

The impact of non-tariff measures on Spanish foreign trade: A structural gravity approach

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Introduction

- **Non-tariff measures (NTMs)** are gaining protagonism in the evaluation of trade policies:
 - Reduction of tariffs globally due to multilateral liberalisation rounds
 - Provisions in bilateral trade agreements
- Non-tariff measures encompass food safety and environmental protection rules (SPS, TBT)
- EU trade policy as a component of the **Farm to Fork strategy** to help the global transition to sustainable and 'fair' food chains
- To better account for the trade impacts of such a transition, it is important to understand what are the costs/benefits of the **current regulatory framework** and to what extent **streamlining NTMs** reduce trade frictions.

Objectives

To shed light on the diverse effects of **synthesized types of NTMs** on **agrifood trade** employing recent methodological developments

Provide estimates for aggregate and sectoral estimations focusing on a **selection of Spanish agrifood exports**

Sample

Trade data

- GTAP [Global Trade Analysis Project]: 20 agrifood sectors

Country Coverage

- 99 individual countries, including individual EU members
- Excluding intra-EU trade (31% of global trade; zero tariffs; harmonised or mutual recognition of NTMs)

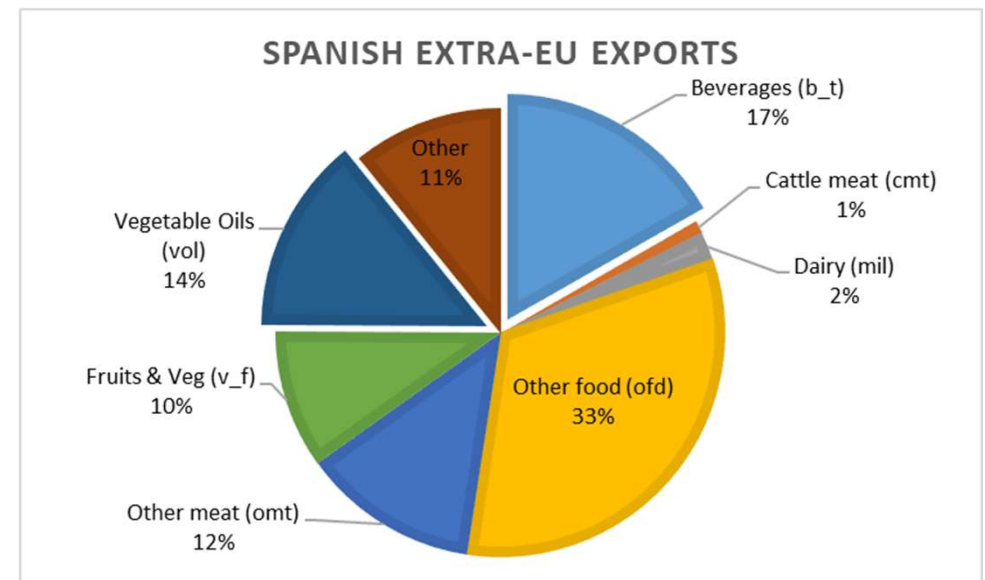
Sector Coverage

- 5 individual sectors and total agrifood

Period

- Cross section 2014

Sample covers **79% of world trade**



Methodology

- **Structural gravity approach**, which includes domestic trade flows:

$$\text{Domestic Trade: } m_{rsh} = \text{Output}_{rh} - \text{Exports}_{rh} \quad r=s \text{ [GTAP]}$$

- To account for the extra added costs due to **heterogeneity in regulations** between the importer and exporter:

Number of measures (N_{rsh}) applied by the importer to the exporter that the exporter does not apply to its imports
[UNCTAD TRAINS]

