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Abstract

Trade negotiations between the European Union (EU), on the one hand, and the United States (US) and Canada, on the other, have raised concerns of European consumers fearing food safety issues. Trade dispute settlements between these countries on food imports to the EU and remedies against the European Communities are other substantial factors governing the bilateral and multilateral trade policies between these countries. This study sheds light on various aspects of the particular issue of poultry imports to the EU during the period 1996-2014. First, we analyse the mechanisms of EU market protection through the evolution of tariffs and non-tariff measures (NTMs), both descriptively and econometrically. Second, we provide bilateral ad valorem equivalents (AVEs) of NTMs imposed on the imports of poultry to the EU. These AVEs, which are equivalent to tariffs, hint towards the diverse impact of NTMs on various exporters based on their production compatibilities with EU standards. Third, we analyse the quality impact of NTMs, which are also differentiated by the exporting countries. Overall, this detailed study may assist dispute settlement bodies of the World Trade Organisation (WTO) in analysing cases related to regulatory NTMs for which there is lack of scientific evidence.

Keywords: EU regulations, non-tariff measures, gravity model, ad valorem equivalents, product quality

JEL classification: F13, F14, Q17

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1. Introduction

Recent negotiations on the European Union (EU) trade agreements with Canada (CETA) and with the United States of America (USA) (TTIP) have provoked debates not only in the political sphere but also within the consumer society and academia. On the one hand these mega trade deals could be seen as an initiation towards the Trans-Atlantic trade union enlargement in the process of globalisation (though after the US presidential election in 2016 that might be stopped). On the other hand, it is raising concerns from the side of consumers fearing lower standards after opening trade, particularly in Europe.

Within the traditional trade policy frameworks, tariffs had been the main instrument to protect the domestic industries and consumers by raising the tax on the imports of the undesired product. Since General Agreement on Tariffs and Trade (GATT) and World Trade Organisation (WTO) have facilitated trade liberalisation by lowering tariff rates, especially in advanced economies, non-tariff measures (NTMs) have become more attractive tools. WTO agreements allow member states to impose qualitative regulations, standards, security and safeguard measures in order to improve safety, human and animal health, environmental quality, and market efficiencies. However, complying with these regulations makes them trade restrictive. Therefore, these measures are sometimes also referred to as non-tariff barriers to trade.

As long as the standards embodied within the NTMs improve the quality of the products such that the consumer health or environmental quality, etc. improves, the imposition of these trade policy tools might be accepted by trade partners. However, there are not always many evident and scientific arguments behind the good faith of their imposition, particularly if quality standards and preferences differ. For instance, the EU legislations within sanitary and phytosanitary measures (SPS) against the genetically modified organisms (GMO) and hormones in meats restricted the imports of biotech agricultural and food products. They both caused dispute settlement cases within the WTO. In 1996, Canada and the US requested the Dispute Settlement Body (DSB) of the WTO for consultation on hormones measures imposed by the EU on meat products. This became a very long lasting dispute and in 1999, Canada requested for a CAD 75 million remedies in suspension of concessions to the EU while the US requested for USD 2002 million. In 2009 and 2011, a mutually accepted solution on implementation of remedies was notified to the WTO by the US and Canada, respectively[1].

On May 2003, the US, Canada, and Argentina requested for consolation on measures affecting the approval and marketing of biotech products. The dispute took few years and the European Community did not manage to provide sufficient scientific evidence against the biotech products. Although there was a mutual agreed solution between the EU and Canada and Argentina, on January 2008, the request for retaliation by the US was approved by the DSB of the WTO.

[1] The final decisions of arbitrators determined CAD 11.3 million and USD 116.8 million as the level of nullification suffered by Canada and the USA, respectively.

Despite the legitimate intention of the EU to protect its society and its final consumers by imposing the standards, no scientific evidence was provided so far finally justifying the trade restrictiveness of these NTMs.

Similar debates are still ongoing with other regulations in force, which in the media are debated 'chlorinated chicken'. This is a restriction on the imports of poultry washed with certain pathogen reduction treatments (PRT) to the EU. The ban exists in the EU market since 1997 with several amendments. In October 2006, the US raised a Specific Trade Concern (STC) on the SPS imposed by the EU to the WTO claiming that 'although the European Commission had proposed legislation permitting the use of PRTs in January 2006 the ban on imported poultry had not been removed'. The EU legislation would suggest that use of antimicrobial treatments (AMT) might be abused to compensate the low hygienic quality of production. If the set of quality standards for poultry in an exporting country such as the US were high enough, they could increase their exports to the EU, eliminating the use of AMT and PRT. Finally, in January 2009, the US requested the DSB for consultations with the EU regarding these regulations. Australia, China, Guatemala, Republic of Korea, New Zealand, Norway, and Chinese Taipei subsequently reserved their third-party rights, while the Panel body has not yet been composed for the case.

Therefore, the argument pro and con can go beyond a single country for standards and regulations. In general, when an exporting country produces with similar production standards as the country imposing the regulations does, the implication of the NTM is not necessarily trade restrictive. However, there might be certain quality improvement in the countries which are not enjoying the same level of standards. With respect to the recent trade negotiations it is important to find how the two economic partners meet each other's standards. In fact, the existing framework of standards between the two partners can identify the contractual terms of the agreements, in which standard-like trade barriers and NTMs should shape.

The problem emerges when the domestic legal systems of countries diverge substantially. More specifically, the regulations within the EU could differ in essence from those of other countries such as the USA mainly because the legal systems are different. For instance in the EU, the producer is responsible to initially prove that her product does not harm the consumers, and then she is permitted to produce. In contrast, according to international regulations within the WTO agreements that are similar to the legal framework in the US, production shall be halted as soon as evidence is provided that the consumer is harmed by the product. These systematic differences determining the trade regulations have resulted in several trade disputes.

