

Non-Tariff Measures Trickling through Global Value Chains

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Conference on European Economic Integration (CEEI) 2017

A modern take on structural reforms – past and future challenges for CESEE and Europe at large
Session: How can structural reforms serve integrated production networks and mitigate protectionist threats?

November 20-21, 2017, Vienna

This paper was produced as part of the project "Productivity, Non-Tariff Measures and Openness" (PRONTO) funded by the European Commission under the 7th Framework Programme, Theme SSH.2013.4.3-3 "Untapped Potential for Growth and Employment - Reducing the Cost of Non-Tariff Measures in Goods, Services and Investment", Grant agreement No. 613504.

Motivation

- International linkages imply a number of ‘spillover’ effects
 - R&D spillovers, business cycle spillovers, inflation spillovers, etc.
- Spillovers from trade impediments studied less so far
 - Casual evidence: Imposing tariffs on car components implies higher costs for car producers and higher prices for consumers
- In international production networks “product standards” become more and more important
- Product standards and regulations are an important (and debated) issue in trade negotiations
 - Consumer safety issues, environmental protection, health standards, etc.

Contribution of this research line

- Construction of database capturing non-tariff measures (NTMs)
 - Panel dimension
 - Intensity of NTMs (number of NTMs)
- Estimation of “ad-valorem equivalents” of NTMs
- Identify channels via NTMs (measured via AVEs) trickle through GVCs
- Studying impacts on industrial performance of NTMs (via GVCs)
 - Labour productivity
 - Export performance
 - Product quality

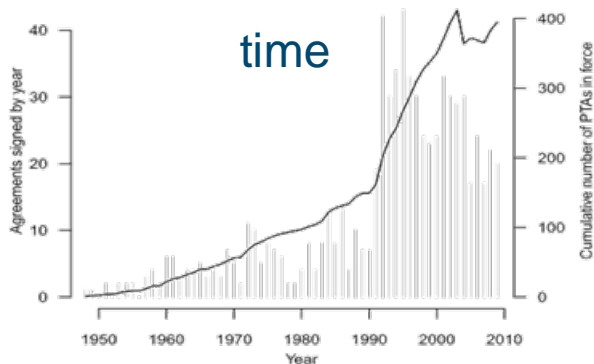
Papers

- Ghodsi, M., J. Grübler, O. Reiter and R. Stehrer (2017), *The Evolution of Non-Tariff Measures and their Diverse Effects on Trade*, wiiw Research Report 418, May 2017.
- Ghodsi, M., J. Grübler, and R. Stehrer (2016), *Import Demand Elasticities Revisited*, wiiw Working Paper 132, November 2016.
- Ghodsi, M., J. Grübler, and R. Stehrer (2016), *Estimating Importer-Specific Ad Valorem Equivalents of Non-Tariff Measures*, wiiw Working Paper 129, September 2016
- Ghodsi, M., and R. Stehrer (2017), *EU Trade Regulations and Imports of Hygienic Poultry*, wiiw Working Paper 135, April 2017
- Ghodsi, M. and R. Stehrer (2017), Quality impacts of NTMs, in progress.
- Ghodsi, M. and R. Stehrer (2017), Non-tariff measures trickling through global value chains, in progress.

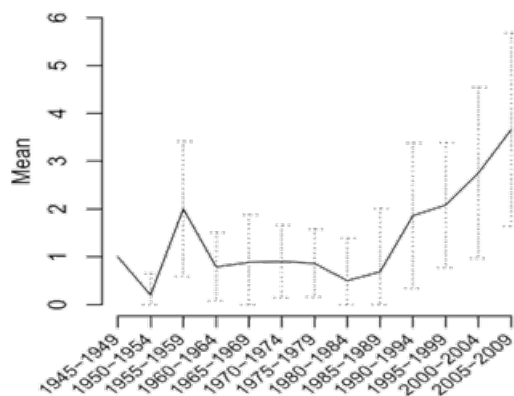
The increasing importance of non-tariff measures

The Political Economy of NTMs

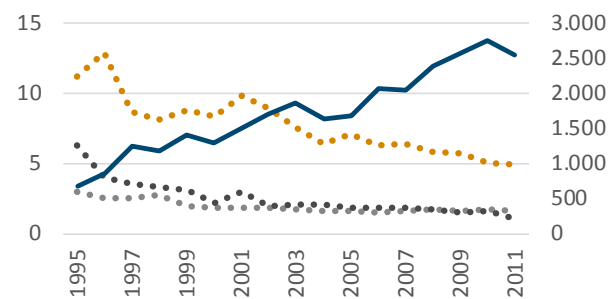
Number of PTAs over time



Depth of PTAs over time



Trends in Tariffs and NTMs



- United States
- Simple avg. over all countries
- Germany

Note: Applied tariff rate, weighted mean, all products (%)

Sources: WTO I-TIP (NTM data), World Bank (WITS tariff data), wiiw calculations. Dür et al, 2014

(Number and Depth of PTAs).

What are NTMs?

