

# Standards and Trade: Empirical Evidence and Case Studies

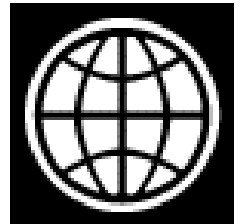


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# Outline and Objectives

- Do standards affect trade?
  - Focus on Bank research – empirical evidence
  
- Developing country case examples
  - Aflatoxin, pesticides, export success
  
- Concluding remarks
  - Policy considerations
  - Research ahead

# Why Standards Matter

- Benefit of standards
  - Quality, information exchange, technology transfer, health, safety
- Technical regulations as protection
  - Non-transparent rules
  - Import specific testing, certification rules
  - “Domestic” science drives rules

# Challenges for Empirical Analysis

- Standards complex and non-transparent
- Scarcity of methodological frameworks
- Data availability

# World Bank Research

- Initial work with gravity model approach
- Leverage existing data sets
- Motivation and framework
  - Empirical analysis – standards and trade
  - Harmonized vs. non-harmonized standards
  - Developing country impact

# Policy Context

- Debate over risk, precaution, trade
  - Food safety, WTO disciplines, use of international standards
- Developing country focus
  - Comparative advantages and interests
- Harmonization of regulation – why not?

# Aflatoxin standards and trade

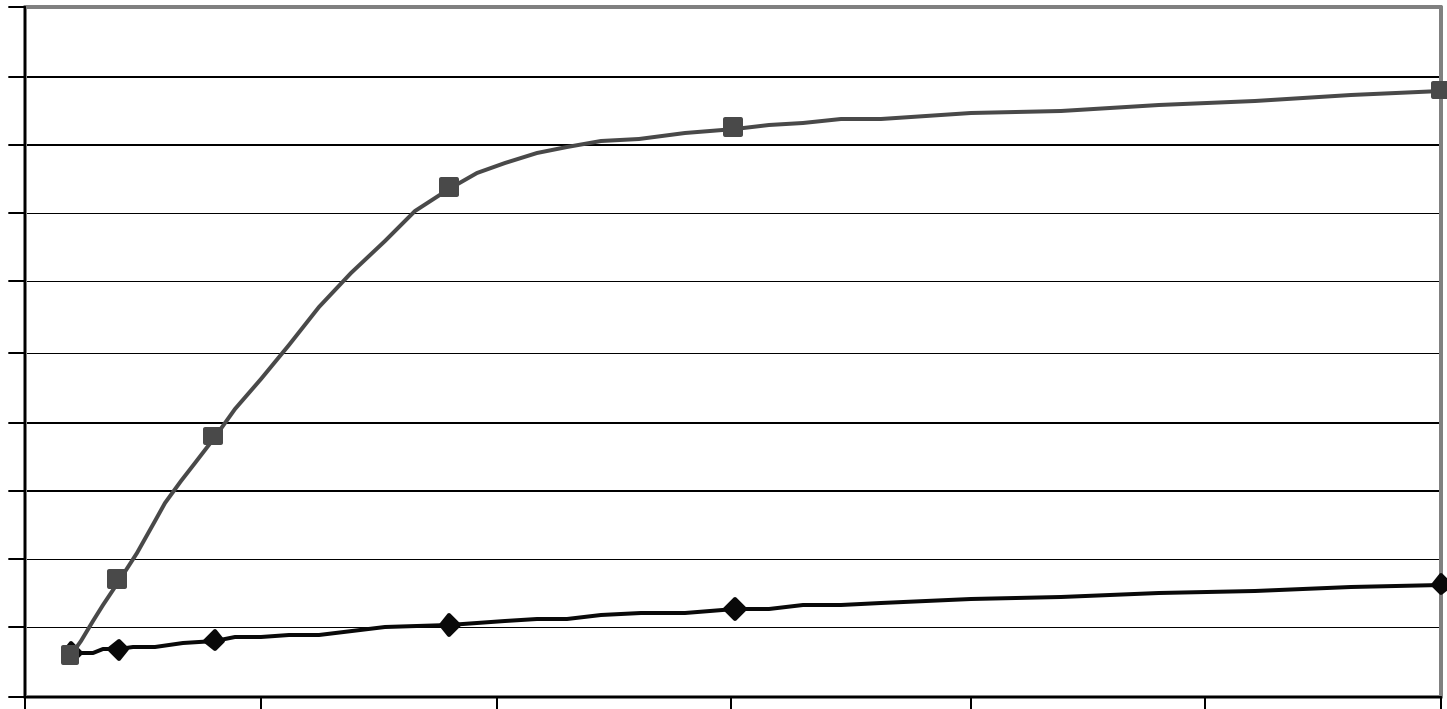
- Data
  - FAO Survey -- JECFA
  - Trade -- UN COMTRADE
  - 15 importing countries and 31 exporters (1989-99)
  
