The Brussels Effect: Are consumer health and safety regulations across the world shaped by the European Union?

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Introduction

- The Single Market (SM) is an important asset of the European Union (EU) enabling integration through the free movement of goods.

- Health & safety regulations have fostered European integration by increasing trade in goods and consumer protection within the SM.

- Although the primary objectives behind regulations have been internal, an important external regulatory influence has manifested over time.

- The capacity of the EU to be a source of global regulations for foreign jurisdictions is known as **the de jure Brussels Effect** (Bradford, 2020).

Examples of the de jure Brussels effect

Research Question

Objective: Go beyond the anecdotal evidence and document the de jure Brussels effect on a larger scale.

What is the paper doing?

1. Assessing the probability of third countries to adopt regulations conditional on the EU having in place similar types of regulations.
2. Exploring the factors behind the adoption of EU-style regulations.

Main take-aways:

1. The adoption of regulations by third countries is positively associated with the prior existence of similar types of regulations in the EU.
2. The proba. to follow EU regulations ↗ with an increasing export share to the EU & the existence of trade agreements with the EU.

Literature Review

The Brussels Effect: How the European Union rules the world (Bradford, 2020).

The empirical literature on the determinants of regulations shows that the likelihood of adopting regulations is higher:

- after episodes of tariff liberalization (Beverelli et al., 2014; Orefice, 2017; Herghelegiu, 2018; Niu et al., 2018; Kuenzel and Sharma, 2021);

- following consultations with stakeholders (Belloc, 2015);

- in industries with higher employment levels (Belloc, 2015);

- in countries which are WTO members (Chin and Che Rusli, 2015).

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Data on consumer health & safety regulations

Consumer health & safety regulations are known in the trade literature as:

- Sanitary and Phytosanitary (SPS) measures;
- Technical Barriers to Trade (TBTs).

Focus on **57 categories of unilateral SPS measures & TBTs** implemented by 83 countries on more than 5205 HS6 products over 2009-2019.

▸ Detailed Classification

Examples of SPS measures	Examples of TBTs
• Tolerance limits for residues of or contamination by certain (non-microbiological) substances	• Product quality, safety or performance requirements
• Restricted use of certain substances in foods and feeds and their contact materials	• Origin of materials and parts
• Labelling requirements	• Processing history
• Irradiation	• Distribution and location of products after delivery

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Other data sources
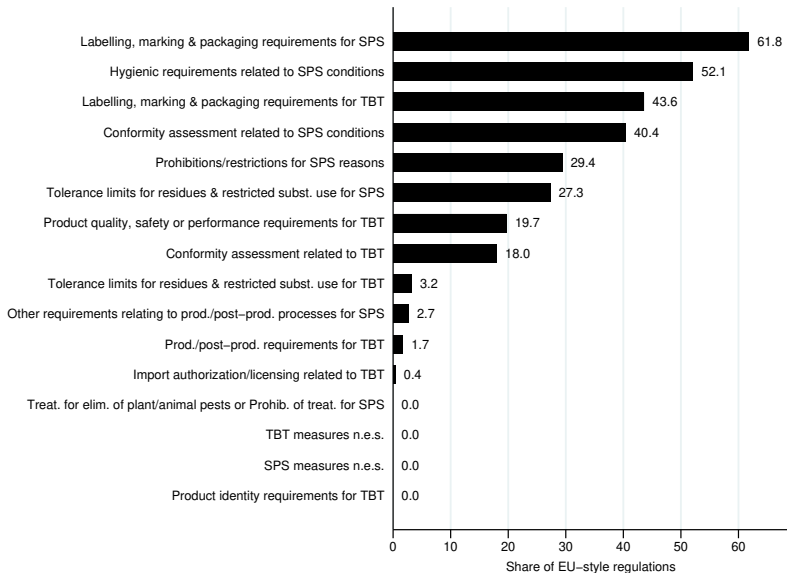
The dataset on regulations is matched with other data sources:

- Export data (BACI, CEPII)

- EU Trade agreements (European Commission & WTO)

- Gravity (CEPII)

- Other import measures (TRAINS - UNCTAD)

- MFN applied tariffs (TRAINS - UNCTAD)

Share of EU-style regulations per country

Share of EU-style regulations (5 years)