Due to their delicate health-related issues, food and agricultural products are considered as the most important subjects for the concerns of consumers who can shape the policies of the governments and ultimately trade partnership agreements. However, where scientific evidence for such concerns is not available or remain disputed, standards and NTMs might lead to economic losses by trade disputes due to differences in the legal systems of the two sides of conflict. Such disputes could be avoided by mutual recognition of these differences in the legal systems.

This research is focused on the implications of NTMs imposed on the trade of poultry to the EU. Within an empirical framework, the impact of NTMs on the imports is differentiated by trade partners and by product categories. Besides, using a theoretical framework proposed by Feenstra and Romalis (2014),

the quality, and quality-adjusted price of the traded products are differentiated, which can hint towards the quality impact of NTMs based on the existing standards of the exporting countries.

The WTO secretariat compiles and publishes the notified NTMs within a database called Integrated Trade Intelligence Portal (I-TIP). This dataset covers the NTMs imposed by each WTO member against all or specific trade partners on certain (categories) of products. According to the I-TIP database, until March 2015, countries notified 38,881 NTMs to the WTO on various products at the Harmonised System (HS) and against various countries. However, in spite of all WTO efforts to obtain the most information on measures, many of the measures have missing HS codes. In fact, among these notifications, 22,592 have no corresponding HS codes that could suit a good empirical analysis. In an earlier work, Ghodsi et al. (2016c) improved this database by finding the HS codes for 13,426 missing ones[2]. Despite large information provided such as comprehensive measure description, NTM type, key issues, countries involved, date of initiation, in force, and withdrawal, this database does not show the restrictiveness or quality impact of each measure. This paper offers a framework to quantify the trade restrictiveness (or trade promotion) and the quality impact of each NTM notification, which may be helpful for the trade dispute settlement cases of the WTO, or for ongoing trade negotiations.

The rest of the paper is structured as follows. In the second section, EU poultry imports will be analysed descriptively and the impact of NTMs imposed by the EU on poultry imports will be analysed econometrically. Ad valorem equivalent (AVE) of EU notifications will be presented and analysed in the third section. Section four analyses the quality impact of EU measures. Finally, section five concludes.

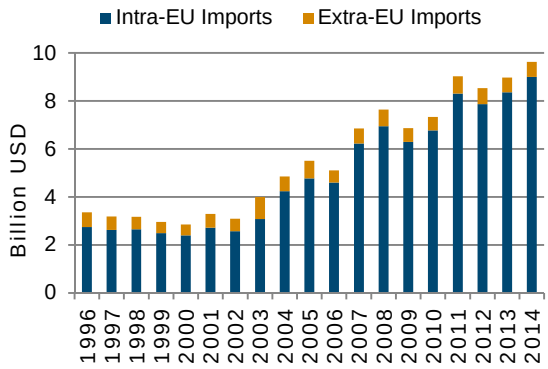
[2] Refer to Ghodsi et al. (2016c) for further information on I-TIP and descriptive statistics on the NTMs in this database.

2. EU poultry imports and trade policy

2.1. DESCRIPTIVE ANALYSIS

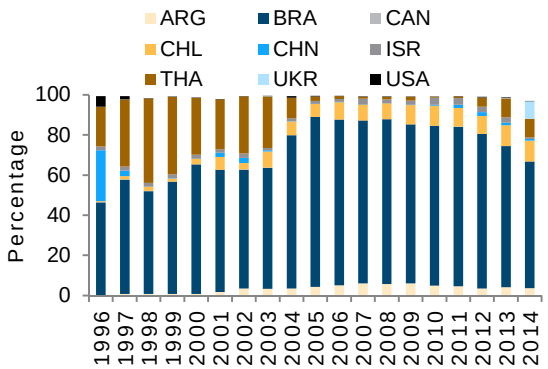
According to the European Commission, the poultry sector[3] in the EU with excess export of about 3% of the production in 2014 is one of the major producers in the world, which is keeping being self-sufficient. Trade in this sector has evolved since 1996. Figure 1 shows that a major part of this development was mainly due to the increase of the intra-EU trade. This increasing trend of trade among the EU member states was mostly due to the accession of new member states (NMSs) such as Poland with the highest production of about 13% of total EU poultry production[4] and second highest intra-EU export of 15% (after the Netherlands with 26% of intra-EU export) in 2014. However, extra-EU trade stayed very low and lost its importance during years. While extra-EU trade held 18% of total EU imports values of poultry products, it gradually decreased to 12% after accession of NMSs in 2004 and to 6.6% in 2014. This indicates a desire for the consumption of the EU produced products, which might be the results of consumer's preferences and different standards and trade policy measures within the EU market.

Figure 1 / EU poultry imports – intra vs extra



Source: UN Comtrade.

Figure 2 / Partners' share in extra-EU poultry imports



Source: UN Comtrade.

Figure 2[5] shows some of the major extra-EU suppliers of poultry products. Among the exporters, Brazil is the major supplier with the highest share of 84.5% in extra-EU imports in 2005 worth USD 574 million. This share reduced to 63% worth USD 400 million. Until 2002, Thailand was the second major exporter of poultry to the EU with 28% of extra-EU imports worth USD 57 million. Losing its market share after 2003, Thailand has gradually improved to the third in 2013, while Chile stood second with over 10% of the extra-EU imports. Argentina is another South American large supplier of poultry to the EU with

[3] Here the trade data on poultry is sector 0114 of SITC Rev. 2, which is all corresponding products within sector 0207 in HS Rev. 1996 excluding 020734.

