
Local export spillovers in France

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→ Motivation

French export performance is disappointing ..
Macro or micro reasons ?

Since 2005, deficit of French current account.
Negative record in 2007 (-36.6 billions euros)

Explanations? euro/dollar exchange rate, bad industrial specializations, insufficient relationships with emerging countries...

Growing attention on **micro** determinants of exports

Only a minority of firms sell on foreign markets

- 14.6% of US firms export (Bernard and Jensen, 1987 data, manufacturing)
 - 17% of French firms export (Eaton, Kortum and Kramarz, 1986 data, manufacturing)
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...which justifies public interest for microdeterminants of exports

- Interest of public authorities for the dynamics of exports at firm level in order to promote French exports
 - Shift which corresponds to a parallel movement in academic research: models *à la* Melitz with firms' heterogeneity (not all firms are expected to be exporters)
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Spatial concentration of French exporters...

- More than 30% of « Clocks and Watches » exporters are located in Doubs département, in Franche-Comté, whereas only 0.84% of French population lives there
 - More than 18% of « Preparations of cereals, flour, starch or milk; bakers wares » are located in Loire département, in Rhône-Alpes, whereas only 1.2% of population lives there
 - More than 20% of « Vegetable textile fibers; paper yarn and woven fabric of paper yarn » are located in Nord département, whereas only 4.2% of population lives there
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... as a booster of exports at firm level?

- Underlying idea: exporting is costly for a firm. Mutualization of exporting costs could reduce the individual costs to export and boost the dynamics of exports at firm level
 - In particular, attempts to promote **collaborative actions** on export markets: national tenders in order to favor SMEs regroupments on export questions (Competitiveness clusters)
 - Different types of actions: groupment of employers in order to share an employee dedicated to export questions, common participation to international fares, experience sharing...
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What we do

- We measure, on French firm/product/country level data (19987-2003), the impact of other local exporters on the export behaviour of a firm:
 - on the decision to start exporting
 - on the export volume
 - Results:
 - For a firm, we find that the probability to a export a given product to a given country is positively affected by the number of other local exporters. That effect is clearly product & destination-specific
 - We find no effect on the size of the export flow
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Our contribution

1. Use detailed dataset (linking enterprise survey and customs) with trade by firm, product and destination country for 1998-2003
 2. Explore the **presence of export spillovers**: focus on trade costs effect (after control of productivity)
 3. **Describe the nature of mechanism:**
 - Channel: fixed versus marginal cost (extensive versus intensive)
 - Product and/or destination specificity
 - Geographical scope: spatial decay
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→ Empirical strategy

Estimated gravity equations

Exports of firm i , product k to country j at time t

Extensive margin: exports occur when profits > 0

$$\text{Prob}(S_{ikjt} = 1) = \text{Prob}(\alpha_1 \text{empl}_{it} + \alpha_2 \text{dem}_{jkt} + \alpha_3 \text{dist}_{jt} + \alpha_4 \text{spill}_{i(kj)t} + u_{ikjt} > 0)$$

Intensive margin: gravity equation at the firm level

$$\text{export volume}_{ikjt} = \beta_1 \text{empl}_{it} + \beta_2 \text{dem}_{jkt} + \beta_3 \text{dist}_{jt} + \beta_4 \text{spill}_{i(kj)t} + v_{ikjt}$$

$\text{Spill}_{i(kj)t}$ = Surrounding exporters of product k to country j

What does the spillover variable measure?

- Market and non-market externalities
(cost sharing + info transfers): >0
- Competition on exported good
Congestion on export infrastr.: <0

Our estimate: net effect

Other (controlled) effects of exporters' agglomeration

- Controls in the regression to control non-export specific effects of exporters' agglomeration
 - Effect on price of local inputs: size of area (employment)
 - Technological spillovers on productivity: TFP
 - All left hand side variables are lagged by one year to reduce endogeneity problems (Bernard and Jensen)
 - Regressions will exploit the within (time) variation: include firm-(area)-product- country fixed effects
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→ Empirical results

Sample and spillovers variables

- Product 4-digit level (1236 products)
- Definition of local spillovers at firm level, as the nb (or employees) of other exporting firms in the employment area
- 4 types of spillovers:
 - All products and all destinations
 - All products and same destination
 - Same product and all destinations
 - Same product and same destination

Explained variable:

- **Extensive margin:** dummy variable = 1 if firm starts to export product k at time t to country j
 - **Intensive margin:** volume of exports from firm i to country j at time t
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Spillovers and export decision

Table 5 – Logit on the decision to start exporting / Different product-destination spillovers

Model :	(1)	(2)	(3)	(4)
ln (firm's employees)	0.570 ^a (0.074)	0.570 ^a (0.075)	0.568 ^a (0.075)	0.570 ^a (0.075)
ln (firm's TFP)	0.118 ^a (0.035)	0.119 ^a (0.035)	0.119 ^a (0.035)	0.118 ^a (0.035)
ln (total employment in the area)	0.869 (0.582)	0.842 (0.586)	0.874 (0.586)	0.884 (0.585)
ln (destination country's imports, product specific)	0.176 ^a (0.013)	0.172 ^a (0.013)	0.175 ^a (0.013)	0.174 ^a (0.013)
# other firms in the area, all products-all destinations	0.001 (0.001)			
# other firms in the area, all products-same destination		0.008 ^a (0.003)		
# other firms in the area, same product-all destinations			0.012 ^b (0.005)	
# other firms in the area, same product-same destination				0.051 ^a (0.009)
Observations	645268	645268	645268	645268
Year fixed-effects	yes	yes	yes	yes
Firm-country-product fixed-effects	yes	yes	yes	yes
R ²	0.09	0.09	0.09	0.09

All regressions are conditional logit estimations. Standard errors in parentheses, ^a, ^b and ^c respectively denoting significance at the 1%, 5% and 10% levels. Regressions are corrected for clustering at area level. All explanatory variables are time specific and lagged one year with respect to the explained variable.

