

Firms' Exports, Volatility and Skills: Evidence from France

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Motivation

- A lot of attention has been paid on the consequences of trade on unemployment and wage inequality.
 - **Old evidence:** country-sector aggregated data on developed countries \Rightarrow mostly found no effect of globalization on the wage skill premium (Krueger 1993; Lawrence and Slaughter 1993; Berman et al. 1994).
 - **New evidence (1):** more disaggregated empirical evidence suggests a positive effect of trade liberalization on wage inequality (Attanasio et al. 2004; Goldberg and Pavcnik 2005 and 2007; Verhoogen 2008; Harrigan and Reshef 2015 among others)
 - **New evidence (2):** local labor market evidence with occupation specific data \Rightarrow occupation specific effect of trade (Autor et al. 2013; Kovak 2013; Topalova 2010; Edmonds, Pavcnik and Topalova 2010)

Motivation

- **Volatility of employment is important:** Displacement cost, uncertainty of the job spell and uncertainty of income contribute to the overall welfare impact of openness
- Exporting firms face idiosyncratic shocks in export markets affecting sales and employment volatility (Vannoorenberghe 2012; Berman et al. 2015; Kurz and Senses 2016).
- Workers employed in export intensive firms could experience different levels of volatility compared to less export intensive firms (i.e. different exposure to foreign shocks).
- → Our paper explores **the causal** impact of firms' **export exposure** on the volatility of employment of different skills, and investigate the possible mechanisms.

A First Glance

- (1) **Skilled intensive fixed export costs.** (product-destination specific) involve services and tasks that require more skilled workers such as marketing research, communication with clients, experts in local technical standards, intermediaries and distribution (Matsuyama 2007; Brambilla et al. 2012)
▶ Fact 1
- (2) **Exporting firms are skilled intensive.** Yeaple (2005), Verhoogen (2008), Harrigan and Reshef (2015), Burstein and Vogel (2016) among others.
- (3) **Unskilled are hired more easily than skilled workers.** The hazard of a recruitment decision is about 10 percent lower for skilled than for unskilled intensive jobs (Davis et al. 2014)
- (1)-(3) \Rightarrow Among exporting firms, a foreign shock affects in a different way the volatility of skilled and unskilled workers. ▶ Fact 2 ▶ Fact 3

What We Do

- Focus on employment volatility at the firm level, not on aggregate volatility
- Theoretical framework to rationalize empirical facts on employment volatility
- Provide econometric evidence on the **causal effect** of the export intensity of the firm on the volatility of employment
- By class of workers, skilled/unskilled (i.e. inequality in employment stability)
- Test for the **main channels** through which export activity has a heterogeneous effect on the volatility of different skills.

How We Do It

- 1 Provide a simple theoretical mechanism that delivers a different reaction in employment volatility of skilled vs unskilled workers to a common shock in the foreign demand
- 2 The baseline identification strategy relies on the variation of export intensity and employment volatility **across firms within a sector conditional on firms' size.**
- 3 **Test causal effect** → instrumental variable estimation:
 - **Main instruments:** sector specific real exchange rate (RER) and initial export intensity of the firm

What We Find

Conditional on firm's size and import intensity:

- 1 Our results are consistent with causality running from export intensity to volatility of employment
- 2 Firms with high levels of exports - as facing positive *exogenous* foreign demand shocks - experience a relatively lower skilled-over-unskilled volatility of employment.
- 3 **Channels:** coherently with our theoretical argument the extensive margin channel (number of destinations) explains our results.

Literature Review

- Volatility and macroeconomic variables
 - Growth: Ramey and Ramey (AER 1995)
 - Development: Koren and Tenreyro (QJE 2007)
 - Trade policy and welfare: Krebs et al. (ReStat 2010)
- New interest in Volatility and Openness
- Macro level: di Giovanni and Levchenko (ReStat 2009) and (JPE 2012); Caselli et al. (2015)
- Firm level volatility and trade
 - Sales: Comin and Philippon (2006); Vannoorenberghe (JIE 2012); Kramarz, Martin and Mejean (2017)
 - Employment: Kurz and Senses (JIE 2015)
 - Firms and Aggregate Fluctuations: di Giovanni et al. (2014) and (2018)
- No consensus on the relationship between trade and aggregate volatility

