

Overview of the aggregate data collection and effects of NTMs

Selected findings from the NTM-IMPACT project

NTM-IMPACT Consortium

Presented by Christine Wieck

Organized Session

NTMs, Agricultural and Food Trade, and Competitiveness

Findings from the NTM-IMPACT Project

NTM-IMPACT project

- ❑ Objective: Collection and analysis of NTMs for EU, food-exporting EU-competitor countries, and impacts for LDCs
- ❑ Work groups focusing on:
 - Analytical framework for definition of measures, products, time frame, and methods
 - Public agri-food regulations across 11 countries
 - Compilation of database with regulations
 - Comparative analysis of regulatory heterogeneity
 - Trade impact of NTMs using gravity model
 - Private and public standards addressed in case studies
 - On meat, dairy, F&V NTMs and trade impacts for EU and competitor countries
 - On impacts for LDCs

NTM-IMPACT project

- ❑ Brings together 19 partners from 16 countries
 - Coordinator: G. Henry (CIRAD, France)
 - France, Netherlands, Germany, Belgium, UK, Slovak Rep.
 - US, Canada, Argentina, Brazil, India, Russia, China, Australia, New Zealand, Japan
- ❑ Outreach supported by IPC
- ❑ Co-financed by the European Commission
- ❑ Project web site: <http://www.ntm-impact.eu>

Outline

- Project components:
 - Analytic framework for defining measures and methods
 - Construction of a new NTM database for agri-food trade
 - Measuring regulatory heterogeneity using index
 - Analysis of the trade impact of NTMs using the new database
 - Analysis of the impact of NTMs on product trade clusters
 - Analysis of the impact of private and public standards on LDCs

New NTM database on public regulations

- ❑ Eight product groups identified where EU countries have a considerable export interest
 - Beef, pork meat, cheese, barley, maize, rape, and some F&V
- ❑ 10 regions (+ India)
- ❑ One snapshot in time: 2010

- ❑ Related papers:
 - ❑ Shutes, K., Achterbosch, T., Mraz, M., Burnquist, H. (2011). *NTM data collection (scope and methods) and database setup*. NTM-IMPACT working paper D4.1.
 - ❑ Shutes, K., Mraz, M. (2011). *Description of data base for NTM-IMPACT*. NTM-IMPACT working paper D4.2.

New NTM database on public regulations

- 10 categories of measures considered

Numerical measures	Qualitative measures
Pesticide maximum residue levels	Labeling requirements
Veterinary drugs maximum residue levels	Plant health measures
Microbiological levels	Animal health measures
Contaminant levels	Traceability requirements
Additives	Conformity assessment

