Smoothing out the Bumpy Road to Export Success: Evaluating Export Promotion Activities in Belgium

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The big picture

Policies that raise firms' involvement in the global economy seem to be a good idea

- Imports:
  - Domestic tariff reductions trigger large productivity increases (China's WTO entry – Brandt et al., 2012)
  - Japanese FDI triggered spread of modern manufacturing (U.S. – Van Biesebroeck, 2003)

- Exports:
  - Learning-by-exporting is more likely for poor countries (sub-Saharan Africa – Van Biesebroeck, 2005)
  - Foreign tariff reductions trigger large export responses (AGOA – Frazer and Van Biesebroeck, 2010)
  - Exports are particularly valuable in a cyclical downturn, when there is spare production capacity and unemployment

- Connecting into global value chains has become vital for survival and growth (Sturgeon and Van Biesebroeck, 2008, 2012)

Export promotion

Can government policy help firms achieve export market success?

- Theory:
  - enter export market if $\omega_{ic} \geq \phi_{cd}^*(\cdot)$
  - with $\phi_{cd}^* = \lambda \left(\dfrac{Y}{Y_d} \right)^{1/\gamma} \left(\dfrac{w_c \tau_{cd}}{\theta_d} \right) (f_{cd} t_{cd}^\sigma)^{1/(\sigma-1)}$
  - $f_{cd} = ?$ (information, contacts, 'ease of doing business',...)

- Evidence:
  - for Canada: positive effect of firm-specific export promotion, especially at intensive margin (Van Biesebroeck, Yu, Chen, 2012)
  - for China: positive effect of locating in a STIP, especially on the quality of exports (Schminke and Van Biesebroeck, 2012)
  - for Belgium? (this study)

This study

- Look at Belgian exporters
  - Exports total about 300 billion Euros in 2008
  - Approximately 85% of GDP
  - Three quarters is destined for E.U. members
  - Key economic sectors are manufacturing and wholesale trade

- Firm-specific export promotion activities
  - Organized in 3 regional agencies
  - We obtained firm-level support information from two of them
  - Credit insurance is provided separately

This study

Key research question:

Do the services offered by export promotion agencies lead to significantly better firm-level export performance?

Follow-up questions:

- On which dimensions? (intensive, extensive,...)
- To which destinations? (new EU members, extra-EU, BRIC,...)
- For which firms? (size, wage,...)
- Which types of services (activities, information, contacts,...)

Lit. – Mixed evidence for 'aggregate' export promotion

- Positive effects on aggregate trade flows from
  - number of embassies/consulates (Rose, 2007)
  - export promotion agency budget (Lederman et al., 2010)

- No effects from
  - Canadian trade missions (Head & Ries, 2010)
  - U.S. states' export promotion budgets on firm-level exports (Bernard & Jensen, 2004)

- Takeaway
  - Detailed information needed for reliable identification
  - Need to take reverse causality seriously

Literature - firm-level support

- Positive effects of export promotion on exports
  - in Peru, esp. at product and destination extensive margins (Volpe Martincus & Carballo, 2008)
  - in Chile, mostly on export volume and no. of destinations (Álvarez & Crespi, 2000)
  - in Colombia, complementary effect of promotion activities (Volpe Martincus and Carballo, 2010)
  - more in this conference

- Related policies also seem to boost exports
  - Export subsidies (Colombia – Helmers & Trofimenko, 2009)
  - Production subsidies (China – Girma et al., 2009)
  - Investment or training grants (Ireland – Görg et al., 2008)
  - Preferential policy areas (China – Schminke and Van B., 2012)

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Data: export support

Brussels Export (2007-2010)

- Support Indicators: Attaché meeting, financial file, Action
- Number of persons participating in meetings
- Assist 200-450 firms per year

FIT (2000-2009)

- Support Indicators: Action, Communication, Question, Subsidy
- Assist 3700-4300 active firms per year
- On average, client firms request assistance 5-6 times per year

Data: export performance & controls

Bel1 firm data (2006-2010)