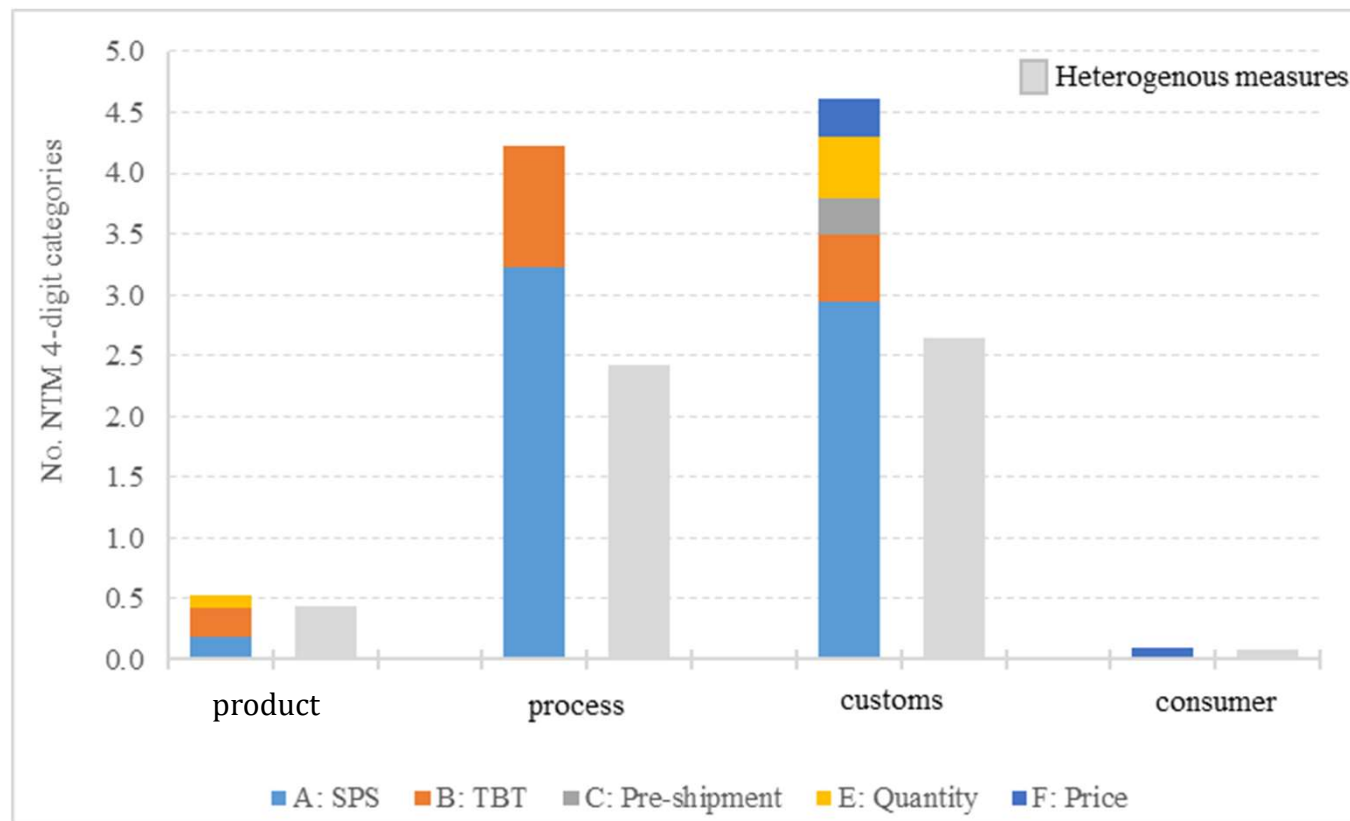
$$NTM_{rsh} = \ln(1+N_{rsh})$$

- **Taxonomy of NTMs** by Ederinton and Ruta (2016) according to the diverse price wedges caused by NTMs and the stage of the supply change they affect: **process, product, customs, consumer**