- Classification of measures in line with MAST classification

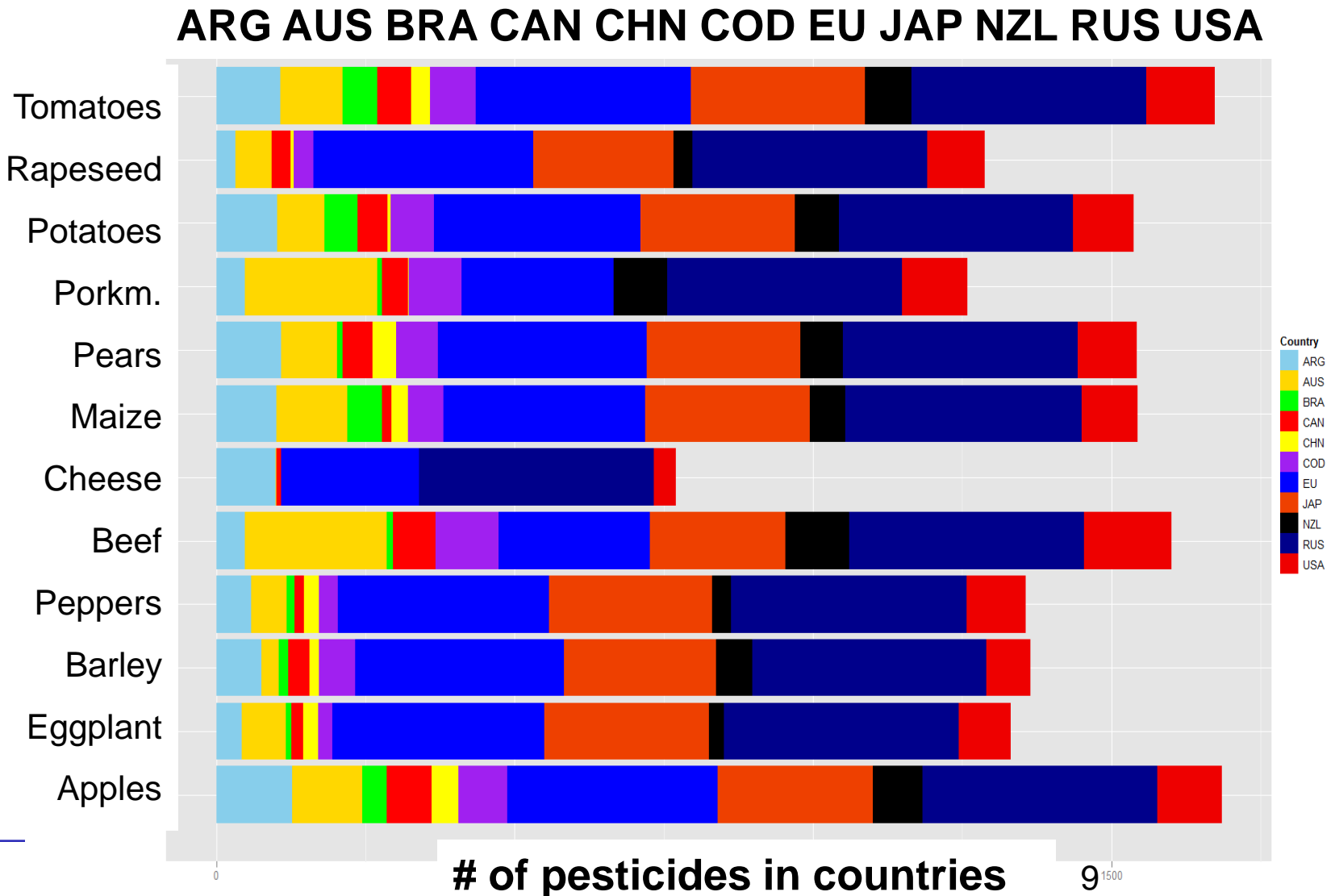
Database contributors

Region	Data collector
European Union	Dutch Agricultural Research Institute (LEI), Slovak Agricultural University
Argentina	Instituto Nacional de Tecnologia Agricola
Australia	University of Sydney
Brazil	University of Sao Paulo
Canada	Université de Laval
China	Centre for Chinese Agricultural Policy
Japan	Osaka University & Keio University
New Zealand	University of Otago
Russia	Institute for Agricultural Market Studies
United States	Virginia Tech University
Codex, OIE	University of Bonn, LEI

Database features

- ❑ For numerical measures (e.g. MRLs): use of existing data (EU, USDA, ...)
- ❑ Qualitative measures: specific online questionnaires with associated keywords
- ❑ Logbooks & commenting stored in database
- ❑ Stored in MS Access
- ❑ Link to EU Market Access Database foreseen

Example: # of pesticides in countries + Codex



Example: traceability questionnaire

5. Does your country have a mandatory system for traceability?

- For Beef products
- For Pork products
- For Fruit products
- For Vegetable products
- For Cereal products
- For Dairy products

6. Which parts of the supply chain need to be recorded (not necessarily in paper form)?

Check one or more of the appropriate boxes

- One step towards the consumer
- One step towards the previous supplier
- Two steps towards the consumer
- Two steps towards the previous supplier
- The whole supply chain
- No traceability requirements

7. Do your country's traceability requirements cover:

- Agricultural production inputs (feed)
- Agricultural production inputs (not feed but e.g. fertilizer)
- Transport intra business
- Veterinary medicine products

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Measuring heterogeneity in NTMs

- ❑ Measurement and comparability of NTMs is often difficult, particularly for non-numerical standards
- ❑ Quantification of differences in NTMs across countries using an index: Heterogeneity index of trade (HIT)
- ❑ HIT facilitates aggregation of diverse regulations involving different kinds of information
 - Including binary, ordered, and quantitative data

- ❑ Related paper:
- ❑ Rau, M.-L., Shutes, K., Schlueter, S.W. (2010). *Index of Heterogeneity Requirements in International Agri-Food Trade*. NTM-IMPACT working paper D5.1.