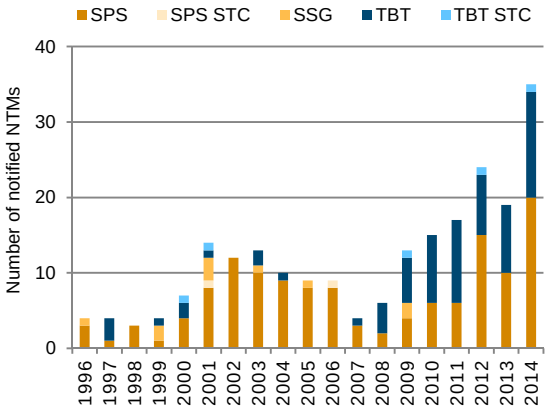
[4] Some details be found here: http://ec.europa.eu/agriculture/poultry/index_en.htm

[5] The missing parts of bars in Figure 2, especially for the year 2014, are referring to some non-EU countries such as Norway, Gabon, United Arab Emirates, Russia, etc. covering only a small share of extra-EU poultry imports.

average share of 4.3% since the new millennium. In 2014, Ukraine became another major exporter of poultry to the EU covering around 9% of extra-EU imports. This could be a trade diversion effect of the Eastern Ukrainian conflict with Russia. Out of these large suppliers, the United States and Canada are taking less than 1% of extra-EU import value since 1997. However, since the price (unit values) of their exports is around as double as other large suppliers, their share in tons is even lower than that figure.

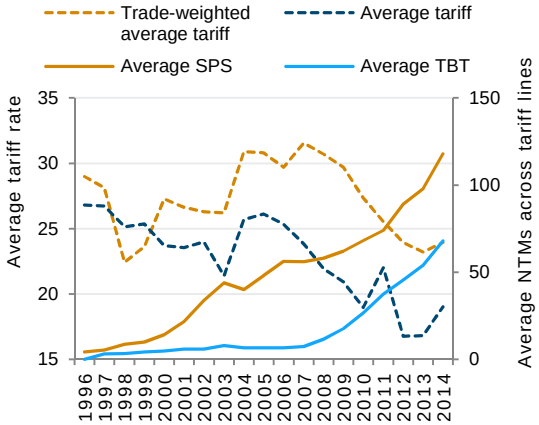
The decreasing share of extra-EU imports of poultry coincides with increasing number of qualitative NTMs. Figure 3 shows that the number of EU regulations within SPS and technical barriers to trade (TBT) notified to the WTO has increased since 1996. The majority of these SPS and all TBTs are imposed against all countries in the world. There are few STCs that are raised against the imposition of other SPS and TBTs that are not directly notified to the WTO, which are shown in lighter colour. However, among the TBT and SPS, there are also some STCs that are raised on the directly notified measures by the EU to the WTO. In 2006, the USA raised a STC on an EU regulation on PRT usage being in force since 1997. Such a regulation also coincides with a sudden fall in the imports from the US as depicted in Figure 2. There are also few special safeguards (SSGs) during the period that were mainly price-based measures to control imports surges due to price falls.

Figure 3 / NTMs on poultry maintained by the EU



Source: Ghodsi et al. (2016c).

Figure 4 / EU effective trade policy on poultry imports



Source: Ghodsi et al. (2016c).

Some NTMs might focus on more than one product. Some might also relate to specific substances that are used in the production of other products. This could result in larger effectiveness of a given detailed NTM. Some (non-) discriminatory NTMs might be effective against the imports from several other countries which again affects a larger number of bilateral trade flows. Therefore, instead of number of NTMs notified to the WTO, one can get a better picture of these policy measures by observing the effective coverage. Thus, the number of bilateral trade flows (here is 6-digit tariff lines) affected by an NTM can be a good proxy measuring the effective coverage.

The effective coverage of the NTMs is depicted in Figure 4. Again, it is observed that the average number of NTMs affecting bilateral 6-digit tariff lines is increasing during time. Since SPSs are typically regulations on food safety, standards, and human health, the coverage of SPS on poultry imports are more effective than that of TBT. Another interesting point is regarding the average tariff in this sector that

had a peak of 26% in 2005 and gradually decreased to its lowest of 17% in 2013. Considering the trade-weighted average (TWA), tariffs show a slightly different picture. In fact, the highest TWA imposed effectively by the EU was above 31% in 2007 coinciding with the financial crisis. This shows that tariff lines with higher trade values were affected by higher tariff rates. Moreover, the overall picture shows that while tariffs have been reduced over the years by WTO concession commitments and by EU customs unions, effective imposed NTMs emerged. Together with the decreasing share of extra-EU trade, it can be argued that NTMs proliferation was more effective than tariff reduction as a restrictive trade policy measure. In the following subsection, we will test this econometrically.

2.2. GRAVITY FRAMEWORK

A formal structural gravity framework is used to study the impact of NTMs on the imports of poultry to 28 single member states of the EU from all over the world. More concretely, the following gravity equation is estimated.

