.45	4645	26.0	46.52	4652
10.2	46.38	4638	20.5	46.75	4675	27.0	46.66	46G5
10.3	46.31	4631	20.6	46.76	4676	28.1	46.66	46G5
10.4	46.33	4633	21.1	46.46	4646	28.1	46.69	46G5
10.5	46.33	4633	21.2	46.46	4646	28.2	46.66	46G5
10.6	46.21	4621	22.1	46.76	4676	28.2	46.69	46G5
10.7	46.39	4639	22.2	46.76	4676	28.3	46.61	4661
10.8	46.36	46G2	23.1	46.44	4644	28.4	46.62	4662
10.8	46.37	46G2	23.2	46.44	4644	28.9	46.63	46G3
10.9	46.21	4621	23.3	46.44	4644	28.9	46.64	46G3
11.0	46.34	4634	23.4	46.44	4644	29.1	45.11	45G1
12.0	46.35	4635	23.5	46.73	4673	29.1	45.19	45G1
13.1	46.76	4676	23.6	46.73	4673	29.2	45.31	4531
13.2	46.41	4641	23.7	46.73	4673	29.3	45.31	4531
13.3	46.41	4641	23.9	46.73	4673	30.0	46.66	46G5
13.9	46.41	4641	24.1	46.72	4672	31.0	46.47	46G4
14.1	46.42	4642	24.2	46.72	4672	31.0	46.65	46G4
14.2	46.42	4642	24.3	46.72	4672	32.1	46.48	4648
14.3	46.42	4642	24.4	46.72	4672	32.2	46.49	4649
15.1	46.42	4642	24.5	46.72	4672	32.3	46.49	4649
15.2	46.42	4642	25.1	46.72	4672	32.4	46.49	4649
16.1	46.73	4673	25.2	46.72	4672	32.5	46.46	4646
16.2	46.73	4673	25.3	46.74	4674	32.9	46.90	4690
17.1	46.76	4676	25.4	46.66	46G5			
17.2	46.76	4676	25.4	46.69	46G5			
19.0	46.71	4671	25.5	46.72	4672			
20.1	46.75	4675	25.6	46.72	4672			
20.2	46.75	4675	25.7	46.49	4649			
20.3	46.73	4673	25.9	46.72	4672			

3. The Data

Summary statistics I

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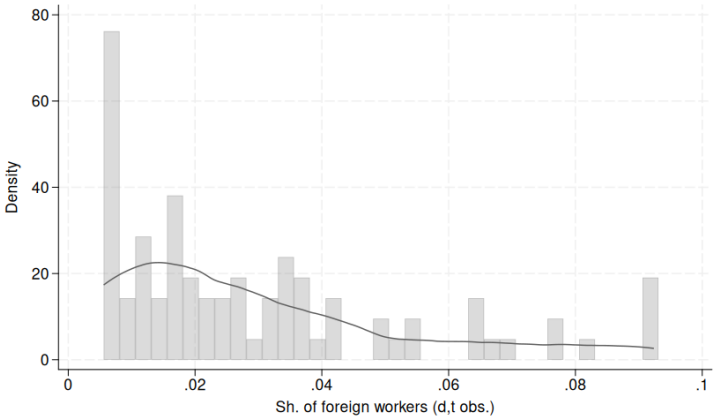

3. The Data

Summary statistics

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	Manufacturing (*jdt* obs.)			Wholesale (*jdt* obs.)			
	Mean	**Std. Dev.**	**Obs.**	**Mean**	**Std. Dev.**	**Obs.**	Diff.
Number of firms	178.243	509.484	1,975	117.738	166.132	1,975	***
Sh of large manufacturing firms (+250 empl.)	0.034	0.123	1,975	-	-	-	-
Total sales (mln euros)	472.465	986.757	1,975	368.229	770.339	1,975	***
Number of exporting firms	37.991	100.824	1,975	24.804	39.326	1,975	***
Total sales of exporting firms (mln euros)	406.474	906.219	1,975	209.655	474.877	1,975	***
Total export sales (mln euros)	20.984	53.481	1,975	4.431	8.177	1,975	***
Nb of destinations served by exporting firms, on average	5.797	4.29	1,746	2.826	1.66	1,779	***
Average exporting firm age	26.065	11.285	1,746	18.566	7.956	1,779	***
Average exporting firm capital stock (mln euros)	5.937	43.272	1,746	1.033	10.6	1,779	***
Average exporting firm public capital share (%)	0.285	3.26	1,746	0.059	2.373	1,779	**
Average exporting firm private capital share (%)	85.5	17.573	1,746	88.836	14.847	1,779	***
Average exporting firm foreign capital share (%)	11.634	15.584	1,746	8.867	13.71	1,779	***