Explanatory power of variables

Coefficient of 0.051 in Logit, based on an average probability to start exporting of 30%, induces that an additional neighbor increases the probability to start exporting by roughly 1.07 percentage point.

Table 6 – Explanatory power - Decision to start exporting

Within variation			
Variable	Mean	Std-dev.	Expl. power (% point)
Firm's employees	126.1	19.07	2.57
Firm's TFP	67.6	26.8	1.24
Destination country's demand, product specific	426157	248572	2.56
# of other exporters in the area, same product-same destination	0.31	0.35	0.55
# of other exporters in the area, same product-all destinations	3.03	1.07	0.39
# of other exporters in the area, all products-same destination	14.51	2.11	0.53

A one standard-deviation increase in each of the three significant agglomeration variables increases the probability to export by 0.39 to 0.55 percentage point for a given firm-product-country triad over time.

Are export agglomeration economies really local?

Table 7 – Logit on the decision to start exporting / Different product-destination spillovers / Robustness checks

Model :	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ln (firm's employees)	0.63 ^a	0.56 ^a	0.569 ^a	0.570 ^a	0.570 ^a	0.566 ^a	0.564 ^a	0.122 ^a	0.122 ^a
ln (firm's TFP)	0.08 ^b	0.12 ^a	0.118 ^a	0.118 ^a	0.118 ^a	0.119 ^a	0.119 ^a	0.027 ^a	0.027 ^a
ln (firm's mean wage)	0.29 ^a								
ln (total employment in the area)	0.91	0.81	0.871	0.889	0.884	0.868	0.831	0.288 ^c	0.282 ^c
ln (destination country's imports)	0.17 ^a	0.17 ^a	0.174 ^a	0.175 ^a	0.174 ^a	0.166 ^a	0.171 ^a	0.039 ^a	0.040 ^a
# firms (area), same prod./dest.	0.05 ^a	0.05 ^a	0.054 ^a		0.048 ^a	0.042 ^a		0.010 ^a	
ln (1+# other exported products)		0.37 ^a							
# firms (area)			0.01 ^b						
# employees (area)				0.0002 ^a					
Mean size of exporting firms					0.0001 ^c				
# firms (region), same prod./dest.						0.014 ^a		0.003 ^a	
# firms (France), same prod./dest.						0.008 ^a		0.002 ^a	
# firms (area), same prod.-all dest.							0.008 ^c		0.002
# firms (region), same prod.-all dest.							0.003 ^a		0.0008 ^t
# firms (France), same prod.-all dest.							0.0007 ^a		0.0003 ^c
Observations	644740	645268	645268	645268	645268	645268	645268	645268	645268
R ²	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.08
Year fixed-effects	yes	yes	yes	yes	yes	yes	yes	yes	yes
Firm-country-product fixed-effects	yes	yes	yes	yes	yes	yes	yes	yes	yes
Product-year fixed-effects	no	no	no	no	no	no	no	yes	yes

All regressions are conditional logit estimations except columns (8) and (9) which are linear probability estimations. Standard errors in parentheses, ^a, ^b and ^c respectively denoting significance at the 1%, 5% and 10% levels. Regressions are corrected for clustering at area level. All explanatory variables are time specific and lagged one year with respect to the explained variable. Estimations in columns (8) and (9) are done with product (SH2)-time fixed effects.

Robustness tests

- Use of flows at the product 2-digit level
 - Account of scope economies within the firm
 - Use sub-sample of firms: small/big firms, intensive exporters, multi-product exporters
 - First differencing instead of fixed effects
 - Alternative definition of extensive margin (not just start):
decision to export: dummy variable = 1 if firm exports product k at time t to country j .
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Which spillovers on exports flows ?

Table 14 – OLS on the export volume / Different product-destination spillovers

Model :	(1)	(2)	(3)	(4)
ln (firm's employees)	0.229 ^a (0.059)	0.229 ^a (0.059)	0.229 ^a (0.059)	0.229 ^a (0.059)
ln (firm's TFP)	0.056 ^a (0.019)	0.056 ^a (0.019)	0.056 ^a (0.019)	0.056 ^a (0.019)
ln (total employment in area)	0.865 ^c (0.464)	0.897 ^c (0.470)	0.902 ^c (0.469)	0.899 ^c (0.467)
ln (destination country's imports, product specific)	0.117 ^a (0.021)	0.116 ^a (0.021)	0.117 ^a (0.021)	0.116 ^a (0.021)
# other firms in the area, all products-all destinations	0.002 (0.001)			
# other firms in the area, all products-same destination		0.001 (0.001)		
# other firms in the area, same product-all destinations			0.002 (0.003)	
# other firms in the area, same product-same destination				0.012 ^c (0.007)
Observations	691132	691132	691132	691132
R^2	0.002	0.002	0.001	0.002
Year fixed effects	yes	yes	yes	yes
Firm-Country-Product fixed effects	yes	yes	yes	yes

Standard errors in parentheses, ^a, ^b and ^c respectively denoting significance at the 1%, 5% and 10% levels. Regressions are corrected for clustering at area level. All explanatory variables are time specific and lagged one year with respect to the explained variable.

Weaker evidence of export spillovers on intensive margin

Conclusions

- Export agglomeration economies exist
 - On the extensive margin of trade at firm level...
...but not on the intensive margin of trade
 - Export agglomeration economies are clearly destination and product specific
 - And exhibit a spatial decay within France
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