“Non-tariff measures (NTMs) are policy measures, other than ordinary customs tariffs, that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both.” (UNCTAD,)

Non tariff measure classification by chapter

- A: Sanitary and phytosanitary measures**
- B: Technical barriers to trade**
- C: Pre-shipment inspection and other formalities
- D: Contingent trade-protective measures
- E: Non-automatic licensing, quotas, prohibitions and quantity-control measures other than for SPS or TBT reasons
- F: Price-control measures, including additional taxes and charges
- G: Finance measures
- H: Measures affecting competition
- I: Trade-related investment measures
- J: Distribution restrictions
- K: Restrictions on post-sales services
- L: Subsidies (excluding export subsidies under P7)
- M: Government procurement restrictions
- N: Intellectual property
- O: Rules of origin
- P: Export-related measures

Examples of NTMs

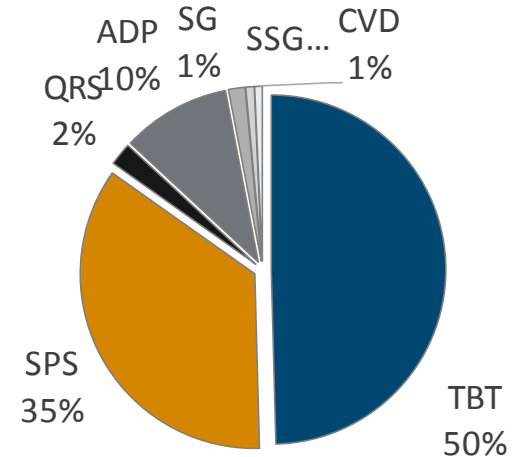
- Sanitary and phytosanitary measures (SPS)
 - ~30% of NTM notifications
 - Bilateral SPS measure of the EU blocking the import of dried beans from Nigeria due to pesticide residues at levels exceeding the reference dose as stated by the European Food Safety Authority
[WTO Document: G/SPS/N/EU/131, 29 June 2015]
 - Measures to prevent the spread of transmissible diseases, such as spongiform encephalopathies
[WTO Document: G/SPS/N/EU/67, 4 March 2014]

- Technical Barriers to Trade (TBT)
 - ~45% of NTM notifications
 - Energy labelling requirement for storage cabinets, including those used for refrigeration. The stated aim of the EU is to pull the market towards more environmentally friendly products by providing more information to end-users.
[WTO Document: G/TBT/N/EU/178, 28 January 2014]

Non-tariff measures (NTMs)

- Data collected from WTO trade notifications WTO I-TIP
 - and harmonised ...
- 15 out of 16 classifications concern imports
- thereof 3 are technical in nature:
 - TBT... technical barriers to trade
 - SPS ... sanitary and phytosanitary measures
 - Pre-shipment inspection and other formalities
- thereof 12 are non-technical measures:
 - antidumping (ADP)
 - countervailing Duties (CVD)
 - (special) safeguards (SG)
 - quantity control measures (e.g. quotas, licensing) (QRS)
 - ...
- Specific trade concerns (SPS & TBT)

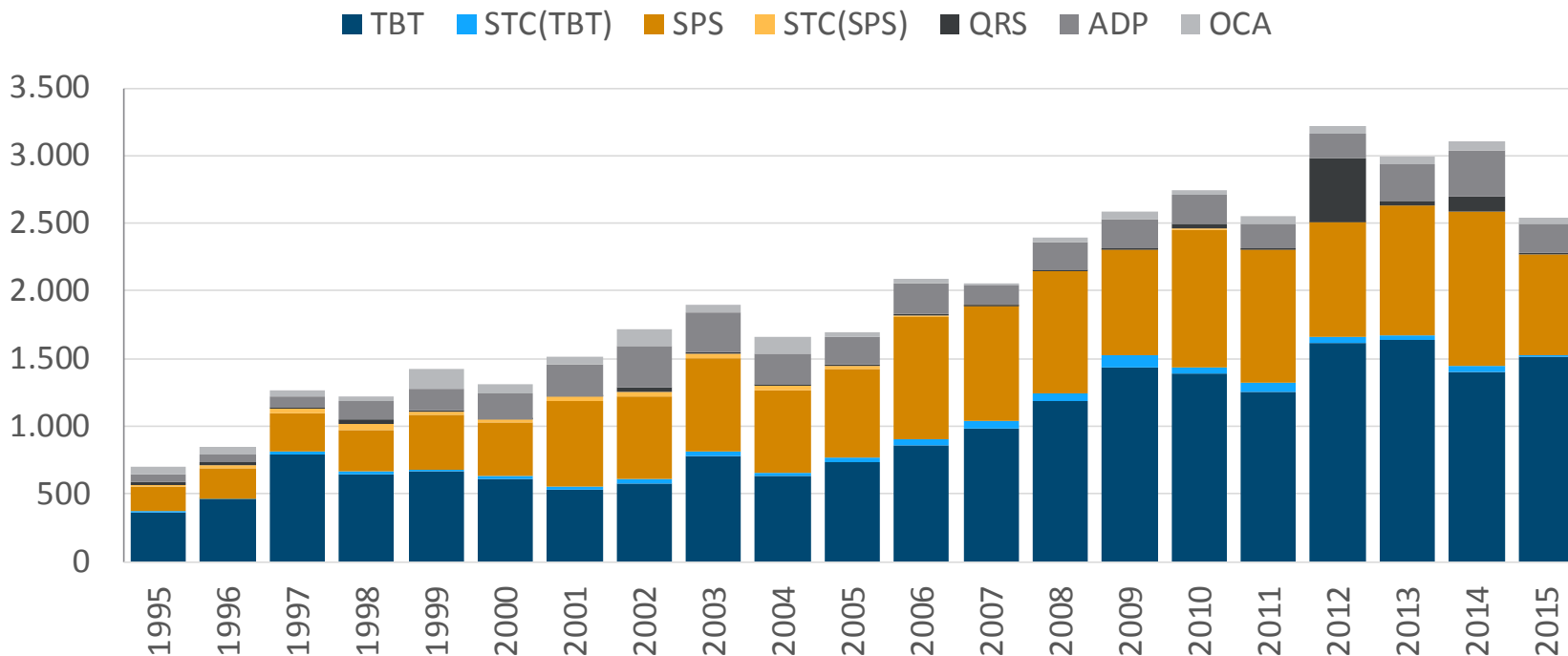
Other
Counteracti
measures
(OCA)