- 0% - 30%
- 30% - 50%
- 50% - 70%
- 70% - 100%
- EU
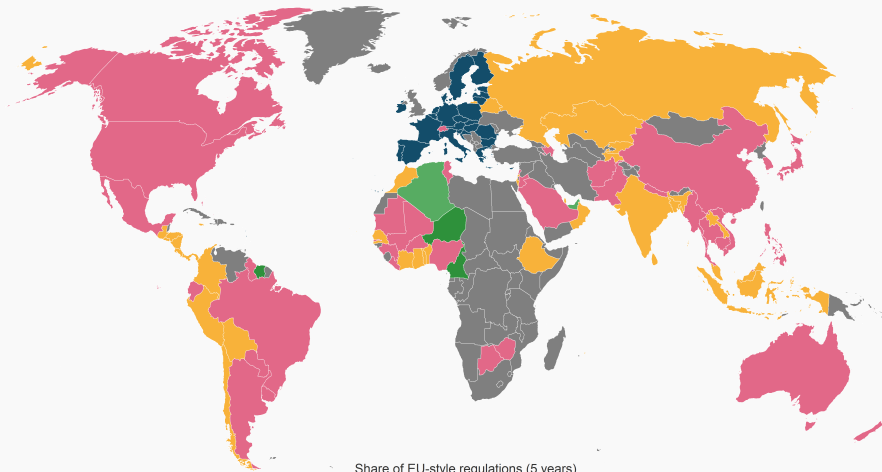
Share of EU-style regulations per broad regulation type

Regulation type	Share
Labelling, marking & packaging requirements for SPS	61.8
Hygienic requirements related to SPS conditions	52.1
Labelling, marking & packaging requirements for TBT	43.6
Conformity assessment related to SPS conditions	40.4
Prohibitions/restrictions for SPS reasons	29.4
Tolerance limits for residues & restricted subst. use for SPS	27.3
Product quality, safety or performance requirements for TBT	19.7
Conformity assessment related to TBT	18.0
Tolerance limits for residues & restricted subst. use for TBT	3.2
Other requirements relating to prod./post–prod. processes for SPS	2.7
Prod./post–prod. requirements for TBT	1.7
Import authorization/licensing related to TBT	0.4
Treat. for elim. of plant/animal pests or Prohib. of treat. for SPS	0.0
TBT measures n.e.s.	0.0
SPS measures n.e.s.	0.0
Product identity requirements for TBT	0.0

Share of EU–style regulations

▶ Go

Share of EU-style regulations per sector

Sector	Percentage
Vegetable products	39.7
Prepared foodstuffs & beverages	39.0
Animal products	37.4
Precision & medical instruments	34.9
Animal or vegetable fats & oils	32.1
Textiles	30.5
Mechanical appliances; electrical equipment	24.0
Footwears & gears	23.6
Products of the chemical or allied industries	15.1
Transport equipment	14.7
Base metals & articles of base metal	14.0
Miscellaneous manufactured articles	13.9
Raw hides & skins	12.2
Works of art	12.0
Plastics & rubber articles	9.8
Stone, Cement	8.2
Woods	7.9
Pulp of wood & paper	7.9
Arms & ammunition	5.4
Mineral products	5.0
Precious or semi–precious stones	3.3

Percentage

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Empirics: The de jure Brussels Effect

Linear probability model (LPM) estimation:

$$Pr[Reg_{ikt}^s = 1] = \alpha_0 + \alpha_1 \textbf{Reg EU}_{\textbf{k},\overline{\textbf{t},\textbf{t}-5}}^{\textbf{s}} + FE_{ikt} + FE_{s(ch)} + \epsilon_{ikt}^s$$

	$Pr[Reg_{ikt}^s = 1]$
Reg EU$_{k,\overline{t,t-5}}^s$	0.015***
	(0.000)
Observations	5,033,347
Adjusted R^2	0.781
$Country_i - HS6_k - Year_t$ FE	Yes
NTM Chapter FE	Yes

Note: Robust standard errors in parentheses with ***
denoting significance at the 1% level.