$$\ln(m_{ijht+1}) = \alpha_0 + \alpha_T \ln(1 + T_{ijht}) + \sum_{n=1}^{N} \alpha_n \ln(1 + NTM_{nijht}) + \beta_1 G_{ijt} + \beta_2 EU_{it} + \omega_{ijh} + \omega_{it} + \omega_{jt} + \mu_{ijht}, \quad n \in \{TBT, SPS, TBT\ STC, SPS\ STC, SSG, ADP\} \tag{1}$$

where $\ln(m_{ijht+1})$ is the natural logarithm of the trade indicators of the HS 6-digit product h imported to country i from country j at time t+1. We use trade value, trade quantity, and trade price (unit value) as three indicators of the dependent variable in separate estimations. T_{ijht} is the effective tariff rate imposed on the traded product at time t. Tariff is compiled as AVEs of tariffs estimated by UNCTAD method. Priority of tariff information is firstly effectively applied rates; where it is not available, preferential tariffs are used; and when none of them exists, the most-favoured nation (MFN) tariffs are used. NTM_{nijht} represents the number of NTM of type n being in force or initiated at time t by the EU against partner j. G_{ijt} includes a set of gravity covariates common in the literature capturing country-pair characteristics and consists of classical gravity variables and factor endowments. It includes traditional market potential of trade partners that is the natural logarithm of summation of both countries' expenditure-side real GDP (g_{ijt}). Additionally we use the output-side real GDP per capita for the economic development of a country and use it in the indicator used by Baltagi et al. (2003) as follows:

$$y_{ijt} = \left(\frac{GDPpc_{it}^2}{(GDPpc_{it}+GDPpc_{jt})^2} + \frac{GDPpc_{jt}^2}{(GDPpc_{it}+GDPpc_{jt})^2}\right) - \frac{1}{2}, y_{ijt} \in (0, 0.5) \tag{2}$$

In addition, G_{ijt} includes distance between the trading partners in three relative factor endowments: labour force L, capital stock K, and agricultural land area A as follows:

$$f_{kijt} = \ln\left(\frac{F_{kjt}}{GDP_{jt}}\right) - \ln\left(\frac{F_{kit}}{GDP_{it}}\right), F_k \in \{L, K, A\} \tag{3}$$

Data for the aforementioned gravity variables are gathered from the Penn World Tables (PWT, Feenstra et al., 2015). Further gravity variables that enter our regressions are the exchange rate of the partner country in the importer's currency (Xr_{ijt}), a dummy variable for preferential trade agreement (PTA) between the two partners, and a dummy indicating intra-EU trade (i.e. both partners are EU members at

time t). Since all EU28 members are included as importers in the sample, a dummy variable indicating the EU membership of the importer is also included as EU_{it}.

Furthermore, some fixed effects are included to capture the multilateral resistances. In fact, in the first specification, only country-pair-product fixed effects (ω_{ijh}) and time fixed effect (ω_t) are added in the estimation to run a panel fixed effect. In the second specification, importer-time (ω_{it}) and exporter-time (ω_{jt}) effects are added instead of time-fixed effects. While those two specifications are run by normal OLS, in a third specification, Poisson estimation controlling for country-pair-product and time fixed effects is used to additionally control for zero trade flows. Inclusion of country-time effects in Poisson (or PPML) could not lead to the estimation convergence. Because of many missing observations in explanatory variables (such as tariffs), it could not be possible to estimate a full balanced panel via the Poisson regressions. Last but not least, in order to reduce the endogeneity bias of covariates due to the simultaneity, all explanatory variables are lagged.

Table 1 presents the gravity estimation results on the EU28 poultry imports from all over the world. The first panel to the left shows the OLS results controlling for only bilateral product and time fixed effects (FE) which is the same as panel FE. The middle panel shows the estimation results controlling for additional country-time effects. The third panel shows the Poisson FE results controlling for the zero trade flows. In all regressions, tariffs as traditional tariff policies are affecting trade flows negatively. After controlling for country-time effects, which by theory captures the multilateral resistances, SPS shows to be trade enhancing. Besides, controlling for the zero trade flows, Poisson regressions suggest that tariff lines affected by SPS measures have higher trade values and quantities. However, these have no statistically significant impact on trade unit values reflecting the product cost or quality.

SPS STCs that are very partner-specific are shown to statistically significantly increase the price of traded products controlling for bilateral-product effects. However, since these measures are country-time observations in the sample, controlling for those country-time effects in the second panel hints to an opposite but insignificant impact of these measures on prices.

TBTs imposed on poultry imports are statistically significantly reducing trade flows, which is robust in all specifications. In fact, results in the first panel suggests that a 1% increase in the number of TBTs imposed on poultry product can substantially decrease the trade quantity and value by about 0.3%, which shows around 30% marginal impact of TBTs on trade. Drawing on results from the Poisson estimates, these measures increase the price of imports statistically significantly. While both quantity and value of trade are reduced by TBTs, it can be argued that the implication of TBTs on the imported poultry to the EU members is not quality but cost increasing, which leads to lower demand. However, in the middle panel where the changes in preferences of the importing country and the production patterns of the exporter countries are controlled by the FE, the impact of TBTs on import prices is negative. This might further indicate a lower price or quality of products induced by TBTs, where those patterns are captured by the FE showing the trade restrictiveness of these measures on poultry imports.

TBT STCs do not statistically significantly affect the dependent variables except for one specification. As can be interpreted from the first panel, during time, they only increase the price of imports from the partner country raising them to the WTO, but have no significant influence on their trade values.