Note: Total number of notifications (37,982) to the WTO between 1979 and March 2015; Graph excludes 899 Specific Trade Concerns.

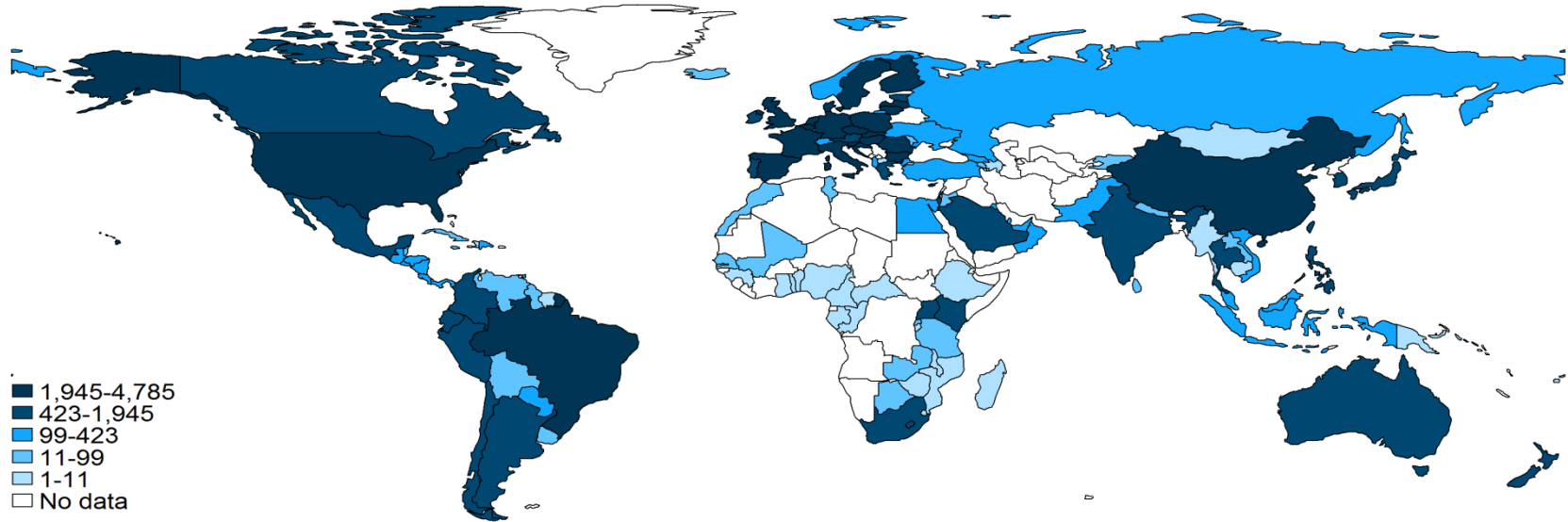
Sources: UNCTAD, 2013 (Classification), WTO I-TIP (NTM data), wiiw calculations.