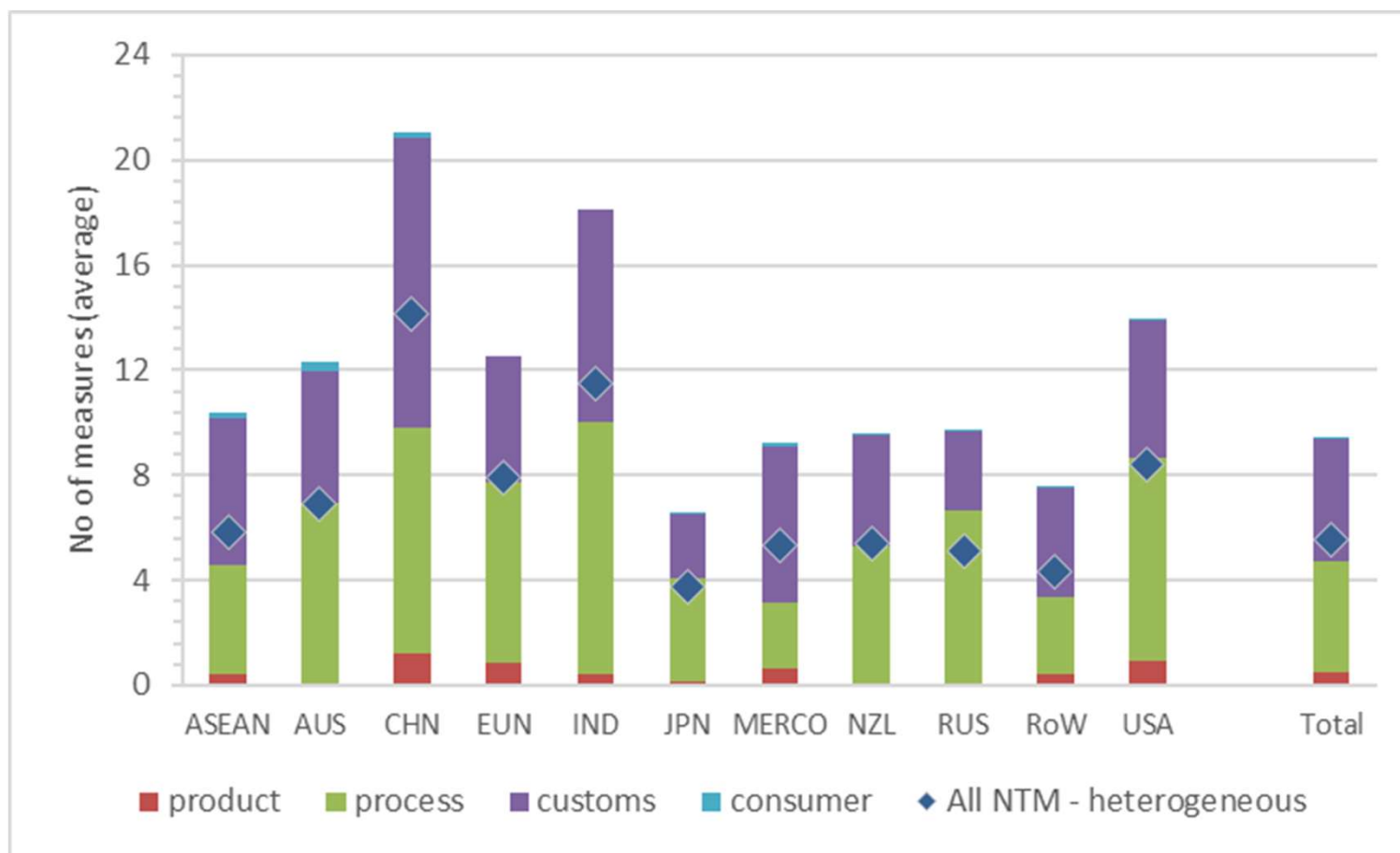
NTMs data and classifications

- Global UNCTAD TRAINS database (UNCTAD, 2017): 16 categories; defined up to four digits
- Ederington and Ruta (2016): 4 categories (Policy Research WP of World Bank)