▸ Robustness

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The de jure Brussels Effect across various dimensions

Proba. to adopt regulations subject to the EU having similar regulations:

Across sectors: ▸ Go
- ↗ for *Stone/Cement, Plastics/Rubber Art., (Semi)Precious Stones, Transp. Equip., Agri-food, Base Metals/Art., Chemical/Allied Ind., Textiles, Mech. Appl./ Electr. Equip., Precision/Medical Instr.*

Across types of regulations: ▸ Go
- ↗ for *Hygienic req. - SPS, Production/post-production req. - TBT, Tolerance limits for residues & restricted subst. use - SPS and TBT, Product quality/safety/perf. req. - TBT.*

Across countries: ▸ Go
- ↘ for countries with a higher GDP/capita.

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Comparison for the EU, the US, and China

	$\Pr[\text{Reg}_{ikt}^s = 1]$
Reg EU$^s_{k,\overline{t,t-5}}$	0.010***
	(0.000)
Reg US$^s_{k,\overline{t,t-5}}$	0.006***
	(0.000)
Reg CN$^s_{k,\overline{t,t-5}}$	0.005***
	(0.000)
Observations	4,681,589
Adjusted R^2	0.790
Country$_i$ − HS6$_k$ − Year$_t$ FE	Yes
NTM Chapter FE	Yes

Note: Robust standard errors in parentheses with *** denoting
significance at the 1% level.

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Empirics: Factors behind the de jure Brussels effect (1)

The mechanisms through which the de jure Brussels effect unfolds can be:

- market-driven (e.g. influence of foreign firms over their governments)
- treaty-driven (e.g. bilateral and/or multilateral agreements)

LPM estimation:

$$Pr[EUstyleReg_{ikt}^s = 1] = \alpha_1 \mathbf{\Delta ExpShrToEU_{ik,\overline{t,t-5}}} + \alpha_2 \mathbf{FTAwEU_{i,t-5}} +$$
$$Controls + FE_i + FE_k + FE_t + FE_{s(ch)} + \epsilon_{ikt}^s$$

$\Rightarrow$ Controls include: GDP, GDP/capita, ΔTariffs, other NTMs.

Empirics: Factors behind the de jure Brussels effect (2)

	$\Pr[\text{EUstyleReg}_{ikt}^{s} = 1]$
Trade agreement with the EU$_{t-5}$	0.027***
	(0.006)
Δ Export share to the EU$_{\overline{t,t-5}}$	0.002***
	(0.001)
log GDP$_{t-5}$	0.697***
	(0.039)
log GDP per capita$_{t-5}$	-0.670***
	(0.038)
Δ MFN applied tariff$_{\overline{t,t-5}}$	-0.098***
	(0.017)
Nb. of different other NTMs$_{t-5}$	-0.047***
	(0.002)
Observations	328,198
Adjusted R^2	0.199
Country$_i$ − HS6$_k$ − Year$_t$ FE	Yes
NTM Chapter FE	Yes

Note: Robust standard errors in parentheses with *** denoting significance at the 1% level.

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- The probability that a country adopts consumer & health regulations increases with the prior existence of similar regulations in the EU.

- The adoption of EU-style regulations is associated with market forces (i.e. increase in the share of the EU in a country's total exports) and treaty-driven forces (i.e. existence of trade agreements with the EU).

- The de jure Brussels effect is an underestimation of the overall Brussels effect.

Next steps

- Refine the definition of the de jure Brussels effect (e.g. first mover)

- Understand the de jure Brussels effect in specific areas (e.g. environment)

- Perform some falsification tests

- Pick a case study and dig further

THANK YOU!

Annex

Detailed SPS Classification (1)

Detailed SPS Code	Description
A11	Prohibitions for SPS reasons
A12	Geographical restrictions on eligibility
A13	Systems approach
A14	Authorization requirement for SPS reasons for importing certain products
A15	Authorization requirement for importers for SPS reasons
A19	Prohibitions or restrictions of imports for SPS reasons, n.e.s.
A21	Tolerance limits for residues of or contamination by certain (non-microbiological) substances
A22	Restricted use of certain substances in foods and feeds and their contact materials
A31	Labelling requirements
A32	Marking requirements
A33	Packaging requirements
A41	Microbiological criteria of the final product
A42	Hygienic practices during production related to SPS conditions
A49	Hygienic requirements n.e.s.
A51	Cold or heat treatment
A52	Irradiation
A53	Fumigation
A59	Treatments to eliminate plants & animal pests or disease-causing organisms in the final product n.e.s. or prohibition of treatment

Source: UNCTAD (2019).