NTM notifications over time



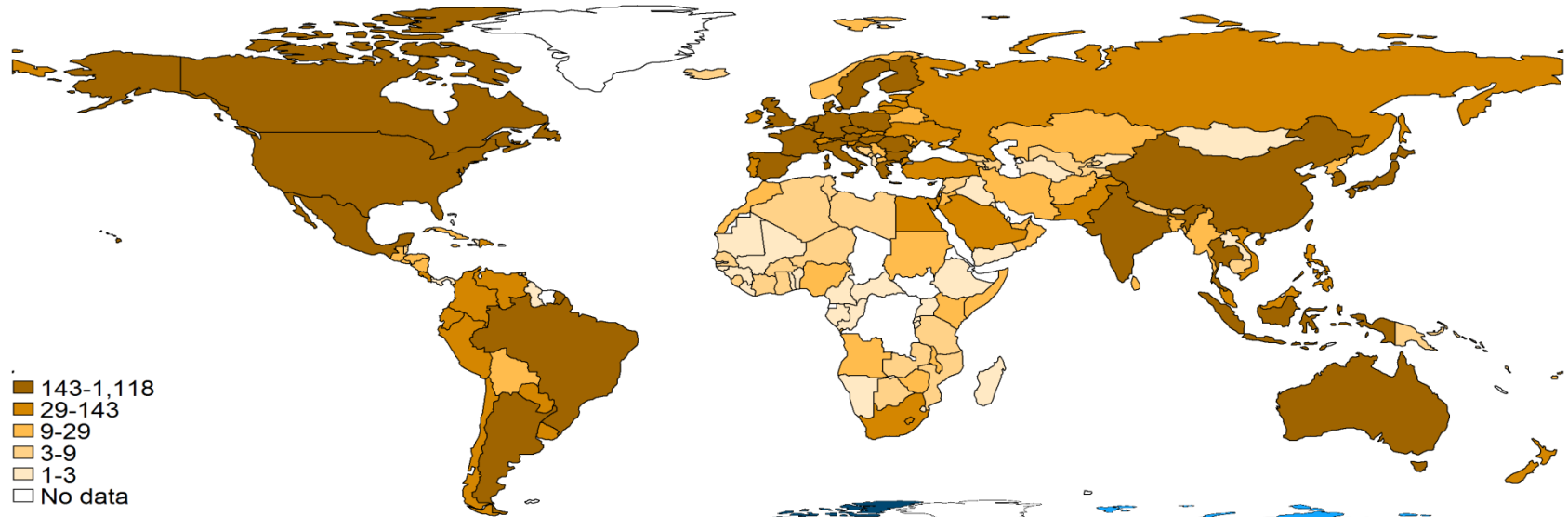
Source: Ghodsi et al. (2017)

NTM notifications by imposing country

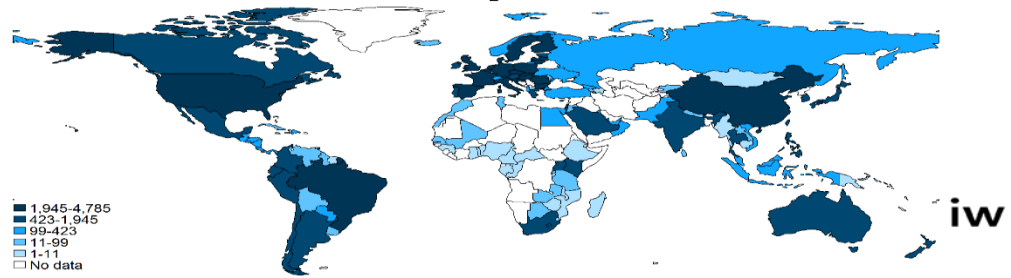


Source: Ghodsi et al. (2017)