- 1 Theoretical Framework
- 2 Data
- 3 Measuring Employment Volatility
- 4 Identification strategy
- 5 Baseline regression results
- 6 Robustness tests

Theoretical Framework

- Consider a firm serving its domestic market and a foreign destination j
- The demand addressed to the firm is stochastic on both markets
- Exports are increasing in the level of fixed export costs
- Production function homogenous of degree one, constant relative wage \Rightarrow constant unskilled to skilled labor ratio in production
- Fixed export costs are paid in units of skilled labor only
- *Prediction 1: For a given firm size, the volatility of unskilled labor demand is an increasing function of the level of exports*
- *Prediction 2: For a given firm size, the ratio of skilled to unskilled labor demand volatility is a decreasing function of the level of exports*

Theoretical Framework with CES

- Melitz framework with fixed cost of exporting paid in unit of skilled labor \rightarrow this will generate different labor volatility for skilled and unskilled
- CES production technology combines skilled (s) and unskilled (u) workers with elasticity of substitution $1/(1 - \alpha)$: $q_i(\varphi) = \varphi_i(s_i^\alpha + u_i^\alpha)^{\frac{1}{\alpha}}$
- Each firm i faces a demand function (from a CES utility) for each product k in market j given by $q_{ij} = \exp^{\rho_{ij}} A_j p_{ij}^{-\sigma}$

where ρ_{ij} is an idiosyncratic shock to the demand of firm i in each destination j , with mean 0 and variance ϵ_{ij}^2

- Taking first difference in logs over time of labor demand equations, gives the dynamics of the labor demands, $g_{s_{it}}$ and $g_{u_{it}}$.
- Therefore, given a firm specific foreign shock ρ_i , the change in the volatility of skilled employment is smaller than that for unskilled

$$\frac{\partial \text{Var}(g_{s_{it}})}{\partial \rho_i} < \frac{\partial \text{Var}(g_{u_{it}})}{\partial \rho_i} \quad (1)$$

- Two sources of firm level data for France over the **period 1996-2007**:
 - (1) **DADS poste**: wages and the occupation category at the 4-digit disaggregation of employees in each firm
 - (2) **French Customs Data**: exports by firm-product (hs6) and destination market.
- From (1) employees within a firm are classified in two categories of skills depending on wages in the initial year: **Skilled workers are those employed in occupations with initial average wage above the median**. Rob check using workers' occupation (production vs. non-production workers).
- From (2) **firms' export intensity** is measured as the average of firm's total exports (baseline), number of destinations or number of products exported (testing the channels).

Descriptive Statistics

Table: In-sample descriptive statistics

	Obs	Mean	Std Dev	Min	Max
Volatility skilled/unskilled	17,696	1.95	1.57	0.002	46.51
Volatility high skilled	17,696	0.36	0.19	0.000	1.87
Volatility low skilled	17,696	0.24	0.14	0.005	1.22
Export (ln)	17,696	10.51	3.21	1.427	20.01
Import (ln)	17,696	8.86	5.46	0.000	20.17
N. destinations	17,696	3.22	2.85	1.08	113.29
N. exported products	17,696	4.75	4.01	1.08	1881.83
Employment	17,696	25.27	2.85	2	391.50

Measuring Employment Volatility

- Coherently with eq. (7) and (8), we use the standard deviation of a **conditional** growth rate of firms' employment (by skill), over the period 1996-2007 (Kurz & Senses 2016):

$$\gamma_{it} = \ln(E_{it}) - \ln(E_{it-1}) = \phi_i + \mu_{st} + \textit{DestinationDummy}_{it} + v_{it}$$

- E_{it} is total employment (skilled or unskilled) of firm i at time t (hours worked as robustness check)
- ϕ_i are firm fixed effects; μ_{st} are sector-year fixed effects (sector in which the firm operates)
- $\textit{DestinationDummy}_{it}$ are dummy variables equal to one if the firm export to a given country in a given year

Measuring Employment Volatility

- The estimated residual, \hat{v}_{it} , represents the conditional growth rate. It reflects the *deviation of employment growth from the firm-average and from the sector-average at year t*.
- Then we compute the standard deviation of the residual growth rates over the period 1996-2007:

$$\sigma_i = \sqrt{\frac{1}{11} \sum \hat{v}_{it}^2}$$

- Finally we compute the skilled/unskilled volatility ratio: σ_{is}/σ_{iu}

Identification Strategy

- Baseline specification:

$$\sigma_{is}/\sigma_{iu} = \beta_0 + \beta_1 \text{Ln}(\text{exports}_i) + \beta_2 \text{FirmSize}_i + \beta_3 \text{Ln}(\text{imports}_i) + \alpha_s + \epsilon_i$$