Detailed SPS Classification (2)

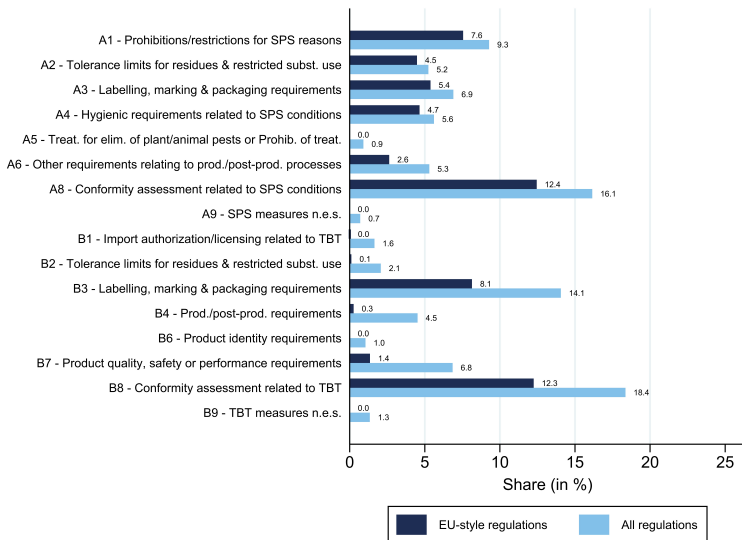| Detailed SPS Code	Description
A61	Plant-growth processes
A62	Animal-raising or -catching processes
A63	Food and feed processing
A64	Storage and transport conditions
A69	Other requirements relating to production or post-production processes n.e.s.
A81	Product registration and approval requirement
A82	Testing requirements
A83	Certification requirements
A84	Inspection requirements
A851	Origin of materials and parts
A852	Processing history
A853	Distribution and location of products after delivery
A859	Traceability requirements n.e.s.
A86	Quarantine requirements
A89	Conformity assessment related to SPS conditions n.e.s.
A9	SPS measures n.e.s.

Source: UNCTAD (2019).
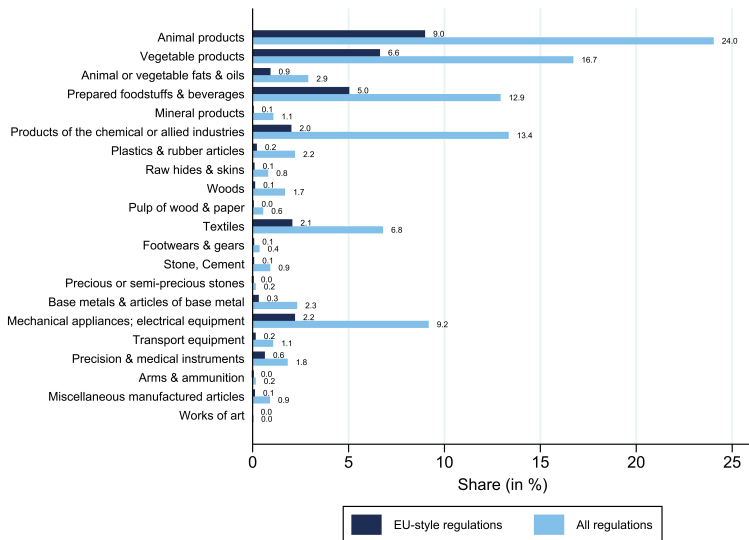
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Detailed TBT Classification

Detailed TBT Code	Description
B14	Authorization requirements for importing certain products
B15	Authorization requirements for importers
B19	Import authorization/licensing related to TBTs n.e.s.
B21	Tolerance limits for residues of or contamination by certain substances
B22	Restricted use of certain substances
B31	Labelling requirements
B32	Marking requirements
B33	Packaging requirements
B41	TBTs regulations on production processes
B42	TBTs regulations on transport and storage
B49	Production or post-production requirements n.e.s.
B6	Product identity requirements
B7	Product quality, safety or performance requirements
B81	Product registration/approval requirements
B82	Testing requirements
B83	Certification requirements
B84	Inspection requirements
B851	Origin of materials and parts
B852	Processing history
B853	Distribution and location of products after delivery
B859	Traceability requirements n.e.s.
B89	Conformity assessment related to TBTs n.e.s.
B9	TBTs measures n.e.s.