Table 1 / Gravity estimations on EU poultry import

Estimation	OLS			OLS			Poisson		
Dep. Var.	**Value**	**Quantity**	**Price**	**Value**	**Quantity**	**Price**	**Value**	**Quantity**	**Price**
α_T	-1.43***	-1.34***	0.083	-1.26**	-1.53**	-0.27	-0.23	-1.12***	-0.40**
	(0.34)	(0.36)	(0.10)	(0.60)	(0.63)	(0.17)	(0.44)	(0.42)	(0.20)
α_{SPS}	-0.0019	0.015	0.017	0.43*	0.47*	0.043	0.23**	0.17*	0.046
	(0.072)	(0.076)	(0.019)	(0.23)	(0.24)	(0.082)	(0.10)	(0.095)	(0.058)
α_{SPSSTC}	-0.23	-0.0081	0.23***	-0.43	-0.50	-0.073	-1.37*	-2.09**	-0.22
	(0.27)	(0.27)	(0.073)	(0.60)	(0.67)	(0.18)	(0.77)	(0.82)	(0.14)
α_{TBT}	-0.29***	-0.30***	-0.0035	-0.34	-0.44*	-0.11*	-0.33***	-0.38***	0.097**
	(0.065)	(0.067)	(0.015)	(0.23)	(0.24)	(0.062)	(0.075)	(0.085)	(0.041)
α_{TBTSTC}	-0.066	0.13	0.20***	0.51	0.37	-0.14	0.45	0.58	0.19
	(0.25)	(0.26)	(0.058)	(0.95)	(0.85)	(0.28)	(0.42)	(0.41)	(0.20)
α_{SSG}	0.19*	0.12	-0.071***	0.11	0.045	-0.061*	-0.35**	-0.27	-0.41***
	(0.11)	(0.11)	(0.027)	(0.14)	(0.14)	(0.035)	(0.15)	(0.17)	(0.078)
α_{ADP}							-6.65***	-10.0***	-4.49***
							(1.54)	(1.38)	(1.21)
g_{ijt}	1.30***	1.19***	-0.10	1.53*	1.84**	0.31	1.87***	1.46***	-0.52
	(0.30)	(0.31)	(0.088)	(0.75)	(0.79)	(0.23)	(0.33)	(0.31)	(0.58)
y_{ijt}	-0.00086	0.0061	0.0069**	-0.0056	-0.0031	0.0025	0.00039	0.015	0.014*
	(0.0094)	(0.0098)	(0.0029)	(0.010)	(0.011)	(0.0033)	(0.011)	(0.011)	(0.0080)
f_{Lijt}	-0.18	-0.28	-0.10	27437.6	-86337.2	-113774.8	0.19	-0.22	-0.021
	(0.24)	(0.26)	(0.072)	(.)	(880486.6)	(1386957.6)	(0.35)	(0.33)	(0.63)
f_{Kijt}	0.30**	0.22*	-0.080**	-18961.7	-27455.5	-8493.8	0.44**	0.49***	0.0040
	(0.12)	(0.12)	(0.035)	(.)	(309060.7)	(489766.1)	(0.17)	(0.17)	(0.16)
f_{Aijt}	0.13	0.24	0.12	-89940.5	-33786.0	56154.5	0.54	0.54	0.60
	(0.34)	(0.36)	(0.095)	(.)	(469137.2)	(722122.8)	(0.54)	(0.56)	(0.38)
Xr_{ijt}	-0.0043	-0.0078*	-0.0035*	-0.0015	-0.0057	-0.0041**	-0.0035	-0.0071	-0.015**
	(0.0042)	(0.0045)	(0.0020)	(0.0056)	(0.0064)	(0.0020)	(0.0051)	(0.0045)	(0.0066)
PTA	0.41**	0.46**	0.048	0.11	0.086	-0.027	1.28***	1.24***	-0.14
	(0.20)	(0.20)	(0.055)	(0.49)	(0.51)	(0.12)	(0.22)	(0.18)	(0.11)
Intra-EU	-0.27	-0.12	0.15***	-395.2	3398.9	3794.1	0.55*	0.33	1.07***
	(0.24)	(0.25)	(0.058)	(.)	(35254.1)	(55707.0)	(0.32)	(0.28)	(0.18)
EU_{it}	0.27	0.017	-0.25***	0.42	0.40	-0.011	-0.18	-0.50**	-0.98***
	(0.20)	(0.21)	(0.050)	(0.67)	(0.70)	(0.21)	(0.23)	(0.20)	(0.13)
Constant	-6.39	-5.75	0.64	-45756.2	-92101.9	-46345.7			
	(4.16)	(4.30)	(1.22)	(.)	(1016551.7)	(1611701.7)			
ω_{ijh}	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
ω_t	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**
ω_{it}	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
ω_{jt}	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
N	31283	31283	31283	31283	31283	31283	93910	93910	93910
R-sq	0.769	0.776	0.708	0.795	0.800	0.731			
adj. R-sq	0.735	0.743	0.665	0.754	0.761	0.680			

Robust standard errors in parentheses (clustered by country-pair-products).
* p<0.1, ** p<0.05, *** p<0.01.

The interpretation of the results of other explanatory variables is rather straightforward.[6] Market potential (g_{ijt}) increases trade flows, while differences in the economic development (y_{ijt}) increase the trade unit

[6] Antidumping (ADP) measures in the sample do not relate to many positive trade flows, but they are mainly reflected in the Poisson estimations including zero trade flows during time in the panel. Thus, they are very trade restrictive with statistically significant negative coefficients leading to zero trade flows.

values during time. Difference in physical capital between the trade partners is the only factor endowment affecting trade values statistically significantly. In fact, the first and third panels suggest when the two countries are very distant in terms of capital endowments they trade more of poultry products with lower prices. However, controlling for country-time effects make trade variables very sensitive to the differences in factor endowments with large but statistically insignificant coefficients. Depreciation of domestic currency against the trade partner's currency reduces the traded quantity; but it also decreases the unit value of the imported product. When a NMS accesses to the EU, its imports from all trade partners become cheaper based on the results of the first and the third specifications. Moreover, when both partners become EU members and their trade becomes part of intra-EU trade, the traded unit value increases, which might reflect the quality improvement. Controlling for zero trade flows in Poisson regression, when both partners are EU members, they have both higher trade and higher traded unit values.