- σ_{is}/σ_{iu} is our **firm-level employment volatility inequality**.
- Notice that firm-level employment volatility is already purged of firm and sector-year unobservable characteristics
- $\text{Ln}(\text{exports}_i)$, is the logarithm of average export sales over the period 1996-2007
- $\text{Ln}(\text{imports}_i)$, is the logarithm of average firm's imports over the period 1996-2007
- FirmSize_i is the logarithm of total employment in the initial year.

Identification Strategy

- All estimations include 2-digit industry fixed effects (α_s) → we explore **variations in employment volatility across firms within a sector** (conditioned on size)
- Std Dev computed on a homogeneous time span → we keep firms active over the entire period
 - No entry/exit problem (BUT destination specific entry/exit dynamics)
 - Rob check on unbalanced panel using weighted OLS
- We use exporting firms only because:
 - Proper control group: non-exporting firms are different animals. Mixing up exporting and non-exporting firms inflates our story with zeros. So we stick on intensive margin channel only.
 - Get rid of less productive non-exporting firms → improve comparability among firms
 - Lack of IV

Instrumental Variables Estimation



- Potential omitted variable: Firms' export sales and employment demand might be determined by the same firm's supply and demand factors.
 - Example: technological adoption affects both export intensity and volatility but in opposite direction.
- Instrumenting export intensity:
 - *Sector Real Exchange Rate* (average over the period). Exclusion restriction: foreign demand shock, as revealed by a change in RER, affects volatility only through the export intensity channel (conditioned on size and import intensity).
 - *Initial export intensity*. Exclusion restriction: the initial level of export intensity is not correlated with the volatility of employment over the period (conditioned on size and import intensity).

Table I: Baseline results

Table: Export exposure and firms' employment volatility, skilled/unskilled.

Dep Var:	S.D. residual employment growth skilled/unskilled			S.D. residual hours worked growth skilled/unskilled		
	(1)	(2)	(3)	(4)	(5)	(6)
Export Sales	-0.029*** (0.005)		-0.050*** (0.008)	-0.051*** (0.016)		-0.086* (0.049)
Export Sales (no French)		-0.012*** (0.003)			-0.010 (0.008)	
Firm' size	0.344*** (0.020)	0.332*** (0.018)	0.363*** (0.032)	0.213*** (0.062)	0.177*** (0.069)	0.247*** (0.047)
Imports	-0.001 (0.003)	-0.004** (0.002)	0.004 (0.004)	0.000 (0.006)	-0.010 (0.008)	0.011 (0.011)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Estimator	OLS	OLS	2SLS	OLS	OLS	2SLS
IV: RER			0.585*** (0.106)			0.576*** (0.114)
IV: Export (t=0)			0.248*** (0.018)			0.251*** (0.019)
Observations	17,694	17,694	17,694	13,118	13,118	13,118
R-squared	0.056	0.055	0.039	0.028	0.028	0.000
F-stat first Stage			103			85
Sargan Test			0.719			0.958

Robustness tests

- Volatility of Employment in Levels
 - for skilled and unskilled workers respectively  
- Alternative definition of skills (based on occupation) and volatility (sd of growth, coeff. of variation)
- Volatility of hours worked
- Volatility by firms' size
- Panel estimations: time-varying measure of employment volatility
 - Two sub-periods: 1996-2001 and 2002-2007

Mechanisms of transmission

Different channels of transmission:

- 1 Intensive (avg export per destination, avg over the period) vs. extensive margin (number of destination markets, avg over the period)
- 2 Portfolio of exported varieties (number of exported products-destination, avg over the period)
- 3 Relationship between firm's dynamics into destination markets (entry and exit) and employment volatility

→ If our story is true (i.e. fixed cost of export skill intensive), only the extensive channel should matter.

Table II: Mechanisms, intensive vs extensive margin

Table: Export exposure and firms' employment volatility, skilled/unskilled. Testing the mechanism.