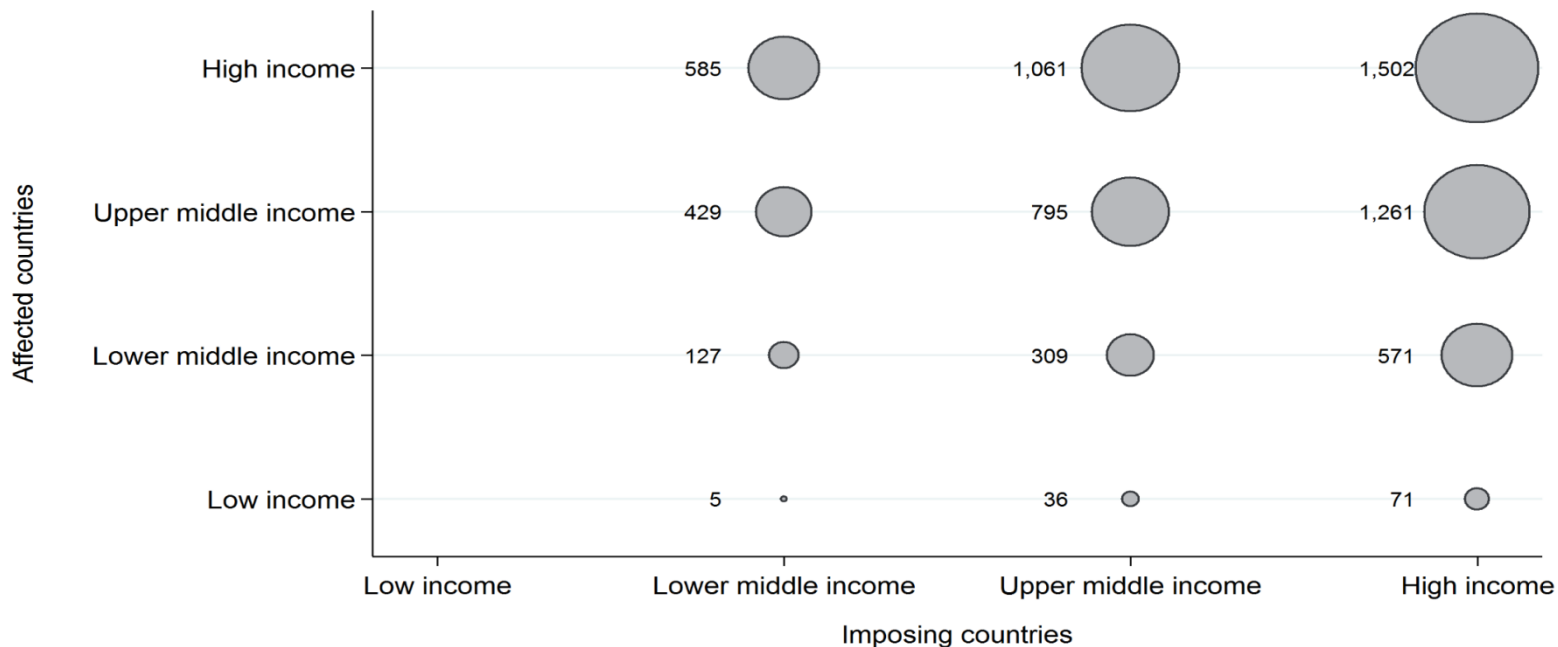
NTM notifications by affected countries



Source: Ghodsi et al. (2017)

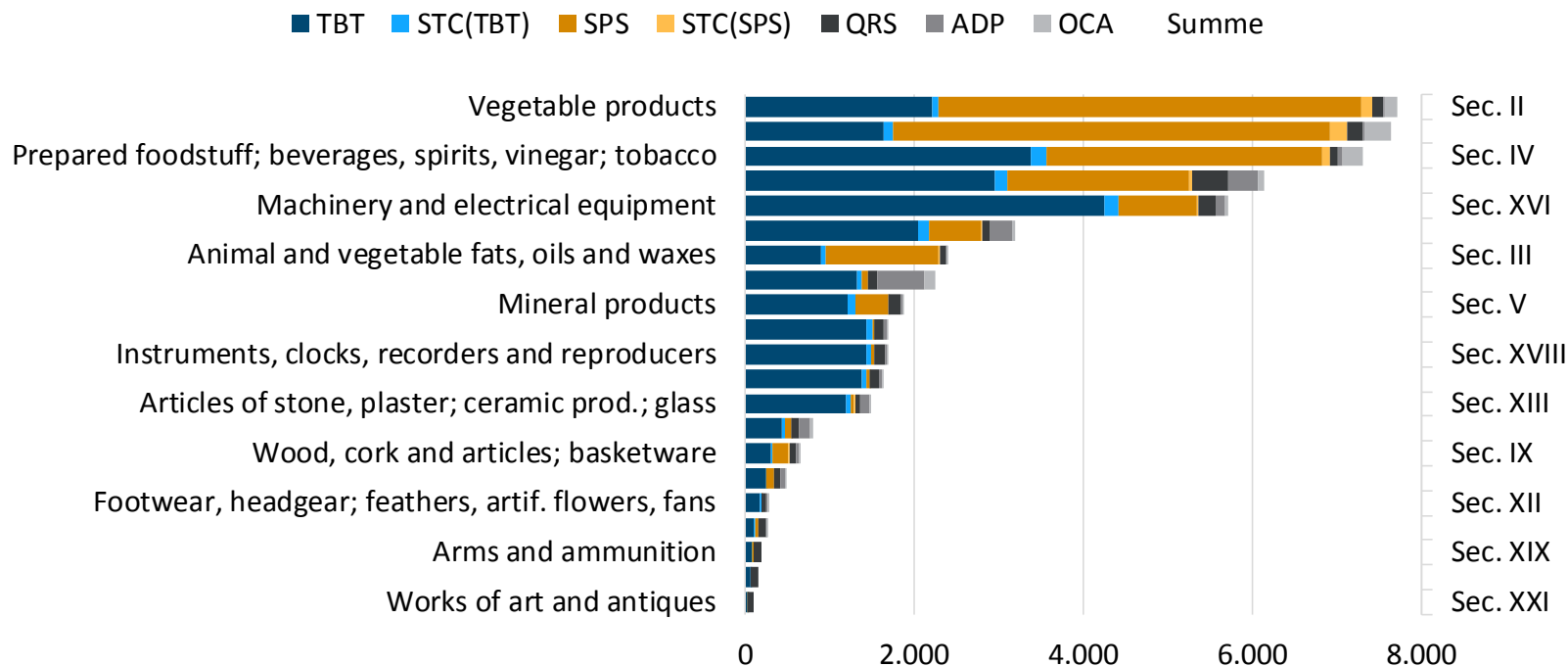


NTM notifications by income groups



Source: Ghodsi et al. (2017)

NTM notifications by product groups



Source: Ghodsi et al. (2017)

The impact of non-tariff measures on trade

Ad-valorem equivalents (AVEs) of NTMs

or: How to make NTMs directly comparable to tariffs?