- The population of Belgian firms that submit annual accounts
- Exclude non-profit organizations and firms with social aim
- Covariates: sector, no. of employees, firm age, wage/worker, capital/worker

NBB trade data (2006-2010)

- By firm-year-product-destination
- Intra-EU trade, collected by Intrastat: firms with EUR 1 mio. total exports per year
- Extra-EU trade, collected by customs: transactions above EUR 1,000 or 1,000kg

Data: descriptive firm statistics

Year	Employees	Wage/worker	Capital/worker	Age	N
(a) All firms with at least one employee					
2006	3.16	31,694	31,337	16.82	108,213
2007	3.16	32,504	32,046	17.02	112,986
2008	3.22	34,009	32,090	17.29	114,691
2009	3.19	35,075	31,745	17.54	117,289
2010	3.55	34,381	30,636	18.39	93,363
(b) Firms using services from FIT					
2006	15.87	42,043	27,158	23.08	2,544
2007	15.94	43,685	29,083	22.94	2,605
2008	15.98	45,817	28,019	22.93	2,680
2009	15.02	47,225	27,738	23.18	2,872
2010	15.47	45,333	27,097	24.05	2,765

Data: descriptive trade statistics

(a) Number of

	exporters	products	destinations	ex-EU dest.
2006	8,557	5.99	5.33	3.09
2007	8,632	6.14	5.38	3.20
2008	8,964	6.41	5.47	3.25
2009	8,779	6.61	5.59	3.26
2010	7,628	7.11	5.98	3.47

(b) Average exports

	total	to newly added destinations	to newly added ex-EU dest.	new ex-EU dest. (by FIT clients)
2006	203,703	203,661	48,617	(230,342)
2007	188,098	187,959	40,522	(228,868)
2008	172,997	172,862	35,881	(211,610)
2009	171,497	171,355	34,158	(191,044)
2010	223,720	223,490	43,905	(203,077)

Methodology

- Estimation of treatment effects: average difference in Y_{it} between the observed outcome of a treated firm and the counterfactual/ hypothetical outcome without treatment
  - Unit of analysis is a firm-year
  - Treatment is "received export support last year" ($w = 1$)
  - Objective: $\tau_{ate} = E(y_1 - y_0)$ or $\tau_{att} = E(y_1 - y_0 | w = 1)$
  - Identifying assumption: $E(y_0 | w = 1, \mathbf{x}) = E(y_0 | \mathbf{x})$
  - With firm-FE: $E(\Delta y_0 | w = 1, \mathbf{x}) = E(\Delta y_0 | \mathbf{x})$
  - Overlap assumption: $\forall \mathbf{x} \in \mathcal{X}, \ 0 < P(w = 1 | \mathbf{x}) < 1$

- $Y_{it} = \gamma D_{it-1} + X_{it}\theta + \lambda_i + \rho_t + \varepsilon_{it}$
  - Matching: add $D_{it-1} \times X_{it}$ interactions
  - Double robust: use propensity score weights
  - Replace γ with $(\gamma_l \operatorname{low}_i + \gamma_m \operatorname{med}_i + \gamma_h \operatorname{high}_i)$

Performance measures

1. Pure extensive margin: Propensity of exporting to...
   - Anywhere
   - intra-EU, periphery, CEE
   - extra-EU, BRIC

2. Intensive margin & extensive product/destination margins, condition either on positive past exports or on no prior exports (rich X_{it} needed for correct identification)
   - Probability of exports to periphery, extra-EU
   - Number of destinations, new destinations, new ex-EU dest.
   - Number of products
   - Total export value, to new destinations, new ex-EU dest.
   - Unit value (price)

3. Estimate average effects for entire sample and separately by size-, wage-, and comparative advantage category

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Pure extensive margin

(Change in the) Probability of exporting, average effect by region

	Belgium	Flanders	Brussels
Any exports	0.010**	0.012**	-0.014
Intra-EU	-0.003	0.000	-0.003
– periphery	0.007**	0.008**	-0.002
– CEE	0.005	0.004	-0.013
Extra-EU	0.013***	0.012**	-0.012
– BRIC	0.010***	0.008*	0.004