Dep Var:	S.D. residual employment growth, skilled/unskilled				
	(1)	(2)	(3)	(4)	(5)
Export per market	-0.032*** (0.008)			-0.009 (0.008)	-0.008 (0.008)
N. destinations		-0.130*** (0.012)		-0.124*** (0.015)	-0.090** (0.040)
N. products			-0.097*** (0.012)		-0.029 (0.035)
Firm's size	0.333*** (0.014)	0.355*** (0.016)	0.353*** (0.014)	0.358*** (0.020)	0.358*** (0.020)
Import Intensity	-0.005** (0.003)	0.001 (0.002)	0.001 (0.003)	0.001 (0.003)	0.002 (0.003)
Industry FE	Yes	Yes	Yes	Yes	Yes
Estimator	OLS	OLS	OLS	OLS	OLS
Observations	17694	17694	17694	17694	17694
R-squared	0.036	0.058	0.058	0.056	0.058

Notes: Export per market is the ratio between total export and the number of destinations (mean over the period). The number of destinations is the average number of destinations served over the period. The number of product is the average number of HS6 item exported over the period.

Table III: Results by type of exports

Table: Export exposure and firms' employment volatility by type of exports.

Dep Var:	S.D. residual employment growth skilled/unskilled	
	(1)	(2)
Export Sales (continuous)	-0.008*** (0.002)	
Export Sales (churning)	-0.025*** (0.006)	
Export Sales (EU)		-0.006** (0.003)
Export Sales (extra EU)		-0.020*** (0.004)
Firm' size	0.350*** (0.020)	0.343*** (0.019)
Imports	-0.001 (0.003)	-0.002 (0.003)
Industry FE	Yes	Yes
Estimator	OLS	OLS
Observations	17,694	17,694
R-squared	0.057	0.056

Notes: Continuous destinations are those in which the firm export continuously over the period, while churning destinations are those in which the firms occasionally exports. EU and non-EU export intensity refer respectively to EU and non-EU destination country exports.

Controlling for alternative explanations:

- 1 Controlling for TFP
- 2 Controlling for Labor Productivity
- 3 Labor Productivity conditioned volatility
- 4 Excluding MNF
- 5 Unbalanced panel
- 6 Before vs after China in the WTO

Next Steps

- Trade is not the only determinant of employment volatility (Caselli et al. 2016): technology adoption might have a role
- Augment the main specification with indirect linkages
 - Input-Output table together with firm-level information on input purchases and domestic sales to construct proxies for indirect linkages between French firms and foreign markets
 - This measure should capture a (supply) network effect: the intensity with which a French firm interacts with internationally connected firms
- From micro to macro: macro implications of the micro-level findings?

Conclusions

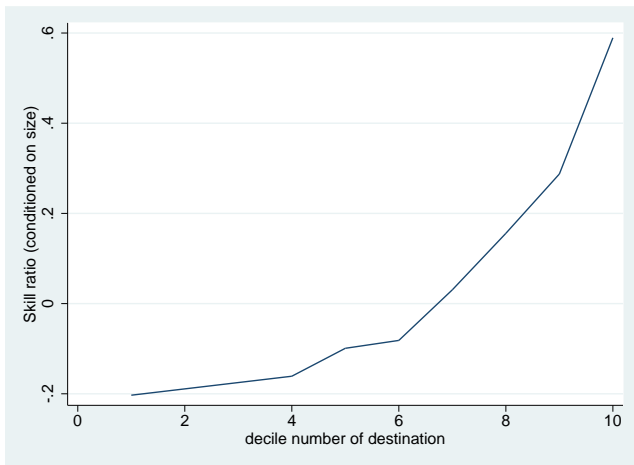
- Study the **causal effect** of firms' export exposure on employment volatility
- Disentangling the impact on skilled and unskilled labor volatility
- Firms with high levels of exports - as facing exogenous foreign demand shocks - experience a lower volatility for skilled relative to unskilled workers with respect to smaller exporters
- These findings seem to suggest that exporting firms increase the stability of skilled jobs and explain part of the precariousness of unskilled ones

Appendix: definition of variables

- **Export Status:** dummy equal to one if the firm exports at least one product in at least one destination. Max over the period.
- **Export Sales:** (log) of total firm's export. Avg over the period.
- **Sector RER:** Sector average of firm specific RER (by initial export). Average across destinations, and then over time.
- **Initial Export Sales:** Total firm's export at time 0
- **Intensive:** average export per destination. Mean over the period.
- **N. of destinations:** number of destinations served by the firms. Mean over the period.
- **N. of varieties:** total number of HS 6-digit - destination served by the firm. Mean over the period.
- **Export consolidated vs churning:** avg firm's total exports (over period)*avg share of firm's exports toward consolidated destinations
- **Export EU vs non-EU:** total firm's exports towards EU vs. non-EU destinations. Avg over the period.