Source: UNCTAD (2019).

Share of EU-style regulations per broad NTM type

NTM type	EU-style regulations	All regulations
A1 - Prohibitions/restrictions for SPS reasons	7.6	9.3
A2 - Tolerance limits for residues & restricted subst. use	4.5	5.2
A3 - Labelling, marking & packaging requirements	5.4	6.9
A4 - Hygienic requirements related to SPS conditions	4.7	5.6
A5 - Treat. for elim. of plant/animal pests or Prohib. of treat.	0.0	0.9
A6 - Other requirements relating to prod./post-prod. processes	2.6	5.3
A8 - Conformity assessment related to SPS conditions	12.4	16.1
A9 - SPS measures n.e.s.	0.0	0.7
B1 - Import authorization/licensing related to TBT	0.0	1.6
B2 - Tolerance limits for residues & restricted subst. use	0.1	2.1
B3 - Labelling, marking & packaging requirements	8.1	14.1
B4 - Prod./post-prod. requirements	0.3	4.5
B6 - Product identity requirements	0.0	1.0
B7 - Product quality, safety or performance requirements	1.4	6.8
B8 - Conformity assessment related to TBT	12.3	18.4
B9 - TBT measures n.e.s.	0.0	1.3

Share (in %)

Legend: EU-style regulations | All regulations

Share of EU-style regulations per sector

Sector	EU-style regulations	All regulations
Animal products	9.0	24.0
Vegetable products	6.6	16.7
Animal or vegetable fats & oils	0.9	2.9
Prepared foodstuffs & beverages	5.0	12.9
Mineral products	0.1	1.1
Products of the chemical or allied industries	2.0	13.4
Plastics & rubber articles	0.2	2.2
Raw hides & skins	0.1	0.8
Woods	0.1	1.7
Pulp of wood & paper	0.0	0.6
Textiles	2.1	6.8
Footwears & gears	0.1	0.4
Stone, Cement	0.1	0.9
Precious or semi-precious stones	0.0	0.2
Base metals & articles of base metal	0.3	2.3
Mechanical appliances; electrical equipment	2.2	9.2
Transport equipment	0.2	1.1
Precision & medical instruments	0.6	1.8
Arms & ammunition	0.0	0.2
Miscellaneous manufactured articles	0.1	0.9
Works of art	0.0	0.0

Share (in %)

■ EU-style regulations   ■ All regulations

Robustness: The de jure Brussels Effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				$\Pr[\text{Reg}_{ikt}^s = 1]$			
	SPS	TBT	Broad NTM	Alt. FE	Last year ≥ 2014	Wo. top 10% dev. ctries	Alt. sq.
= 1 if Regulation $\text{EU}_{k,\overline{t,t-5}}^s$	0.008***	0.027***	0.038***	0.017***	0.015***	0.012***	0.073***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Δ MFN applied tariff (t,t-5)				-0.144***			
				(0.004)			
Nb. of other NTMs (t-5)				-0.118***			
				(0.000)			
GDP (t-5)				-0.257***			
				(0.003)			
GDP per capita (t-5)				0.326***			
				(0.003)			
Total import value (t-5)				-0.001***			
				(0.000)			
Total export value (t-5)				-0.000**			
				(0.000)			
Nb. of RTA partners (t-5)				0.006***			
				(0.000)			
Observations	2668413	2176702	2957295	5377449	4872890	4751252	10439147
Adjusted R^2	0.770	0.858	0.762	0.594	0.776	0.779	0.138

Note: Robust standard errors in parantheses, with *** denoting significance at the 1% level.