Composition of NTM categories and prevalence in the sample

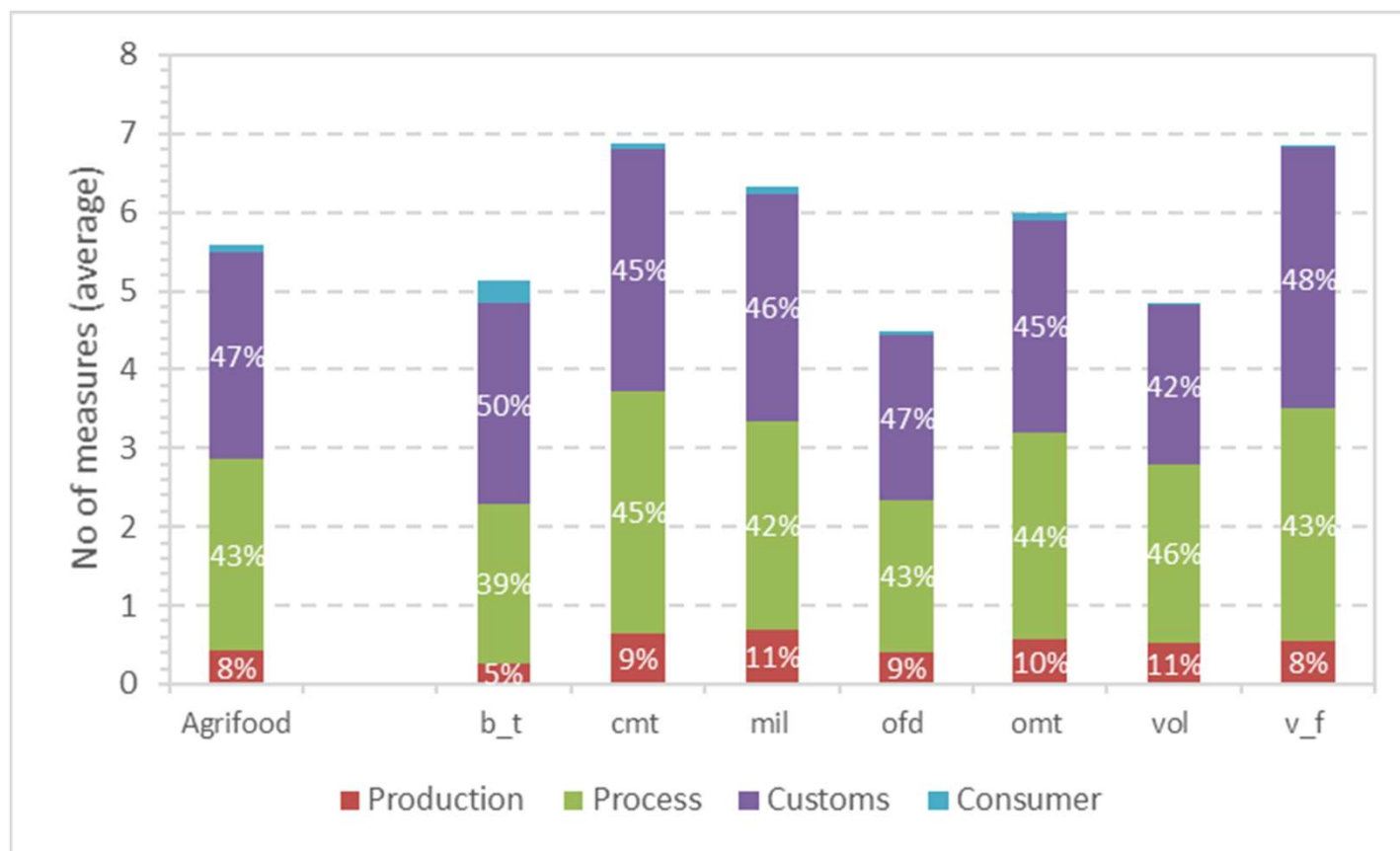


Regional distribution of NTMs in the sample



Source: Own calculations using UNCTAD TRAINS NTM data.

Sectoral distribution of heterogeneous NTMs in the sample



Source: Own calculations using UNCTAD TRAINS NTM data.