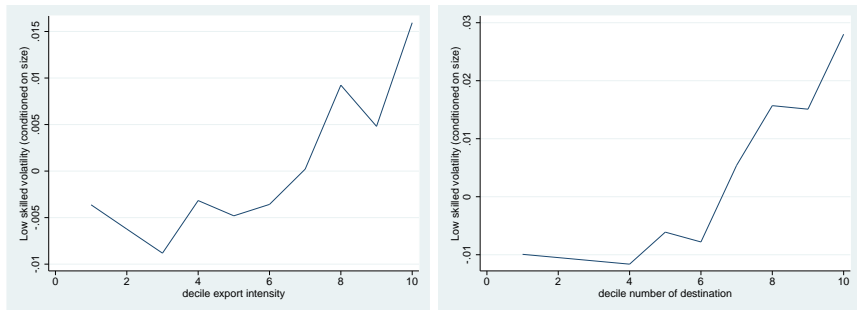
Empirical Fact 1: the fixed export cost is skill intensive.

Figure: Destinations and skilled intensity



Empirical Fact 2: volatility of unskilled workers.

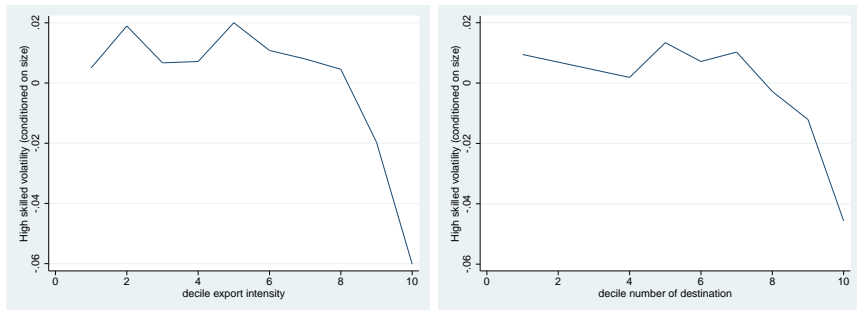
Figure: Export intensity and the volatility of unskilled labor



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Empirical Fact 3: volatility of unskilled workers.

Figure: Export intensity and the volatility of skilled workers



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Macro Level implication

- **Macro Level implication 1:** *the volatility of unskilled workers in France is pro cyclical with respect to foreign demand shocks.*



Table A.1 : Rob. check using the coefficient of variation

Table: Export exposure and firms' employment volatility, skilled/unskilled. Robustness check using coefficient of variation.

Dep Var:	Coeff. Variation residual employment growth.		
	(1)	(2)	(3)
Export Sales	-0.036*** (0.006)		-0.032* (0.017)
Export Sales (no French)		-0.017*** (0.004)	
Firm' size	-0.004 (0.017)	-0.015 (0.018)	-0.008 (0.037)
Imports	-0.022*** (0.004)	-0.025*** (0.005)	-0.023*** (0.007)
Industry FE	Yes	Yes	Yes
Estimator	OLS	OLS	2SLS
IV: RER			0.589*** (0.103)
IV: Export (t=0)			0.247*** (0.017)
Observations	17,911	17,911	17,911
R-squared	0.035	0.034	0.011
F-stat first Stage			105
Sargan Test			0.242

Table A.2: Rob. check using alternative definition of skills

Table: Export exposure and firms' employment volatility. Robustness check using alternative definition of skills (non-production vs production).