3. Ad valorem equivalents of NTMs

In the previous section, the impact of NTMs on bilateral trade flows to single EU Member States was presented. Quality standards and regulations embodied within the NTMs can have diverse impact on bilateral trade flows depending on the type of product and the exporting partner. When the production process and quality of standards are at a similar level between the two trade partners, the impact of NTM might promote trade. This happens because of the trade diversion from countries which produce the product with lower standards (compared to the ones in the imposing country) to the countries with equal or higher standards as existing in the imposing country. Thus, trade implication of NTMs can be analysed better when the exporters and products are differentiated rather than pooling them in one econometrics sample.

Additionally, the impact of NTMs on trade value might be induced through different channels of quantity and quality. When a trade-restrictive NTM is aimed at quality improvement of the imported product, it is reflected in a higher price of imports. Depending on the preferences of consumers for higher or lower quality, trade values might change in opposite directions. However, the imposed NTM might have no impact on the quality but influence the price due to higher trade costs or trade facilitation. Depending on the demand elasticity of the product, this can lead to higher trade values even if the demanded quantity becomes lower.

Applying a two-stage framework firstly proposed by Kee et al. (2009) and recently further developed by Ghodsi et al. (2016a) allows to estimate bilateral ad valorem equivalents (AVEs) of NTMs. In the first stage, bilateral import demand elasticities at 6-digit level of the HS is estimated, which also differentiates the country of origin of the imported product[7]. In the second stage, using the number of each type of NTMs in force, and interacting them with country-pair dummies, the impact of NTMs on the traded quantities can be estimated as follows.

$$\ln(q_{ijht+1}) = \alpha_0 + \alpha_T \ln(1 + T_{ijht}) + \sum_{n=1}^{N} \alpha_n \omega_{ijh} NTM_{nijht} + \beta_1 G_{ijt} + \beta_2 EU_{it} + \omega_{ijh} + \omega_t + \mu_{ijht}, \quad n \in \{TBT, SPS, TBT\ STC, SPS\ STC, SSG, ADP\} \tag{4}$$

where traded quantity q_{ijht+1} is estimated over independent variables by each 6-digit product *h* in a panel data covering all countries in the world[8]. Compared to equation (1), here NTMs are not in logarithm in order to calculate the AVEs from the coefficients as explained below. Besides, each NTM is interacted with a country-pair dummy (ω_{ijh}). Since NTMs imposed by the EU are the same across all EU members, there is one distinct dummy for all EU members as importers. Moreover, number of NTMs for intra-EU trade is set to zero. Hence, coefficient $\alpha_n \omega_{ijh}$ would give the distinct impact of NTM on that

[7] For a detailed methodological framework on bilateral elasticities, refer to Ghodsi et al. (2016b) and Ghodsi and Stehrer (2017).

[8] The reason for separation of product sample is allowing for faster estimations. And the reason for having all countries in the world as importers is to differentiate the imposed NTMs by an average NTM's impact of a benchmark importer.

bilateral trade flow for all EU members. However, due to differences in the elasticities across importers, the AVE of EU member states will differ. Because inclusion of all interactions with six types of NTMs exhausts degrees of freedom, six estimations are run separately for each NTM-dummy interaction including other types of NTMs as control variables. The rest of the variables are similar to equation (1)[9]. Inclusion of numerous interaction variables with many zero values does not allow Poisson regression to converge, thus, panel FE estimation is used.

Finally, having the bilateral quantity impacts ($\alpha_n \omega_{ijh}$) and the bilateral import demand elasticities (ε_{ijh}) at hand, bilateral AVE for each type of NTM is calculated as follows:

$$ave_{nijh} = \frac{1}{\varepsilon_{ijh}} \frac{\partial \ln(q_{ijh})}{\partial NTM_{ijh}} = \frac{e^{\alpha_n \omega_{ijh}} - 1}{\varepsilon_{ijh}} \quad (5)$$

3.1. RESULTS

Table 2 presents the bilateral AVEs of NTMs imposed by the EU from 1996 to 2014 averaged over all EU28 members. The results suggest that SPS imposed by the EU had statistically significantly affected 799 trade flows of products positively and 703 flows negatively. However, transposing the quantity effect in to the AVEs using elasticities suggest that 788 of those SPS become positive AVEs showing restrictiveness. The simple average (s.a.) of coefficients is negative indicating that an additional SPS measure imposed by the EU reduces trade quantity to a single member state by 0.15% in average. Averaging across all EU28 using imports weights, make this average impact positive, indicating a 1.8% increase in bilateral trade flows to a single EU member after imposition of a new SPS. This is also reflected in a positive simple average of AVE of SPS and a large negative AVE using the trade weights. This is in line with the trade flows and partners' share discussed earlier. In fact, major trade partners' exports of poultry to the EU have benefited from the SPS measures imposed by the EU while others' exports to the EU were restricted by these measures. However, AVEs for SPS STC show high restrictiveness for major trade partners. Trade-weighted average AVEs for the STCs raised on the EU poultry SPS is equivalent to a 27.74% tariff. This might indicate why those trade partners raised STC on SPS.

The impact of TBTs on bilateral imports of poultry to the EU is slightly different. Both simple and weighted average AVEs of these measures are showing trade restrictiveness. About 60% of significant coefficients of TBTs is negative. Import weighted average of AVEs for technical regulations imposed by the EU on bilateral product flows is equivalent to about 6%, while this jumps to around 100% for the STCs raised on the TBTs. In fact, two thirds of statistically significant coefficients of TBT STCs are indicating reductions in trade quantities.

