

# Are Exporters Mother Nature's Best Friends?

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# The Relationship Between Trade and Pollution

An illustrative example:

**Table:** Comparing Plant Averages of Exporters and Non-Exporters

	Sales (\$000)	Emp	Prod.	Lbs Per Sale
Non-exporter	\$16,600	104	168,137	0.181
Exporter	\$20,700	132	199,395	0.018

Polluting plants: SIC 28 (Chemical Manufacture) in Ohio

- ▶ Exporters are larger than non-exporters
- ▶ They are also more productive
- ▶ The pollute less per dollar of output

# Literature Review and Contributions

- ▶ Large trade and the Environment Literature
  - ▶ Introduce heterogenous firm trade models
  - ▶ Consider impact of import competition
- ▶ Relationship between productivity and emissions
  - ▶ Distinguish between hypothesized channels
- ▶ Pollution haven hypothesis
  - ▶ Study the impact of import sources on pollution at the industry and plant level

## Plant Data:

Plant level characteristics from the National Establishment Time Series

- ▶ Sales, employees, credit rating, location details, 8-digit SIC industry
- ▶ Export status

Plant level pollution from the EPA's RSEI and TRI data sets.

- ▶ Pounds of emissions, Hazard and Risk Scores

The data cover 12,000 plants over 12 years in 2550 counties and 441 SIC4 digit industries

# Exporting and Importing

- ▶ Exporters pollute around 8% less than non-exporters after controlling for output and industry
- ▶ The most pollution intensive plants exit after increases in import competition
- ▶ Industry pollution per unit of output drops 17% after an export shock
- ▶ The source of imports does not impact this result

# The Relationship between Productivity and Pollution

There are at least 3 possible explanations for the negative relationship between pollution and productivity:

- ▶ More productive firms are more concerned about their long-term liability (Konar and Cohen)
  - ▶ No evidence of this in the data. Hazard and risk scores are higher for exporters
- ▶ Larger firms have a higher profile and a larger incentive to reduce emissions (Arora and Cason)
  - ▶ Large firms do tend pollute less, but more productive large firms pollute less still
- ▶ More productive firms generate less waste of all kinds (Earnhart)
  - ▶ This explanation holds even after controlling for size

# Theoretical Framework Consistent with Empirics

- ▶ A heterogenous firm model similar to Melitz (2003)
  - ▶ Firms differ in productivity, which affects international trade and pollution emissions
- ▶ Introduces pollution negatively correlated with productivity
- ▶ Examines the relationship between export status and emissions
- ▶ Predict the impact of import competition

- ▶ Are Exporters Mother Nature's Best Friends?

Exporters pollute less than non-exporters after controlling for output

- ▶ Import competition leads to the exit of high pollution plants
- ▶ The source of import competition does not have a large impact on emissions
- ▶ Heterogenous plant model consistent with data
- ▶ Data is not rich enough to rule out other explanations