3. The Data

Stylised fact I: Foreign workers & export sales

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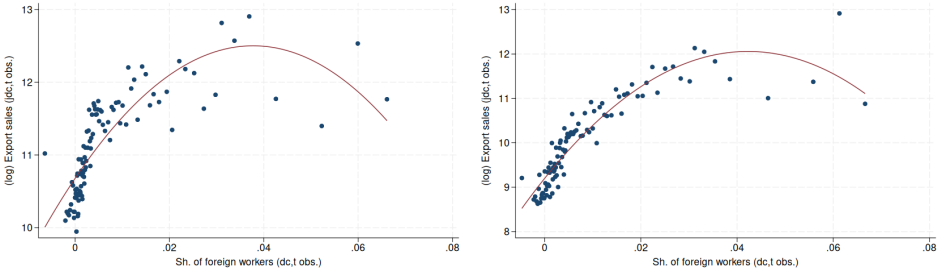

(a) Manufacturing (b) Wholesale

Note: Residualised bins, accounting for *dt* fixed effects and with clustering at the *d* level. Grubbs correction removing outliers.

3. The Data

Stylised fact II: Foreign workers & the share of **direct** export sales

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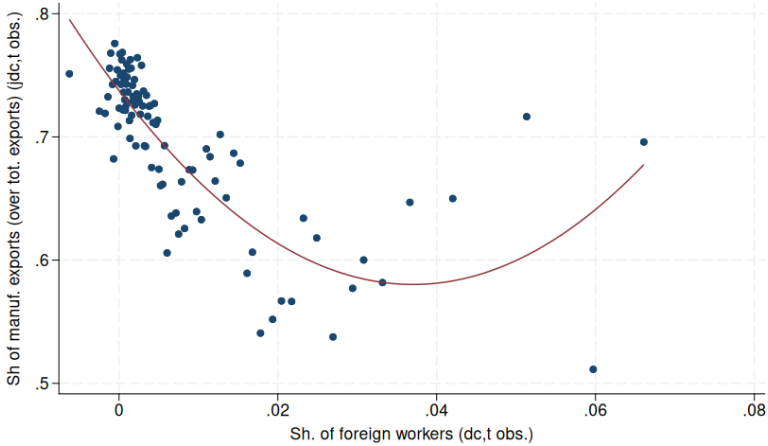

Note: Residualised bins, accounting for *dt* fixed effects and with clustering at the *d* level. Grubbs correction removing outliers.

3. The Data

Stylised fact III: Share of **direct** export sales & share of large firms (+250 emp.)

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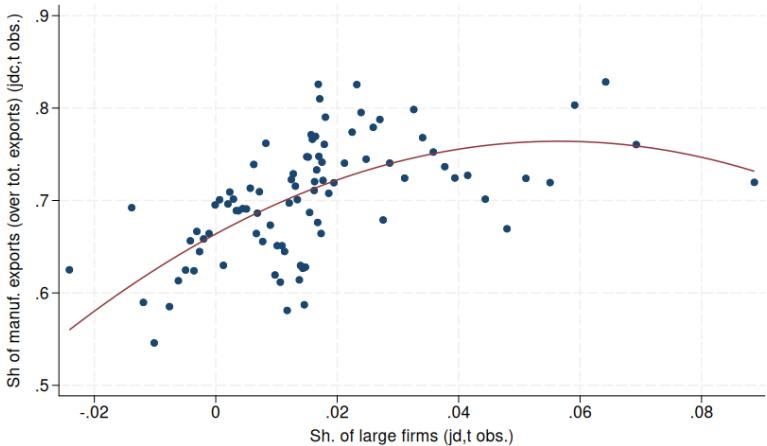

Note: Residualised bins, accounting for *jt* fixed effects and with clustering at the *j* level. Grubbs correction removing outliers.