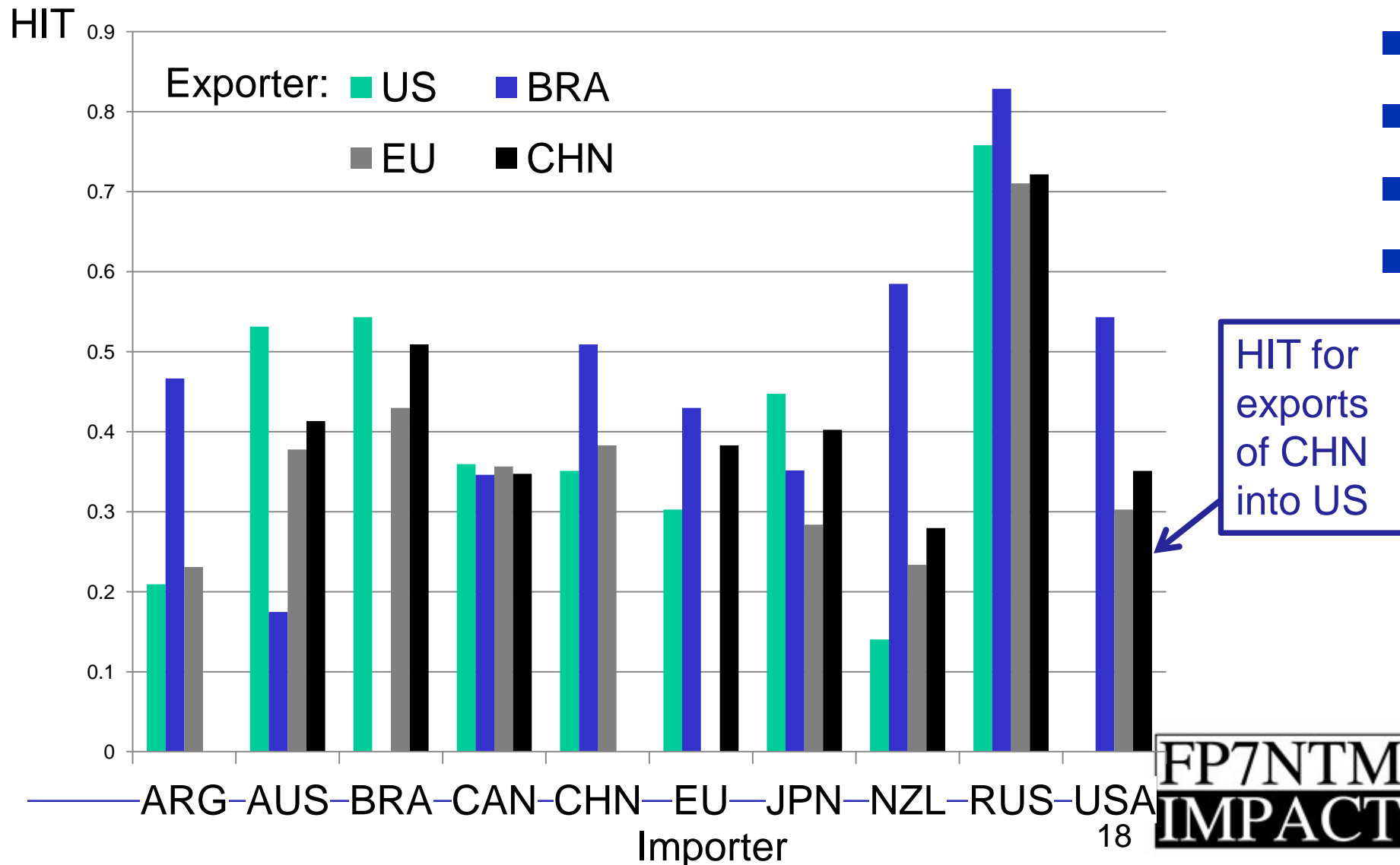
Comparing different types of measures

	Binary	Ordered	Quantitative
Type of measure	Rule based calculation	Rank based qualitative or quantitative information	Numerical elements
Example	EU regulates (1) and Australia does not regulate (0)	EU imposes the tightest labeling requirements (5), US is average (3) and Mexico has the most lenient requirement (1)	Maximum residue levels of a specific substance for a specific product

(Dis-)similarity of specific measures

- ❑ Gower index (1971) is used
- ❑ => Bilateral comparison of regulations regarding similarity
- ❑ => (Weighted) aggregation of bilateral similarity to overall index (HIT)
 - For specific classes of regulations (e.g. pesticide MRLs, or traceability)
- ❑ Characteristics of the index (HIT):
 - Overall index (HIT) is bounded between zero (identical regulations) and one (maximum dissimilarity)
 - HIT is bilateral and specific wrt to trade direction
- ❑ Allows to „slice“ the data in every direction

Traceability requirements for apples: comparison across countries



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Analyzing the impact of heterogeneity on trade flows

- Specification of gravity models that include these heterogeneity index
- Bilateral trade between EU27, Argentina, Australia, Brazil, Canada, China, Japan, New Zealand, Russia, and the US

- Related paper:
- Gervais, J.P., Christian Goetz, Bruno Larue, Tsunehiro Otsuki, Marie-Luise Rau, Karl Shutes, Christine Wieck and Niven Winchester (2011): *The impact of regulatory heterogeneity on agri-food trade*. NTM-IMPACT working paper D5.2.

Gravity analysis specification

$$\ln x_{ij} = \alpha_0 + \ln prod_i + \ln prod_j + \alpha_i + \alpha_j + \delta D_{ij} + \varepsilon_{ij}$$

