

Flip side of the pollution haven: do export destinations matter?

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WHY

Pollution havens research focuses on source country regulations.

Evidence there has been mixed but

Recently a more convincing empirical proof is found by focusing only on imports from heavy polluting industries and developing countries as a source.

No studies on the importance of destination country regulations.

Why would destination regulations matter?

- ▶ Preferences differ. EU has stronger preferences for environment.
- ▶ Might matter most where abatement costs have highest return, e.g. more polluting industries. *Presented here.*
- ▶ Or consumer preferences via energy labels, energy efficiency of the end products: domestic appliances, cars, light bulbs. *Tested in the paper.*

WHAT

Do destinations of export and different degrees of regulations associated with them matter on a level of a firm?

Research Question: *Whether a firm significantly adjusts its energy using pattern before it starts exporting the next period to either a more regulated area of the more developed region of Europe or a less regulated area of the rest of the world (ROW).*

HOW: METHOD

Firm fixed effects estimation:

$$\left(\frac{\text{Energy}}{\text{Turnover}}\right)_{it-1} = \text{Exporter}_{it} + \text{Controls}_{it-1} + \epsilon_{it-1}$$

Estimations at time t run as well. Results are very similar.

Energy intensity is measured as firm's total energy purchased relative to its turnover.

Controls: ownership dummy, size (total wage bill/employment) and size squared, capital, skill intensity, year and industry (at NACE 3) dummies. Labour productivity in robustness checks.

- ▶ Only interested in switch of exporting from 0 to 1. Sample is trimmed down to include only firms who switch to exporting once in their observed CIP life-time. Those are compared to non-exporters.

HOW: DATA

The Irish Census of Industrial Production (CIP): Annual census of manufacturing, mining and utilities (10 to 41 NACE classes, Rev 1.1). Covers all enterprises with 3 or more people engaged.

Period: 1991-2008.

Focus on Manufacturing Sector.

Destinations

Divide exporters into two general destinations of:

- ▶ Europe: the EU and UK (plus the USA)
- ▶ Rest of the World

Majority rule. Firms whose export share to Europe is at least 60% of their overall export are put into Exporters to Europe group. The same for other regions.

Firms whose majority export destination is changing over time are left out.

RESULTS: ALL FIRMS

	Mean effects
Exporter to EU+USA	0.03863 (0.06896)
Exporter to ROW	0.10584 (0.13528)
Ownership _{t-1}	0.00994 (0.22396)
Size _{t-1}	-0.19054* (0.10181)
Size _{t-1} ²	0.38505* (0.23358)
Capital _{t-1}	-0.12118 (0.17564)
Skill _{t-1}	0.04074** (0.01761)
Observations	13957
Number of firms	2586
R-squared	0.09

Dependent variable: total energy purchase per turnover at time $t - 1$.

All coefficients are standardised.

The model includes year and 3 digit industry dummies and a constant, not reported.

RESULTS: FIRMS IN THE MOST POLLUTING INDUSTRIES

	USA classification	UK classification	EU ETS classification
Exporter to EU, polluting	-0.26640* (0.13741)	-0.33842** (0.16589)	-0.57707** (0.25763)
Exporter to ROW, polluting	0.50526* (0.30590)	0.49078 (0.30984)	1.37616*** (0.10124)
Exporter to EU	0.12776 (0.08580)	0.11690 (0.07608)	0.09398 (0.06890)
Exporter to ROW	-0.07536 (0.11397)	-0.07530 (0.11443)	0.00045 (0.09921)
Ownership _{t-1}	0.01128 (0.22347)	0.01560 (0.22307)	0.01716 (0.22183)
Size _{t-1}	-0.19226* (0.10161)	-0.19066* (0.10161)	-0.18918* (0.10180)
Size _{t-1} ²	0.36702 (0.22952)	0.35544 (0.22852)	0.33227 (0.22620)
Capital _{t-1}	-0.09973 (0.17033)	-0.08916 (0.16875)	-0.06610 (0.16514)
Skill _{t-1}	0.03880** (0.01781)	0.03877** (0.01775)	0.03917** (0.01773)
Observations	13957	13957	13957
Number of firms	2586	2586	2586
R-squared	0.09	0.09	0.09

Dependent variable: total energy purchase per turnover at time $t - 1$.

All coefficients are standardised.

The model includes year and 3 digit industry dummies and a constant, not reported.

MAIN FINDINGS

- ▶ Regulations in destination countries matter too, for firms' energy intensity.
- ▶ The effect is restricted to firms producing within one of the more polluting industries or to firms on a higher end of energy intensity.
- ▶ Those firms significantly reduce their energy intensity when starting to export to a more regulated destination of Europe but not to the ROW.
- ▶ ROW findings are consistent with exporting to developing, non-OECD region.
- ▶ The effect might be due to preferences considerations when starting to export to a more regulated area.