4. Empirical Analysis

Endogeneity concerns related to foreign workers

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- **Reverse causality**: Firms may hire immigrant workers to export or start exporting. At the aggregate level, export-intensive industries attract more foreign workers.
- **Omitted variable bias**: Trends at the *jd* level that could drive both $y_{jdc,t}$ and $\text{For}_{dc,t-1}$.
- **Imputed share** (shift-share IV, à la Card, 2001):

$$\widehat{\text{For}}_{dc,t} = \frac{\text{For}_{dc,2000}}{\text{For}_{d,2000}} \times \text{For}_{[\text{PT}]c,t} \; ; \; \text{IV}_{dct} = \frac{\widehat{\text{For}}_{dc,t}}{\sum_c \widehat{\text{For}}_{dc,t} + \text{Nat}_{d,2000}}$$

c: country group; d: NUTS-2 region; t: from 2010 to 2021

4. Empirical Analysis

OLS results

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	Extensive margin			Intensive margin		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Sh of for. w. (dc,t-1)	1.303***	2.456***	-0.284***	1.328**	2.706***	-0.157**
	(0.301)	(0.306)	(0.082)	(0.555)	(0.780)	(0.071)
Observations	47,266	47,266	47,266	20,602	20,602	20,602
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	OLS	OLS	OLS	OLS	OLS	OLS
R-squared	0.623	0.548	0.480	0.524	0.440	0.367

Note: We exclude jdc, t observations for which we observe either no manufacturers or no wholesalers.

4. Empirical Analysis

Placebo: Foreign workers from other countries than c

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	Extensive margin			Intensive margin		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Sh of for. w. (dc^-,t-1)	-2.421***	-4.381***	0.298**	-0.217	-7.397***	0.768**
	(0.762)	(0.691)	(0.147)	(2.823)	(2.067)	(0.347)
Observations	46,045	46,045	46,045	20,304	20,304	20,304
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
1st stage	0.419	0.419	0.419	0.319	0.319	0.319
	(0.047)	(0.047)	(0.047)	(0.064)	(0.064)	(0.064)
K-Paap F Stat	80.625	80.625	80.625	24.790	24.790	24.790

Note: We exclude jdc, t observations for which we observe either no manufacturers or no wholesalers.

4. Empirical Analysis

Removing **COVID years**

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	Extensive margin			Intensive margin		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Sh of for. w. (dc,t-1)	2.431***	4.680***	-0.356**	1.136	7.444***	-0.616
	(0.824)	(0.784)	(0.166)	(3.182)	(2.247)	(0.371)
Observations	37,449	37,449	37,449	16,303	16,303	16,303
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
1st stage	0.423	0.423	0.423	0.313	0.313	0.313
	(0.055)	(0.055)	(0.055)	(0.076)	(0.076)	(0.076)
K-Paap F Stat	58.537	58.537	58.537	17.137	17.137	17.137

Note: We exclude jdc, t observations for which we observe either no manufacturers or no wholesalers.

4. Empirical Analysis

Large-firm concentration

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	Extensive margin			Intensive margin		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Estimation results						
Sh of for. w. (dc,t-1)	2.532***	4.534***	-0.293*	0.173	7.461***	-0.799**
	(0.772)	(0.699)	(0.147)	(2.860)	(2.120)	(0.347)
Sh of large firms (+250 emp.) (jd,t-1)	-0.170	-0.091	0.048	-1.867***	-1.828***	-0.141*
	(0.125)	(0.059)	(0.048)	(0.643)	(0.280)	(0.073)
Sh of for. w. (dc,t-1) × Sh of large firms (jd,t-1)	-2.286***	-3.159***	-0.106	4.133	-5.952	2.901***
	(0.334)	(0.496)	(0.239)	(8.317)	(5.830)	(0.780)
Observations	46,045	46,045	46,045	20,304	20,304	20,304
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
1st stage	0.418 ; 0.716	0.418 ; 0.716	0.418 ; 0.716	0.307 ; 0.789	0.307 ; 0.789	0.307 ; 0.789
	(0.047) ; (0.059)	(0.047) ; (0.059)	(0.047) ; (0.059)	(0.065) ; (0.050)	(0.065) ; (0.050)	(0.065) ; (0.050)
K-Paap F Stat	40.063	40.063	40.063	12.876	12.876	12.876
Foreign worker sh. estimates for *jd* cells with above/below-average sh. of large firms.						
Below-average sh of large firms (jd,t-1)	2.516***	4.512***	-0.294**	0.202	7.419***	-0.779**
	(0.770)	(0.698)	(0.147)	(2.824)	(2.099)	(0.345)
Above-average sh of large firms (jd,t-1)	2.201***	4.076***	-0.309**	0.772	6.598***	-0.378
	(0.746)	(0.690)	(0.149)	(2.291)	(1.825)	(0.324)