	Price gap method	Indirect Approach
What?	Deriving AVEs from an analysis of the price wedge due to the implementation of NTMs	Deriving AVEs with a Gravity estimation approach from the impact on import quantities and import demand elasticities
Who?	<ul style="list-style-type: none"> • Dean et al., 2009 • Nimenya et al., 2012 • Cadot and Gourdon, 2015 	<ul style="list-style-type: none"> • Kee et al., 2009 • Bratt, 2014 • Beghin et al, 2014
Issues	<ul style="list-style-type: none"> › Necessity to compare different prices along the production and supply chain › Neglect of product quality differences › Price data availability usually restricts to few countries for a small set of products 	<ul style="list-style-type: none"> › Based on import demand elasticities, which are themselves estimates › Neglect of product quality differences



- New data set (WTO I-TIP complemented by Ghodsi et al)
- Types of NTMs
- Intensity Measure for NTMs
- Using a panel structure

Method

- Estimation of import elasticities (Ghodsi and Stehrer, 2016)
- Gravity estimation to get effect of NTM on trade flows

$$(1) \ln(m_{ih}) = \beta_{0h} + \beta_1 \ln(1 + t_{ijht_{-1}}) + \sum_{n=1}^{N-1} \beta_{2n} NTM_{nijht_{-1}} + \sum_{i=1}^I \beta_{2n'i} \omega_i NTM_{n'ijht_{-1}} + \beta_3 C_{ijht_{-1}} + \omega_{ijh} + \omega_t + \mu_{ijht}$$

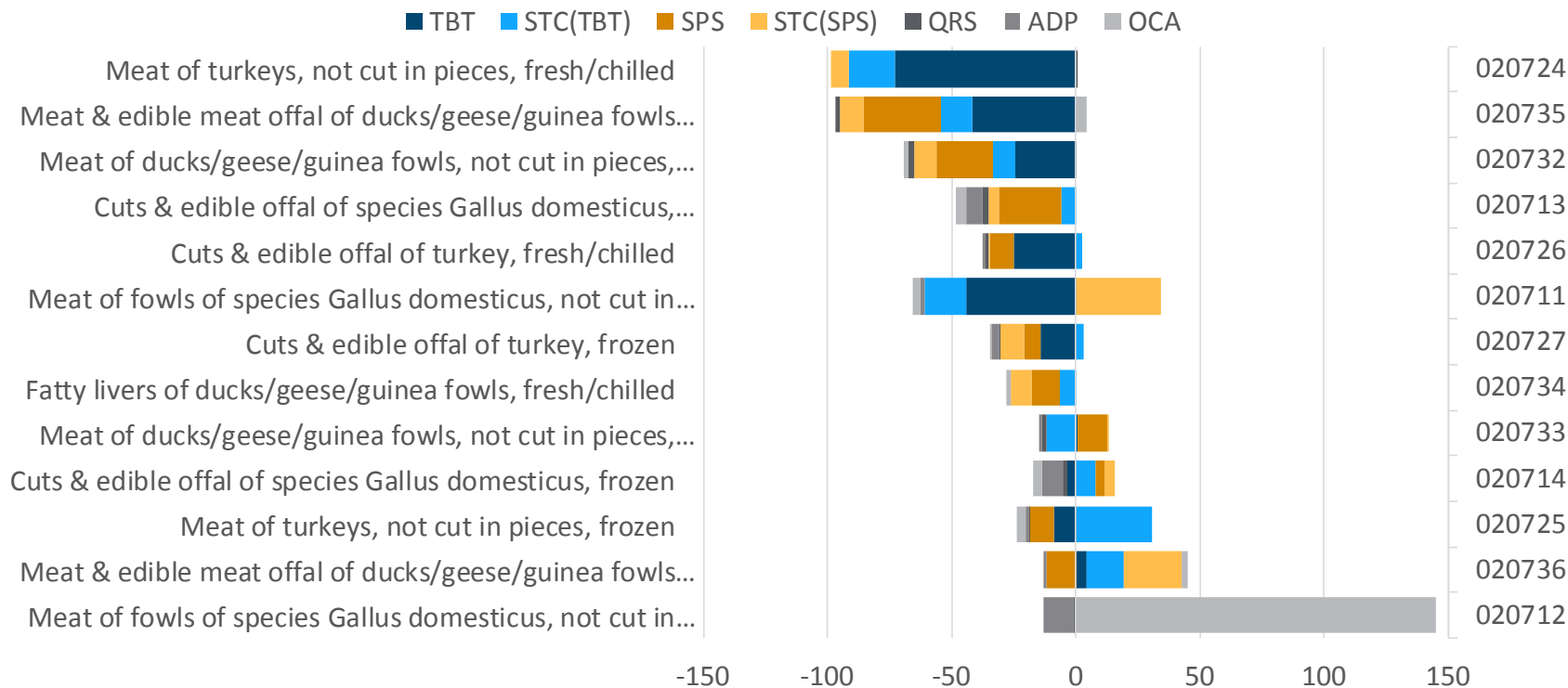
$\forall h; \forall n, n' \in \{ADP, CVD, SG, SSG, SPS, TBT, QRS; STC_{SPS}, STC_{TBT}\}$ where $n' \neq n$

➤ Various robustness checks (Heckman selection, etc.)