*, **, *** refer to significance levels of 10%, 5%, and 1%

Pure extensive margin

Probability of exporting, effects by size-category for Flanders

	micro	small	medium	large
Any exports	0.018**	0.013	-0.005	-0.001
Intra-EU	0.003	-0.005	-0.002	0.032**
– periphery	0.009*	0.004	0.020*	-0.001
– CEE	-0.001	0.007	0.012	0.009
Extra-EU	0.015*	0.018**	-0.003	-0.033
– BRIC	0.012**	0.019***	-0.013	-0.057

The 4 size categories refer to < 10, 10-49, 50-249, and ≥ 250 employees

Pure extensive margin

Probability of exporting, effects by wage-category for Flanders

	low wage	medium wage	high wage
Any exports	0.019	0.015*	0.010
Intra-EU	-0.017***	0.006	0.002
– periphery	0.001	0.017***	0.006
– CEE	0.011	0.003	0.003
Extra-EU	0.036***	0.009	0.008
– BRIC	0.025***	0.006	0.005

Firms are classified in three equally sized groups based on their relative wage per worker compared to other firms in their sector

Pure extensive margin

Probability of exporting, effects by trade-category for Flanders

	net IMP	balanced	net EXP
Any exports	0.013**	0.016***	0.014*
Intra-EU	-0.002	0.002	0.005
– periphery	0.012***	-0.244***	0.002
– CEE	0.000	0.003	0.012*
Extra-EU	0.015**	0.014***	0.009
– BRIC	0.006	0.253***	0.012*

Firms are classified in three groups based on the comparative advantage of their sector

Intensive and extensive margins

(a) by size-category
(b) for Flanders
(c) only firms with no exports in last 2 years

	micro	small	medium	large
Propensity extra-EU	0.020***	0.027***	0.002	-0.002
Number of destinations	0.020*	0.059***	0.037	-0.111
– ex-EU destinations	0.022**	0.042***	0.020	-0.061
Number of products	0.036***	0.053***	0.007	-0.070
Export value (log)	0.213***	0.321***	0.152	-0.623

Intensive and extensive margins

(a) by wage-category
(b) for Flanders
(c) only firms with no exports in last 2 years

	low wage	medium wage	high wage
Propensity extra-EU	0.034***	0.015	0.007
Number of destinations	0.046***	0.025	0.005
– ex-EU destinations	0.038***	0.016	0.001
Number of products	0.042***	0.023**	0.009
Export value (log)	0.393***	0.265***	0.075

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Intensive and extensive margins

(a) average effects
(b) for Flanders
(c) conditioning on...

	any exports ever	EU12 exports $t - 3$ to $t - 1$
Propensity to periphery	0.011**	0.051
Propensity extra-EU	0.015*	0.026
Number of destinations	0.037***	0.090**
– new destinations	-0.001	-0.005
– new ex-EU dest.	-0.001	0.022
Export value	0.032***	0.018
– export price	0.031***	0.015

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Intensive and extensive margins

(a) average effects
(b) for Flanders
(c) for firms exporting to G, F, NL, LUX in last 3 years

	all (N=23920)	no exports elsewhere (N=1511)
Propensity to periphery	-0.005	0.020**
Propensity to CEE	-0.012	0.017**
Propensity extra-EU	0.080*	0.009
Number of destinations	-0.033	0.039**
– new destinations	-0.003	-0.005
– new ex-EU dest.	0.054*	0.000
Number of products	-0.011	0.020

Findings so far

Where is export promotion most effective?

- To penetrate hard-to-reach destinations, i.e. periphery, ex-EU
- For micro & small firms, esp. extra-EU
- For firms that pay below average wages, esp. extra-EU
- To make small and low-wage firms enter export market with more products, in more destinations, and with higher volumes
- Separate treatment limited to "Subsidy": highly significant effects on the export propensity and the number of markets served, but only for micro and small firms
- No clear pattern w.r.t. comparative advantage of the sector
- No effect on newly added destinations for existing exporters