- Cereals, Fruits, Vegetables, Edible Nuts
  
- EU harmonized standard at 2 ppb

# Results

- \$670 million loss to Africa - EU standard on aflatoxin (2ppb)
- Saving 2.3 per billion lives in Europe
- \$38 billion global loss (Europe vs. Codex at 9 ppb)



# Estimated Relationship between Aflatoxin B1 Standards and Trade Flow



# Pesticide Residue Standards

- 1400 pesticides used world-wide
- Bans on most hazardous (DDT etc)
- Chlorpyrifos pesticide
  - Most widely used on bananas

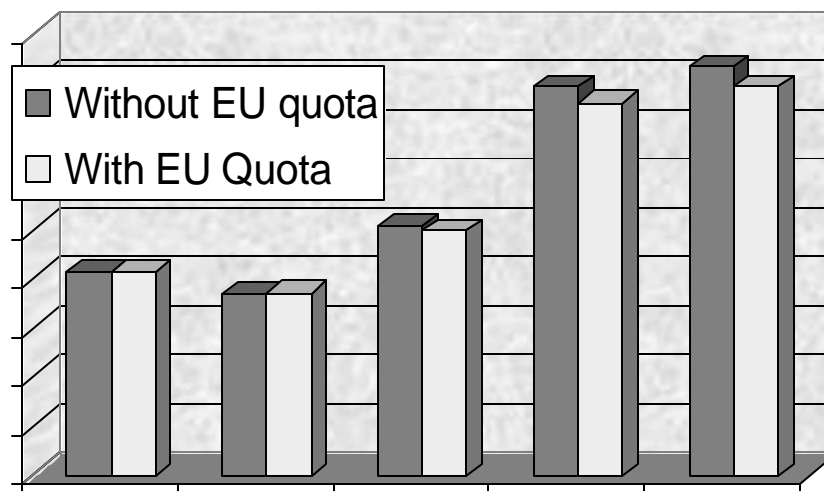
# Context

- Dependency of developing countries on pesticide use
  - 25-30 percent productivity increase
- Health and safety risks
  - On-farm ingestion by workers
  - Environmental discharge of toxic chemicals
  - Dietary intake

# Empirical Analysis

- 11 importers and 19 exporters
  - 1997-99
- Chlorpyrifos MRLs for importing countries (EU 0.05 ppm)
- Does regulatory stringency affect trade?

# Trade Flows under Different Harmonization Scenarios



# Results

- Ten percent increase in stringency
  - 14.8% decrease in banana imports
- EU (0.05 ppm) vs. U.S. limits (0.1 ppm)
  - US\$ 280 mil decline in imports
- Codex standard (2.0 ppm)
  - US\$ 3.5 billion increase in exports