- Transformation to AVEs: $\frac{\partial \ln(m_{ih})}{\partial NTM_{ih}^n} = \frac{\partial \ln(m_{ih})}{\partial \ln(p_{ih})} \frac{\partial \ln(p_{ih})}{\partial NTM_{ih}^n} = \varepsilon_{ih} AVE_{ih}^n$

$$AVE_{ih}^n = \frac{e^{\beta_{2ni}} - 1}{\varepsilon_{ih}}$$

Example: Trade impacts on chicken products



Source: Ghodsi et al. (2017)

NTMs \neq NTBs

*“TBT/SPS measures do not unambiguously increase or decrease trade. In general, TBT/SPS measures have positive effects for more technologically advanced sectors, but negative effects on trade in fresh and processed goods. As economic theory suggests, the introduction of a new TBT/SPS measure yields a **trade-off** between **higher costs of adaption** to new requirements for producers and **lower information costs for consumers**, who can be confident about the quality of the product in question.”* (WTO (2012), World Trade Report)

- NTMs should not be seen as “trade costs”, implying that removal of those will – similar as tariffs in standard trade models – bring further beneficial effects (‘welfare gains’)
 - NTMs are often important and beneficial itself as e.g. safety standards, environmental protection, rules, etc.
 - NTMs can also lead to reduction of trade costs (e.g. due to harmonisation)
- Related research shows that “Ad-Valorem Equivalent (AVE)” of NTMs are in almost 50% of cases negative, i.e. trade enhancing
 - Bratt (2014); Beghin et al. (2014); Ghodsi et al. (2017)

The impact of non-tariff measures in GVCs

Considering the effect of NTMs in GVCs makes it even trickier

What's the impact of a NTM (TBT, SPS,...)

- imposed by the EU
- on imports from goods produced by the Chinese electrical equipment industry
- imported from the Austrian machinery industry
- on the performance of the Slovak Republic automotive industry?

Impacts of NTMs on ‘competitiveness’ via GVCs

- Direct protectionism effect of trade policies in favour of domestic industry
 - less competition >>> lower productivity (growth)
 - ‘selection effect’: productivity threshold is lower for domestic firms to survive >>> average productivity is lower
 - Higher production costs >>> lower competitiveness
- Trade policy measures that the industry is facing while exporting to other destinations
 - Selection effect leading to higher productivity
- Indirect trade policy effects accumulated through backward linkages
 - direct and indirect (via backward linkages) cost effect on all using industries (and using industries from using industries, ...)
 - Cost effect >>> lower competitiveness
 - Lower costs (standardisation) >>> higher competitiveness
 - Higher costs, lower varieties of imports
 - selection effect might lead to higher productivity
 - quality of imports is rising might lead to higher productivity (Ghodsii and Stehrer, 2016)

Methodology

- Estimation of bilateral import elasticities at 6-digit product level
- Estimation of bilateral impact of NTMs at 6-digit product level
- Cumulative tariffs and ad-valorem equivalents in GVCs

Accounts for backward linkages across products and countries by industries

Having J country-sectors and considering backward linkages using WIOD

$$\text{CumBRI} = \left[\mathbf{e} \times \mathbf{B} \times \sum_{n=0} \mathbf{A}^n \right]' = [\mathbf{e} \times \mathbf{B} \times [\mathbf{I} - \mathbf{A}]^{-1}]'$$

where \mathbf{A}^n is the period-averaged of JxJ matrices of technical coefficients, \mathbf{e} is a row vector of ones, \mathbf{B} is a JxJ matrix of element-by-element multiplication of technical coefficients and tariffs $\mathbf{B} = \mathbf{A} \times \mathbf{T}$

Descriptive Results

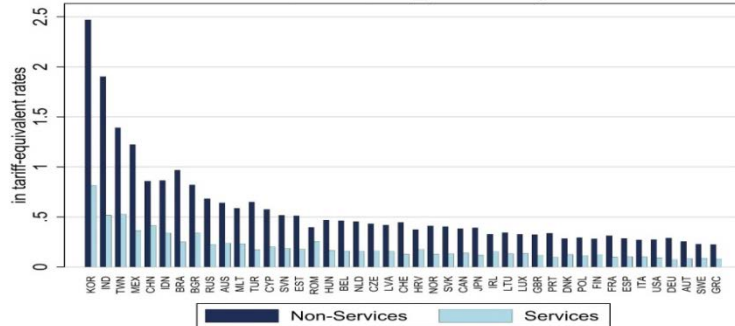
Ad-valorem equivalents of NTMs
(simple averages)

n_{ijh}	Sample Mean	Mean AVE>0	No. AVE>0	Mean AVE<0	No. AVE<0
SPS	-0.26%	18.62%	2363	-12.71%	4289
TBT	-0.80%	5.43%	2035	-6.92%	6247
Tariffs	3.26%				
Summation	0.07%				