Model specification

$$m_{rsh} = \exp[\alpha_0 + GDP_{rs} + \alpha_1 t_{rsh} + \gamma_r + \gamma_h] + \varepsilon_{rs}$$

m_{rsh} : value of bilateral trade (million USD) [GTAP]

GDP_{rs} : log product of GDPs [WB WDI]

$\gamma_r + \gamma_h$: exporter and sector FE [Importer FE dropped as little variability of NTM across exporters]

t_{rsh} : bilateral trade costs

$$t_{rsh} = \gamma_1 X_{rs} + \beta_{RTA} RTA_{rs,t-1} + \beta_{TAR} TAR_{rsh,t-1} + \beta_{NTM,rs} NTM_{rsh}$$

X_{rs} : traditional bilateral trade controls *DIST*, *CONTIG*, *LANG*, *COLONY* and *LOCKED* [CEPII]

Policy bilateral trade controls [Lagged 1 period]:

RTA: Regional Trade Agreement [Egger & Larch, 2008, 2014]

TAR: Applied Tariffs [GTAP]

Results: Agrifood (19 sectors) [Coefficients estimates]

	All NTMs				Heterogeneous NTMs			
	All	Product	Process	Customs	All	Product	Process	Customs
TARt-1	0.30	0.29	0.28	0.30	0.30	0.22	0.29	0.30
RTAt-1	0.22**	0.22**	0.23**	0.22**	0.22*	0.22**	0.22*	0.22**
DISTrs	-1.09***	-1.09***	-1.09***	-1.08***	-1.07***	-1.06***	-1.08***	-1.08***
DISTrr	-0.45***	-0.45***	-0.45***	-0.45***	-0.46***	-0.46***	-0.45***	-0.46***
CONT	0.24	0.23	0.23	0.25	0.25	0.23	0.24	0.24
LANG	0.18	0.18	0.20	0.18	0.16	0.16	0.17	0.18
LOCKs	-1.48***	-1.51***	-1.58***	-1.49***	-1.40***	-1.38***	-1.41***	-1.50***
GDPrs	0.60***	0.60***	0.58***	0.60***	0.63***	0.61***	0.62***	0.60***
GDPrr	0.58***	0.58***	0.57***	0.58***	0.61***	0.60***	0.60***	0.59***
NTM	-0.07	-0.03	0.12*	-0.11	-0.22***	-0.72***	-0.15**	-0.09
R2-corr	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93

- In general, expected signs in traditional variables, not always significant
- Different impact of domestic vs international distances
- High relevance of the size of the country (GDP_{rr}) to control for domestic trade
- Heterogeneous measures reveal effects masked when using 'all NTMs' applied by the importer
- Different intensity of the trade impact by NTM category