Only three bilateral flows to the EU are affected by the imposed ADP measures. These are the imports from Taiwan to France, Ireland, and Poland. While the AVE of ADP imposed by Ireland is around 100%, this indicator for the other two importers is around 1% in average. The surprising result comes from the AVE of SSG showing a negative sign using both types of averages. In previous section, the average impact of SSG imposed by the EU on the trade quantity was statistically insignificant. This is also reflected in the equal number of positive and negative AVEs of these measures. However, both methods

[9] It is important to note that country-year FE is removed in this specification which cause collinearities with NTM-dummy interactions.

of averaging the AVEs indicate trade promotion of these measures. In fact, these price-based measures regulating the market which should increase the price of imports act as a subsidy to trade that is equivalent to a negative 11.34% tariff.

Table 2 / Bilateral AVEs of NTMs imposed by the EU during 1996-2014 – EU28 average

EU28	SPS	SPSSTC	TBT	TBTSTC	ADP	SSG
AVE (s.a.)	0.39%	-0.05%	0.19%	0.43%	0.04%	-0.40%
α_n (s.a.)	-0.0015	-0.009	-0.013	-0.026	-0.003	-0.007
AVE (w.a.)	-10.63%	27.74%	6.00%	99.67%	99.87%	-11.34%
α_n (w.a.)	0.018	-0.073	-0.079	0.672	-6.608	-0.088
Positive α_n	799	113	412	45	0	372
Negative α_n	703	130	600	91	3	273
Positive AVE	788	98	572	100	3	322
Negative AVE	714	145	440	36	0	323

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

Referring to the appendix for the results and AVEs for each trade partner and each single EU member as importer, it is observed that even for some of the EU members as exporters the AVEs are positive showing restrictiveness. The interesting issue is that those bilateral trade flows were extra-EU trade before having the NMS accessed to the EU. In fact, one of the trade partners for those positive AVEs was a NMS before its accession. This allows for two interpretations. One is that those positive AVEs show that the NTMs imposed by the NMS against other countries before accession were restricting imports from EU members or from future NMSs. Second, it could be that the NTMs imposed by the EU against other countries were restricting the imports from the future NMSs before their accession. However, after accessing to the EU, the NTMs become harmonised and while controlling with an EU dummy in the regressions, trade is positively affected after setting those NTMs of intra-EU trade to zero.

4. Quality impact of EU measures

4.1. METHODOLOGICAL APPROACH

In section 3, EU measures found to be diversely affecting the poultry import quantities and prices. Usually, price of imports or traded unit values are considered as proxies for the quality of products. Products from developed countries that have higher quality are associated with higher unit values of trade. A NTM that is imposed against the import of a product can increase its price. However, it should not necessarily mean that the quality of the product is also increased. When the quality of product is not affected by an NTM, the price can increase if the NTM induces a burden to the exporter as either a fixed or ad valorem cost of exporting. In contrast, an NTM that is aimed to improve the market efficiency might decrease the costs of marketing of the product, which can be reflected as a lower price but a similar quality. Therefore, it is difficult to distinguish between the quality and the quality-adjusted price.

Feenstra and Romalis (2014) propose a theoretical framework to disentangle trade values into a quantity, quality, and quality-adjusted price component. In their framework, both supply-side characteristics to produce higher quality based on higher productivity of firms, and consumer-driven characteristics for higher demand for quality are implemented. Quality of the traded product is affected by both side of trade that is net of costs associated to production of the products variety. Their final database on SITC Rev. 2 classification, gives balanced bilateral trade values, quantity, unit values, quality, quality-adjusted price, and quality-adjusted quantity. With these data it is feasible to track the impact of NTMs on the quality and price net of quality of the traded products.

Following the econometric equation (4), the specification will be changed here to a sample of EU28 bilateral imports from all trade partners as follows:

$$\ln(q_{ijht+1}) = \alpha_0 + \alpha_T \ln(1 + T_{ijht}) + \sum_{n=1}^{N} \alpha_n \omega_{ijh} \ln(1 + NTM_{nijht}) + \beta_1 G_{ijt} + \beta_2 EU_{it} + \omega_{ijh} + \omega_t + \mu_{ijht}, \quad n \in \{TBT, SPS, TBT\ STC, SPS\ STC, SSG, ADP\} \tag{6}$$

In one estimation specification, the dependent variable becomes the quality of imported product and in the other the unit value. The information on these variable is from Feenstra and Romalis (2014) covering the sector 0114 of SITC Rev. 2. Here instead of number of NTMs at levels, their logarithmic form is used to capture the elasticity impact. Other variables and econometric specifications remain unchanged. This specification with exporter-NTM interaction will hint towards the diverse quality impact of EU regulations. In fact, for some countries that have already been producing with an equivalent quality to the EU standards, the imposed NTM might not have any significant impact. Based on the theoretical framework, quality levels of products are structured relative to a benchmark country. Therefore, when a product's quality from a specific exporter does not change while other exporters improve the quality of that product, the relative position of the focal exporter's product quality is degraded. Thus, for each type of NTM, there will be one coefficient for an exporting country to analyse the impact. It is important to

mention that both OLS and Poisson techniques with country-pair (ω_{ijh}) and time (ω_t) fixed effects are used for this analysis. Both are giving results that are very close to each other.

4.2. RESULTS

Table 3 presents the impact of the NTMs imposed by the EU on the quality (Q) and price (P) of the imported poultry from all exporting partners. These are in fact coefficients of each NTM *n* imposed by the EU against partner *j* ($\alpha_n \omega_{ijh}$) that are statistically significant at 10% level. The results suggest that both SPS and TBT imposed by the EU influence the quality of imports positively for many exporters. The results can be interpreted in the following example. A 1% increase in the number of SPS imposed by the EU would increase the total unit value of poultry from the United Arab Emirates (ARE) by 350%, while around 48% of this increase is due to the quality improvement. In fact, a 1% increase in the number of EU SPS measures will increase the quality and the quality-adjusted price of imports from ARE by 167.4% and 183% respectively. While this impact is very large for ARE, for many other exporters this impact is very close to zero.