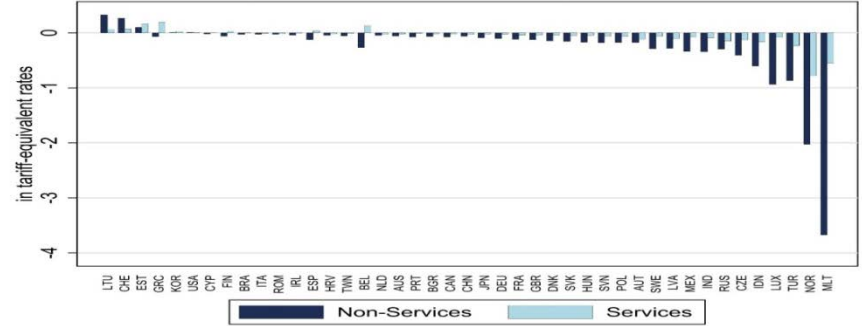
Source: Ghodsi and Stehrer (2017)

Descriptive Results – accumulated tariffs (Channel 3)

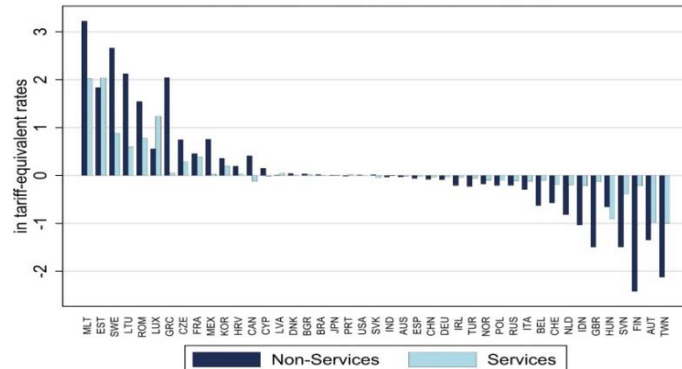
Tariffs on intermediate inputs



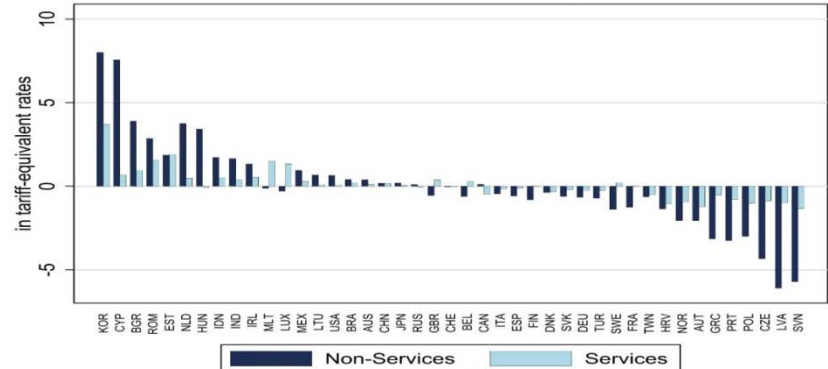
AVEs of TBTs in intermediate inputs



AVEs of SPS in intermediate inputs



Total bilateral effects of trade measures



Source: Ghodsi and Stehrer (2017)

Important findings

- Average tariff rates are rather low
 - No surprise for EU countries
- TBTs have (in most cases) trade promoting effects
- Mixed picture for SPS
- Total direct and indirect effects
 - Mixed picture
 - For countries involved in EU regional value chains tend to be trade promoting
 - But depends on product (industry) mix, geographical source patterns, etc.

Impact on performance measures

■ Method

- Cross-section regression: performance measure regressed on these trade policy measures (various channels) and other controls

■ Exports

- Tariffs does not impact export growth
- Generally positive impacts of NTMs on country/industries export growth
- TBT in third channel (GVC trade) has a small negative impact on average

■ Productivity growth

- Negative effect of tariffs
- Mostly insignificant effects of TBTs and NTMs

■ Quality: „Shipping the good apples out“?

- Positive impact on quality of exported products

Summary

- Standards and regulations in trade have multiple aims
 - Consumer safety, harmonisation of technical standards, health effects, ...
 - Complying with European standards and values
- Impact of NTMs on trade are diverse
 - due to complexity of technical regulations, etc.
 - even if negative impacts occur, NTMs serve various other purposes
- Trade measures accumulate when international production sharing is important
- Evidence suggests that on average
 - NTMs are less trade restrictive than (already low) tariffs
 - NTMs impact generally positively on growth and productivity
 - NTMs impact positively on quality of exported products
- NTMs are an important tool for promoting standards, consumer needs *and* trade

Thanks for attention!

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