□ where

- x_{ij} is the log of exports from i to j (HS6 product level)
- $prod$ is log of production in region i and j (HS6)
- α are exporter and importer fixed effects
- D_{ij} is a matrix of trade cost determinants (distance, applied tariffs (HS6), language, HIT)

□ Different groupings of products tried: meat, cereals, F&V, plant, animal

□ Different estimation methods used (OLS, PPML, HMR, 2-stage Heckman)

Gravity analysis specification

- Up to 13 heterogeneity indexes included
 - Additives, contaminants, pesticide MRLs, veterinary drugs MRLs
 - Traceability, product, process, plant, veterinary, monitoring, certification & labeling requirements
 - Conformity assessment requirements

Results

Product level	Plant products
Method	PPML
Dependent variable	Trade flow
Number of observations	2625
DISTANCE	-0.68***
PRODUCTION EXPORTER	0.49***
COMMON LANGUAGE	-1.54*
APPLIED TARIFF	-0.2**
ADDITIVES	0.33***
CERTIFICATION	1.27***
PLANT REQUIREMENTS	1.12**
PESTICIDE MRLS	-1.29***
CONTAMINANTS	-0.36***
LABELLING	-1.31***
CONFORMITY ASSESSM.	-1.36*
APPL. TARIFF x LABELLING	1.05***
APPL. TARIFF x PLANT REQU.	-1.20**

- Not significant:
 - Traceability
 - Monitoring
 - Constant
 - Importer production

Conclusions

- ❑ NTM database collected under the NTM-IMPACT project provides a rich dataset for future analysis
- ❑ Aggregation of NTMs using heterogeneity indices provides new impetus for comparisons across country pairs and products of NTMs
- ❑ The current definition of regulatory heterogeneity may need further improvement
 - ❑ => Considering stringency and/or costs of compliance
- ❑ The trade impacts of heterogeneity of regulations across products and aggregation levels are still difficult to identify