Dep Var:	S.D. residual employment growth, non-prod/prod workers.		
	(1)	(2)	(3)
Export Sales	-0.031*** (0.004)		-0.037*** (0.008)
Export Sales (no French)		-0.012*** (0.003)	
Firm' size	0.257*** (0.018)	0.244*** (0.019)	0.263*** (0.037)
Imports	-0.003 (0.003)	-0.006*** (0.002)	-0.001 (0.004)
Industry FE	Yes	Yes	Yes
Estimator	OLS	OLS	2SLS
IV: RER			0.586*** (0.103)
IV: Export (t=0)			0.247*** (0.018)
Observations	17,763	17,763	17,763
R-squared	0.046	0.045	0.023
F-stat first Stage			102
Sargan Test			0.356

Table A.3.1: Results by occupation group

Table: Export exposure and firms' employment volatility by class of workers. 2SLS estimations

Dep Var:	Skilled (1)	Unskilled (2)	Non-Production (3)	Production (4)
Export Sales	-0.009*** (0.002)	0.003*** (0.001)	-0.008*** (0.001)	0.003** (0.001)
Firm' size	-0.026*** (0.005)	-0.073*** (0.004)	-0.031*** (0.004)	-0.075*** (0.004)
Imports	0.001 (0.001)	-0.000 (0.000)	-0.000 (0.001)	-0.000 (0.000)
Industry FE	Yes	Yes	Yes	Yes
Estimator	2SLS	2SLS	2SLS	2SLS
Observations	17,703	18,072	17,780	18,064
R-squared	0.042	0.258	0.066	0.244

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Table A.3.2: Results by occupation group

Table: Export exposure and firms' employment volatility by class of workers. 2SLS estimations

Dep Var:	Managers	Techies	Engineers & Lawyers
	(1)	(2)	(3)
Export Sales	-0.007*** (0.001)	-0.013*** (0.003)	-0.006*** (0.002)
Firm' size	0.002 (0.006)	0.009 (0.008)	0.046*** (0.009)
Imports	0.003*** (0.001)	0.004*** (0.001)	0.007*** (0.001)
Industry FE	Yes	Yes	Yes
Estimator	2SLS	2SLS	2SLS
Observations	17,583	16,987	12,260
R-squared	0.055	-0.009	0.046

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Table A.4: Results by firm size

Table: Export exposure and firms' employment volatility by firms' size.

Dep Var:	S.D. residual employment growth skilled/unskilled	
	(1)	(2)
Export Sales Big	-0.047*** (0.006)	-0.054*** (0.010)
Export Sales Medium	0.008 (0.005)	-0.005 (0.011)
Export Sales Small	0.029 (0.032)	0.043 (0.060)
Imports	-0.000 (0.003)	0.003 (0.005)
Industry FE	Yes	Yes
Estimator	OLS	2SLS
Observations	17,694	17,694
R-squared	0.058	0.043

Notes: Big firms are those with initial total employment above 75th percentile. Small firms are those with initial total employment below 25th percentile. Medium size firms are those in between. Size bins included but not reported.

Table A.5: Controlling for TFP

Table: Export exposure and firms' employment volatility, skilled/unskilled. Controlling for TFP.

Dep Var:	S.D. residual employment growth			S.D. residual hours worked growth		
	(1)	(2)	(3)	(4)	(5)	(6)
Export Sales	-0.053*** (0.017)		-0.075** (0.036)	-0.054*** (0.019)		-0.077*** (0.027)
Export Sales (no French)		-0.025*** (0.008)			-0.030*** (0.010)	
Firm' size	0.239*** (0.082)	0.229** (0.097)	0.250*** (0.071)	0.379*** (0.070)	0.376*** (0.078)	0.391*** (0.054)
Imports	-0.015 (0.011)	-0.020* (0.010)	-0.006 (0.013)	0.000 (0.014)	-0.002 (0.013)	0.009 (0.011)
Firm TFP	-0.052 (0.125)	-0.071 (0.135)	-0.036 (0.107)	-0.285** (0.133)	-0.304** (0.129)	-0.268** (0.107)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Estimator	OLS	OLS	2SLS	OLS	OLS	2SLS
Observations	1,905	1,905	1,905	1,768	1,768	1,768
R-squared	0.078	0.076	0.008	0.048	0.047	0.013

Notes: Firm TFP (average over the period) computed on a sample of surveyed firms with more than 25 employees in the period 1999-2007.

Table A.6: Controlling for labor productivity

Table: Export exposure and firms' employment volatility, skilled/unskilled. Controlling for labor productivity.