▶ Baseline

The de jure Brussels Effect across sectors

Sector	$\Pr[\text{Reg}^s_{ikt} = 1]$	Sector	$\Pr[\text{Reg}^s_{ikt} = 1]$
Animal Products	0.019*** (0.001)	Footwears & Gears	0.001 (0.002)
Vegetable Products	0.016*** (0.001)	Stone, Cement	0.037*** (0.004)
Animal/Vegetable Fats & Oils	0.016*** (0.001)	(Semi) Precious Stones	0.031*** (0.007)
Prepared Foodstuffs & Beverages	0.018*** (0.001)	Base Metals & Articles	0.011*** (0.003)
Mineral Products	-0.006* (0.003)	Mech. Appliances/ Electr. Equip.	0.005*** (0.001)
Chemical/Allied Industries	0.005*** (0.001)	Transport Equipment	0.026*** (0.002)
Plastics & Rubber Articles	0.035*** (0.002)	Precision & Medical Instr.	0.003* (0.002)
Raw Hides & Skins	-0.021*** (0.003)	Arms & Ammunition	-0.056*** (0.011)
Woods	0.017*** (0.003)	Miscellaneous	0.001 (0.002)
Pulp Of Wood & Paper	0.004 (0.004)	Works Of Art	-0.096*** (0.023)
Textiles	0.006*** (0.001)		

Note: Robust standard errors in parantheses with *** denoting significance at the 1% level.

The de jure Brussels Effect across regulation types

Regulation Type	Pr[$\text{Reg}^s_{ikt} = 1$]	Regulation Type	Pr[$\text{Reg}^s_{ikt} = 1$]
Prohibitions/restrictions for SPS reasons	0.000 (0.001)	Tolerance limits for resid. & restr. subst. use	0.027*** (0.001)
Tolerance limits for resid. & restr. subst. use	0.037*** (0.001)	Labelling, marking & packaging req.	0.018*** (0.001)
Labelling, marking & packaging req.	0.008*** (0.001)	Prod./post-prod. req.	0.038*** (0.004)
Hygienic req. rel. to SPS conditions	0.068*** (0.001)	Product identity req.	0.081** (0.033)
Other req. rel. to prod./post-prod. processes	-0.039*** (0.002)	Product quality, safety or performance req.	0.020*** (0.001)
Conf. assessm. rel. to SPS conditions	0.016*** (0.001)	Conf. assessm. rel. to TBT	0.012*** (0.001)
Import authorization/licensing rel. to TBT	-0.141*** (0.037)		

Note: Robust standard errors in parantheses with *** denoting significance at the 1% level.

	$\Pr[\text{Reg}_{ikt}^s = 1]$
= 1 if Reg $\text{EU}_{k,t,t-5}^s \times$ GDP per capita (t-5)	-0.013***
	(0.000)
= 1 if Reg $\text{EU}_{k,t,t-5}^s$	0.120***
	(0.001)
Observations	5033347
Adjusted R^2	0.781
$Country_i - HS6_k - Year_t$ FE	Yes
NTM Chapter FE	Yes

Note: Robust standard errors in parentheses with *** denoting significance at the 1% level.

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	$\Pr[\text{Reg}^s_{ikt} = 1]$			
	(1)	(2)	(3)	(4)
=1 if Trade agreement with the EU$_{t-5}$	0.043***	0.033***	0.027***	0.009
	(0.007)	(0.006)	(0.006)	(0.006)
Δ Export share to the EU$_{\overline{t,t-5}}$	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
log GDP$_{t-5}$	0.856***	0.654***	0.707***	0.657***
	(0.047)	(0.040)	(0.039)	(0.041)
log GDP per capita$_{t-5}$	-0.936***	-0.634***	-0.680***	-0.671***
	(0.045)	(0.038)	(0.038)	(0.039)
Δ MFN applied tariff$_{\overline{t,t-5}}$	-0.067***	-0.089***	-0.092***	-0.099***
	(0.019)	(0.017)	(0.017)	(0.017)
Nb. of different other NTM$_{t-5}$	-0.045***	-0.047***	-0.047***	-0.043***
	(0.002)	(0.002)	(0.002)	(0.002)
Nb. of RTA partners$_{t-5}$		-0.004***		
		(0.001)		
Log Total import value$_{t-5}$		0.005***		
		(0.000)		
Log Total export value$_{t-5}$		-0.002***		
		(0.000)		
Observations	233,318	328,198	324,361	305,686
Adjusted R^2	0.310	0.199	0.199	0.198
Country$_i$ − HS6$_k$ − Year$_t$ FE	Yes	Yes	Yes	Yes
NTM Chapter FE	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses with *** denoting significance at the 1% level.