Results by sector: Trade elasticities wrt NTMs

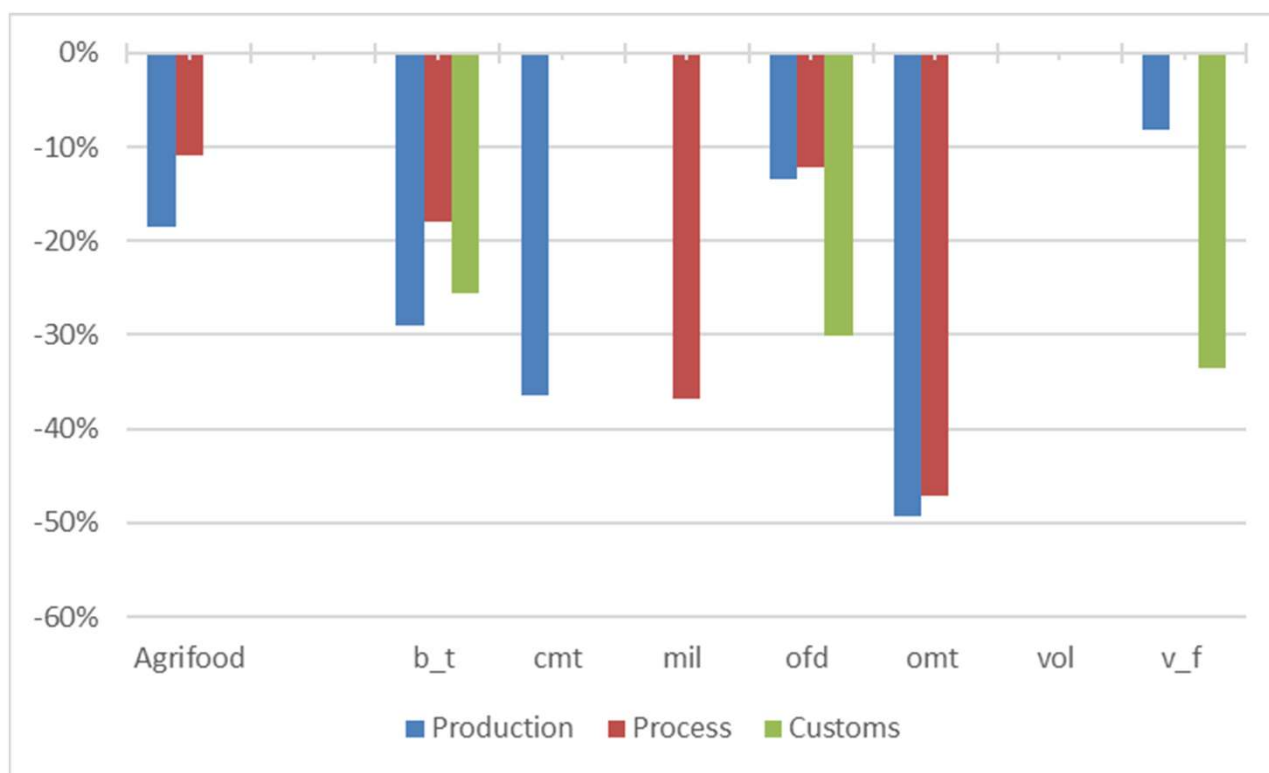
	Any	Product	Process	Customs
AGRIFOOD	-0.22***	-0.72***	-0.15**	-0.09
Beverages	-0.42***	-1.89***	-0.34***	-0.24**
Cattle meat	0.02	-0.97**	-0.02	0.43*
Dairy	-0.31	-0.52	-0.56***	0.30
Other Food	-0.44***	-1.11***	-0.28***	-0.37***
Other meat	-0.67***	-1.59***	-0.60***	-0.14
Vegetable Oils	0.16	-0.39*	0.35**	0.08
Fruits & Vegetables	-0.12	-0.46**	0.14	-0.34***

- NTMs significantly reduce agrifood trade
- Ranking of sensitivity to NTMs: product/process/customs
- Heterogeneous trade impact of NTMs across sectors
- *Beverages, Other food* and *Other meat* more sensitive to NTMs (product in particular)
- Some sectors only respond to particular categories: *Dairy* to Process NTMs; *Cattle meat* to Product; *Oil* to Product; *F & V* to Customs

Results: Spanish Trade losses due to NTMs

$$\text{Trade Change (\%)} = (\exp [\ln(1 + \overline{NTM}_{rs}^h) * \beta_{\text{NTM}}] - 1) \times 100$$

\overline{NTM}_{rs}^h : average number of heterogeneous measures faced by Spain when exporting sector h to importer s



- Substantial trade gains through NTM harmonisation in **product and process**, led by *beverages and meats* (omt mainly)
- Eliminating trade frictions due to **Customs** regulations would lead to substantial gains in *beverages, other food and fruits*

Conclusions

- The relevance of considering **heterogeneity** in regulation to better capture trade impacts
- Heterogeneous impacts of NTMs, across sectors and across categories
- Significant trade gains could be reached by **harmonising** those regulations affecting the **product** and production **process** in agrifood sectors in general, while customs regulations induce more trade frictions in beverages, other food, and fruits & vegetables
- Most striking benefits for Spain would occur in other meat (pork)

Research challenges

- Better and more informative NTM categorisation
- Applying the structural gravity equation to further sectoral disaggregations

Thank you for your attention

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