Note: We exclude *jdc*, *t* observations for which we observe either no manufacturers or no wholesalers. Large concentration *jd*-cells include the 'motor vehicle parts and accessories' industry in *Norte*, and the 'food and beverage' industry in *Lisboa*.

4. Empirical Analysis

Foreign workers with low qualification

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	Extensive margin			Intensive margin		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Sh of **low qual.** for. w. (dc,t-1)	3.261***	5.413***	-0.156	1.239	4.873*	-0.333
	(0.954)	(1.007)	(0.177)	(3.934)	(2.915)	(0.425)
Observations	41,578	41,578	41,578	18,822	18,822	18,822
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
1st stage	0.307	0.307	0.307	0.193	0.193	0.193
	(0.051)	(0.051)	(0.051)	(0.074)	(0.074)	(0.074)
K-Paap F Stat	35.846	35.846	35.846	6.778	6.778	6.778

Note: We exclude *jdc*, *t* observations for which we observe either no manufacturers or no wholesalers.

4. Empirical Analysis

Foreign workers with high qualification

Back

	Extensive margin			Intensive margin		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Sh of **high qual.** for. w. (dc,t-1)	2.227***	3.986***	-0.335**	0.401	7.714***	-0.804***
	(0.608)	(0.466)	(0.128)	(1.944)	(1.570)	(0.264)
Observations	44,744	44,744	44,744	19,942	19,942	19,942
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
1st stage	0.527	0.527	0.527	0.437	0.437	0.437
	(0.038)	(0.038)	(0.038)	(0.051)	(0.051)	(0.051)
K-Paap F Stat	190.025	190.025	190.025	73.845	73.845	73.845

Note: We exclude *jdc*, *t* observations for which we observe either no manufacturers or no wholesalers.

4. Empirical Analysis

High-income countries **excl.**

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	Extensive margin			Intensive margin		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Sh of for. w. (dc,t-1)	0.624	3.292***	-0.432**	-6.886	4.474	-1.449
	(0.638)	(0.717)	(0.173)	(8.000)	(4.784)	(0.998)
Observations	21,638	21,638	21,638	8,543	8,543	8,543
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
1st stage	0.347	0.347	0.347	0.116	0.116	0.116
	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)
K-Paap F Stat	43.878	43.878	43.878	4.916	4.916	4.916

Note: We exclude *jdc*, *t* observations for which we observe either no manufacturers or no wholesalers.

4. Empirical Analysis

High-income countries **only**

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	Extensive margin			**Intensive margin**		
	(log) Nb of exporting manufacturers (1)	(log) Nb of exporting wholesalers (2)	Sh. of exporting manufacturers (among exporters) (3)	(log) Export sales of manufacturers (4)	(log) Export sales of wholesalers (5)	Sh. of exports by manufacturers (over export sales) (6)
Sh of for. w. (dc,t-1)	4.924***	5.201***	0.216	-0.202	4.406***	-0.441***
	(0.415)	(0.454)	(0.132)	(0.785)	(1.641)	(0.153)
Observations	24,404	24,404	24,404	11,744	11,744	11,744
FE	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt	jt-ct-dt
Controls	yes	yes	yes	yes	yes	yes
Estimator	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
1st stage	1.191	1.191	1.191	1.368	1.368	1.368
	(0.086)	(0.086)	(0.086)	(0.096)	(0.096)	(0.096)
K-Paap F Stat	191.786	191.786	191.786	205.097	205.097	205.097

Note: We exclude *jdc*, *t* observations for which we observe either no manufacturers or no wholesalers.