

Welfare Effects of International Trade in Waste

Prakrati Thakur

University of Illinois at Urbana-Champaign | Department of Economics

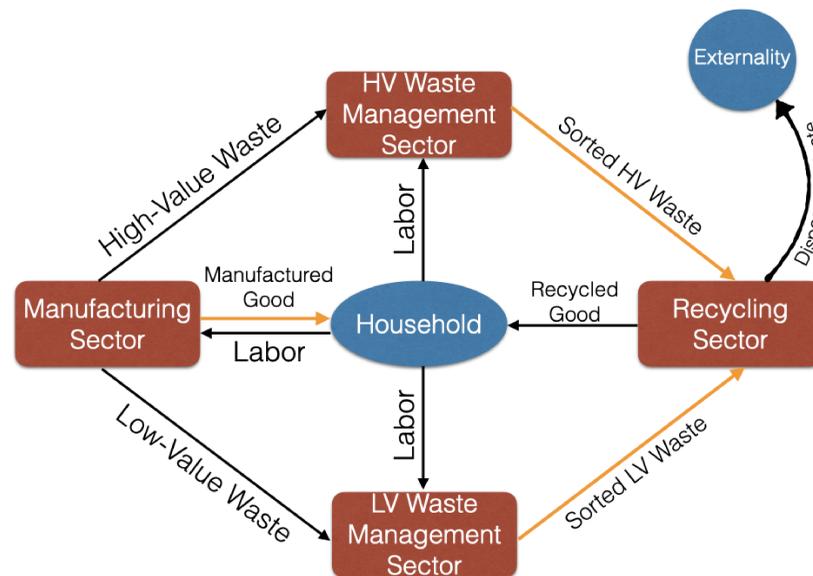
This Paper

- **Motivation:** Waste trade has seen a tremendous growth over past three decades.
- Contentious issue among countries because importing waste creates both benefits and negative externalities.
- **Objective:** Quantify the economic benefits and environmental costs from waste trade.
- **Setup:** Structural gravity framework where generation of waste is a byproduct of manufacturing and waste is an input to recycling.
- **Takeaway:** Waste trade makes countries of all income levels better off but trade in low-quality waste makes middle-income countries worse off.

Model

- Structural gravity model where technological differences across countries drive waste flows.
- Lower income countries specialize in low-value waste while rich specialize in high-value waste.
- Richer countries demand a greater share of high-value waste than low-value waste.
- Environmental costs are captured by combining data on disposal intensity and social marginal cost of waste disposal.

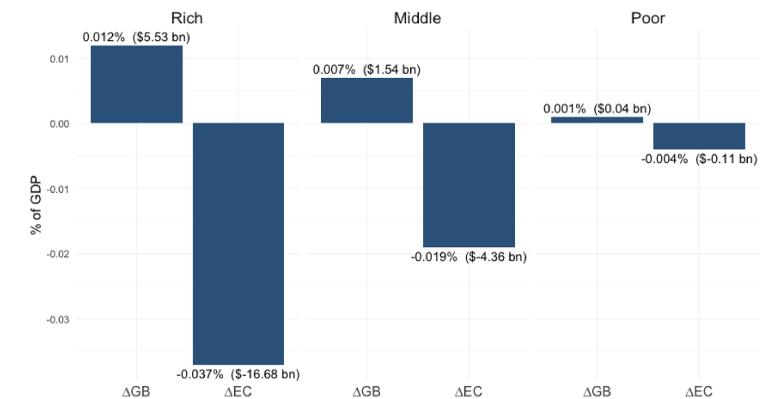
Linkages



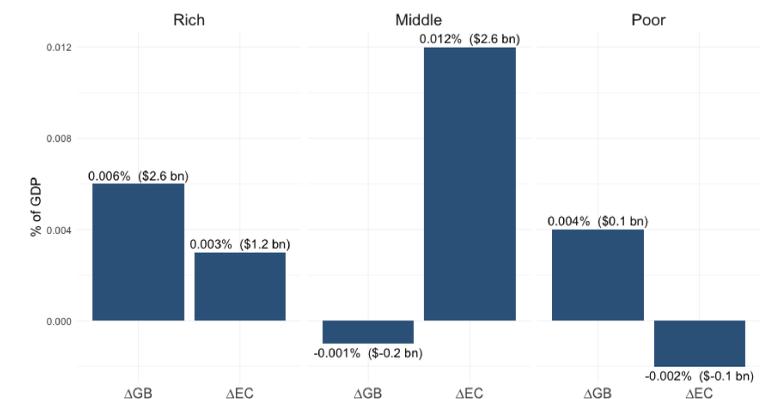
Estimation

- **Challenges:**
 - Disentangle the effect of trade cost from that of trade elasticities.
 - Solve for parameters of three sectors simultaneously.
- **My approach:**
 - Estimate trade elasticities using IV approach.
 - Simulate world economy to estimate rest of the parameters.
 - Trade costs are solved by matching trade flows.

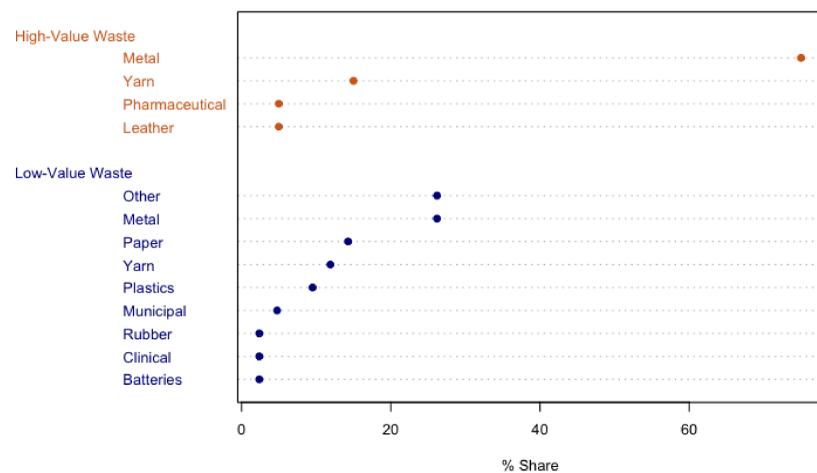
High-Value Waste Trade



Low-Value Waste Trade



Decomposing Waste Flows



Summary Statistics by Waste Type

	Exporter:		Importer:	
	High-Value Waste	Low-Value Waste	High-Value Waste	Low-Value Waste
GDP/capita	22,790	22,575	24,932	20,380
GDP (billion \$)	1,367	1,365	1,630	1,159
GDP/Land (1000 \$/sq. km)	13,388	12,950	19,501	16,624
EPI	75.39	75.19	75.93	72.63

- Exporters of high-value waste have same levels of income and environmental regulation as exporters of low-value waste, on an average.
- Importers of high-value waste have higher levels of income and environmental regulation than importers of low value waste, on an average.

- Existing patterns of waste trade make countries of all income levels better off.
- Trade in low-value waste makes middle-income countries worse off.
- China's 2018 ban made lower income countries including China better off.
- Trade policy can serve as second-best instrument.
- Regulation on low-value waste trade creates an equitable distribution.