# World Bank TBT Database

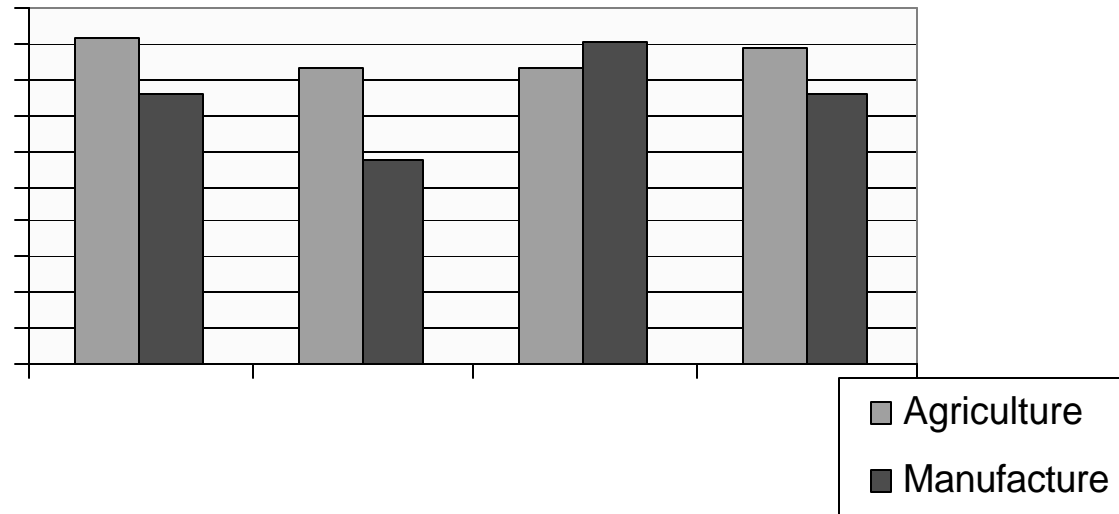
- Investigate impact of technical requirements at the firm level
- Cross country, cross industry statistical analysis
- Survey of 619 firms - 17 developing countries
- Support from U.K. Department for International Development linked to USAID-funded project in Africa

# Research Questions

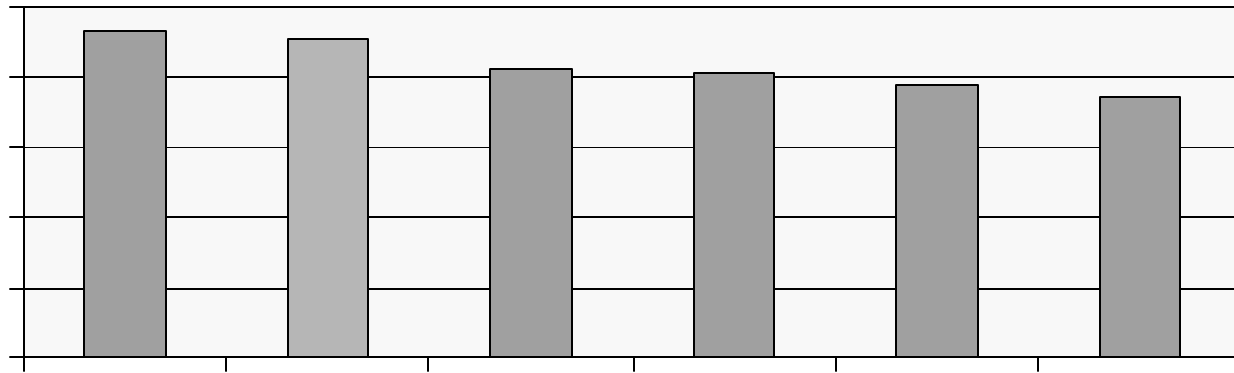
- Compliance costs.....
  - Cost of investment (product redesign, plant upgrades, etc.)
  - Recurrent costs (additional labor and other inputs to maintain compliance)
  
- Impact on exports.....
  - Testing procedures
  - Duplication and market diversification