Dep Var:	S.D. residual employment growth			S.D. residual hours worked growth		
	(1)	(2)	(3)	(4)	(5)	(6)
Export Sales	-0.045*** (0.008)		-0.063*** (0.021)	-0.044*** (0.007)		-0.042*** (0.012)
Export Sales (no French)		-0.019*** (0.005)			-0.017*** (0.005)	
Firm' size	0.203*** (0.023)	0.185*** (0.024)	0.219*** (0.044)	0.196*** (0.024)	0.176*** (0.024)	0.193*** (0.032)
Imports	-0.009* (0.005)	-0.015*** (0.005)	-0.002 (0.007)	0.001 (0.005)	-0.005 (0.006)	0.001 (0.005)
Firm Labor Productivity	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.001)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.000)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Estimator	OLS	OLS	2SLS	OLS	OLS	2SLS
Observations	9,134	9,134	9,134	8,185	8,185	8,185
R-squared	0.046	0.044	0.011	0.024	0.022	0.009

Notes: Firm labor productivity (average over the period) computed on a sample of surveyed firms with more than 25 employees.

Table A.7: Labor productivity conditioned volatility

Table: Export exposure and firms' employment volatility, skilled/unskilled. Robustness check controlling for firm's labor productivity in the first stage.

Dep Var:	S.D. residual employment growth skilled/unskilled		
	(1)	(2)	(3)
Export Sales	-0.070** (0.031)		-0.114** (0.047)
Export Sales (no French)		-0.010 (0.025)	
Firm' size	-0.168** (0.085)	-0.221** (0.087)	-0.129 (0.080)
Imports	-0.029 (0.041)	-0.048 (0.048)	-0.012 (0.040)
Industry FE	Yes	Yes	Yes
Estimator	OLS	OLS	2SLS
Observations	8,758	8,758	8,758
R-squared	0.007	0.007	0.003

Table A.8: Excluding MNEs

Table: Export exposure and firms' employment volatility, skilled/unskilled. Robustness check excluding MNEs.

Dep Var:	S.D. residual employment growth skilled/unskilled		
	(1)	(2)	(3)
Export Sales	-0.022*** (0.005)		-0.041*** (0.009)
Export Sales (no French)		-0.009*** (0.003)	
Firm' size	0.374*** (0.022)	0.366*** (0.017)	0.390*** (0.016)
Imports	-0.002 (0.003)	-0.004 (0.003)	0.003 (0.004)
Industry FE	Yes	Yes	Yes
Estimator	OLS	OLS	2SLS
Observations	16,825	16,825	16,825
R-squared	0.062	0.062	0.061

Table A.9: Unbalanced panel

Table: Export exposure and firms' employment volatility, skilled/unskilled. Robustness check with unbalanced panel data.

Dep Var:	S.D. residual employment growth		S.D. residual hours worked growth	
	(1)	(2)	(3)	(4)
Export Sales	-0.040*** (0.013)		-0.031 (0.018)	
Export Sales (no French)		-0.018*** (0.006)		-0.026** (0.012)
Firm' size	0,328*** (0.031)	0.315*** (0.031)	0.149** (0.061)	0.153** (0.057)
Imports	-0,002 (0.031)	-0.006* (0.003)	-0.002 (0.008)	0.000 (0.057)
Industry FE	Yes	Yes	Yes	Yes
Estimator	OLS	OLS	OLS	OLS
Observations	28943	28943	28943	28943
R-squared	0.007	0.007	0.001	0.001

Notes: We use *all* firms, even those with employment data in only two years.

Table A.10: Before and after China in the WTO

Table: Export exposure and firms' employment volatility, skilled/unskilled. Before vs after China in the WTO.

Dep Var:	S.D. residual employment growth			S.D. residual employment growth		
	(1)	(2)	(3)	(4)	(5)	(6)
Export Sales	-0.034*** (0.009)		-0.024 (0.017)	-0.030*** (0.007)		-0.046*** (0.017)
Export Sales (no French)		-0.006 (0.005)			-0.010** (0.005)	
Firm' size	0.345*** (0.046)	0.320*** (0.034)	0.335*** (0.052)	0.240*** (0.032)	0.226*** (0.033)	0.257*** (0.046)
Imports	0.008 (0.006)	0.003 (0.006)	0.006 (0.004)	-0.002 (0.004)	-0.005 (0.005)	0.003 (0.005)
Period	<i>Before China WTO</i>			<i>After China WTO</i>		
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Estimator	OLS	OLS	2SLS	OLS	OLS	2SLS
Observations	14,252	14,252	14,252	15,755	15,755	15,755
R-squared	0.019	0.018	0.013	0.019	0.018	0.006