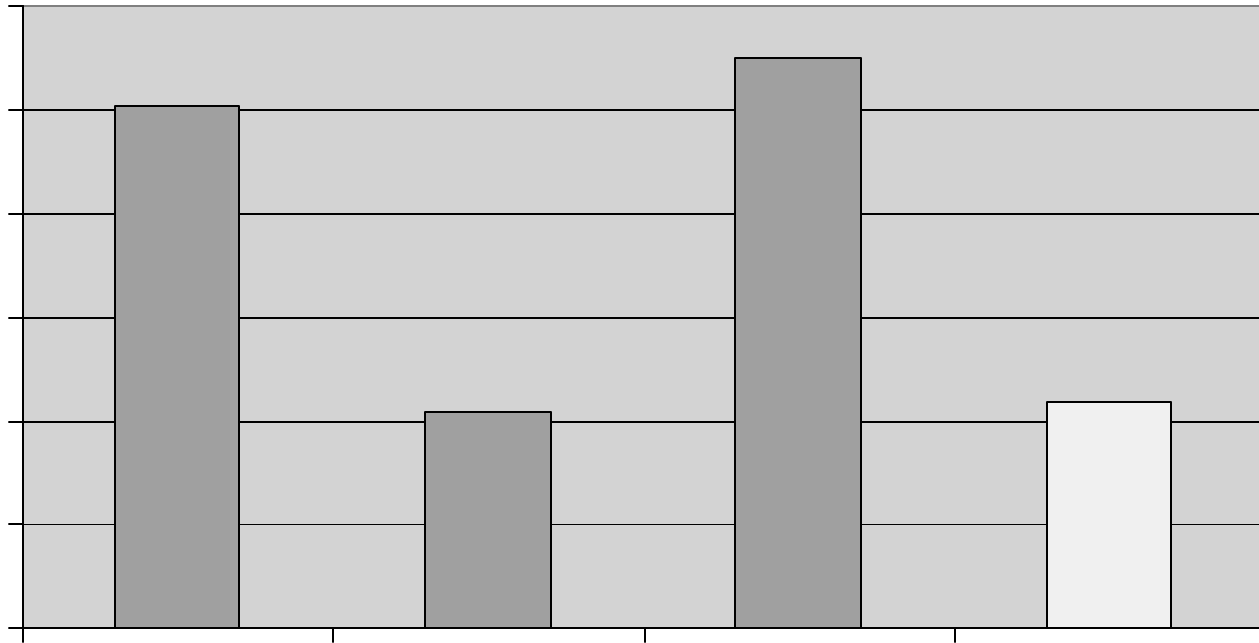
# World Bank TBT Database: Selected Results



# World Bank TBT Database – Factors Important for Export Success in Africa



# World Bank TBT Database – Compliance Costs in Africa



# Empirical Analysis: Examples

- “The costs of complying with foreign product standards for firms in developing countries” Maskus, Otsuki and Wilson (2005)
- “Standards and technical regulations: Do they matter to export success in developing countries?” Chen, Otsuki and Wilson (in process)

# Chen, Otsuki, Wilson

- Data from World Bank TBT Database
- Estimate impact of standards and technical regulations on firms' export performance
- Do technical requirements affect firms' propensity to export and market diversification?

# Chen, Otsuki, Wilson

- Analytical Framework:
- Simple model of a firm's export decisions considering fixed and variable costs of meeting standards.
- Estimate marginal effects of technical requirements on firms' decision to enter export markets with ordered logit model.

# Preliminary Findings

- Standards do affect export share:
  - Testing procedures reduce export share by 9%
  - Lengthy inspection process reduces export share by 4%
  
- Standards do affect market diversification:
  - Quality standards reduce likelihood of exporting to multiple markets by 13%
  - Testing procedures reduce likelihood of exporting to multiple markets by 3%
  - Standards affect market diversification much more for firms which import inputs.

# Policy Considerations

- Continued unilateral regulatory policy – costly
  - Harmonization and convergence a myth?
- Codex and international standards – mandatory
  - Re-negotiate the WTO SPS Agreement
- Mutual Recognition Agreements (MRAs) can expand market access



# Research Ahead

- Data work – time series
- Standards in trade cost context
- Dynamic effects of regulatory change
- Consortium – “Global Standards Analysis Project”

# Thank You

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[www.econ.worldbank.org/projects/trade\\_costs](http://www.econ.worldbank.org/projects/trade_costs)