An interesting finding refers to the impact of SPS on the imports from the US. Results suggest that since 1996, 1% additional SPS imposed by the EU would decrease the quality from the US by 0.165%. While the price impact is about -0.161%, the EU regulations had a slightly small positive impact on the quality-adjusted price of 0.004%. In fact, EU regulations increased the costs of the imports from the US while degrading their quality. However, the SPS STS raised by the US had a small positive impact on the quality and price of the imports. The EU regulations against the AMT were in place to prohibit misuse of these chemicals that were used to maintain the low hygienic quality of the products through shipment. Complying with these regulations by the US exporters showed that the quality of their products has reduced without these chemicals. TBTs have increased the quality of the products from the US while reducing their prices. This might refer to technical regulations that improve the market efficiencies by reducing the cost and improving the qualitative characteristics of products, especially those that are produced in a similar standard setting. Nevertheless, it is important to note that these results are not based on any qualitative testing of the products but on economic quantification of quality and prices.

Quality and price of the two major exporters of poultry to the EU, namely Brazil and Argentina are both affected negatively by NTMs. In contrast, NTMs imposed by the EU enhanced both quality and price of poultry from Thailand and China, two other major exporters. While quality and price of imports from Israel are not affected by these NTMs, price of poultry from Chile, another major exporter is increased by SPS and SSG measures. Besides, quality and price of poultry from Canada are affected negatively by the SPS measures. Again, negative impact of NTMs on quality of imports from EU member states indicate negative role of NTMs imposed by the NMS before accession to the EU. This impact neutralised after harmonisation with the EU standards.

Another important result concerns the impact of SSG. In previous sections, these measures showed to be trade promotive rather than trade restrictive. By estimating the impact of SSGs on single country's exports, it is found that these measures are actually increasing the unit values of imports from many trade partners.

Table 3 / Bilateral quality and price impact of NTMs imposed by the EU – 1996-2011

NTM	SPS		SSG		TBT		TBT STC		SPS STC	
Exporter	Q	P	Q	P	Q	P	Q	P	Q	P
ARE	167.4%	350.4%	41.8%	86.3%	26.6%	51.5%	.	.	.	.
ARG	-9.6%	-11.4%	-16.6%	-20.7%	.	.	.	.	-9.3%	.
AUS	75.3%	187.5%	54.4%	141.8%	65.9%	166.9%	.	.	.	.
AUT	-0.1%	-0.2%	.	.	.	.	.	.	.	.
BEL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
BEN	10.4%	32.9%	.	.	13.3%	33.9%	.	.	.	.
BGR	.	.	.	.	-3.5%	.	.	.	.	.
BRA	-0.3%	-0.3%	-6.5%	0.0%	-2.6%	.	-12.3%	-20.7%	.	.
CAN	-4.4%	-6.3%	.	.	.	.	.	.	.	.
CHE	5.1%	16.7%	10.9%	34.3%	6.7%	20.0%	.	.	-13.0%	-46.7%
CHL	.	11.0%	.	18.3%	.	.	.	.	.	.
CHN	4.1%	6.0%	15.6%	24.8%	6.7%	.	.	.	.	.
CYP	-0.7%	-0.9%	.	.	.	.	.	.	.	.
CZE	5.2%	17.2%	7.6%	26.1%	6.6%	20.4%	.	.	.	.
DEU	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
DNK	0.0%	0.1%	-0.1%	-0.1%	0.0%	0.0%	.	.	.	.
ESP	0.0%	0.0%	0.0%	0.0%	.	0.0%	.	.	.	.
EST	.	1.1%	.	.	.	1.1%	.	.	.	.
FIN	0.0%	0.1%	0.0%	0.0%	.	.	.	.	.	.
FRA	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	.	.	.	.
GBR	0.1%	0.2%	0.0%	0.0%	.	0.0%	.	.	.	.
GEO	15.4%	31.7%	101.1%	255.1%	351.3%	884.5%	.	.	.	.
GRC	-0.8%	-1.7%	.	.	.	.	.	.	.	.
HRV	4.0%	.	.	.	.	-17.7%	.	.	.	.
HUN	0.2%	0.3%	0.0%	0.1%	-2.4%	0.2%	.	.	.	.
IRL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
ITA	-0.1%	-0.1%	0.0%	.	0.0%	0.0%	.	.	.	.
KWT	18.8%	24.2%	43.2%	53.9%	.	.	.	.	.	.
LTU	-7.5%	-32.5%	.	-56.2%	-14.9%	-55.3%	.	.	.	.
NLD	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.	.	.	.
NOR	54.8%	140.8%	81.8%	202.1%	24.0%	57.5%	.	.	.	.
POL	4.8%	7.8%	6.5%	0.0%	3.8%	0.0%	.	.	.	.
PRT	0.0%	0.0%	0.0%	0.0%	.	.	.	.	.	.
ROM	.	8.6%	.	11.8%	.	.	.	.	.	.
SVK	0.0%	-0.1%	-0.4%	.	-0.1%	-0.3%	.	.	.	.
SVN	-0.1%	-0.3%	.	.	.	.	.	.	.	.
SWE	0.1%	0.1%	0.0%	0.0%	.	.	.	.	.	.
THA	6.7%	9.9%	9.8%	13.4%	6.9%	7.1%	.	.	.	.
TUN	6.6%	10.9%	6.4%	12.6%	5.9%	8.8%	.	.	.	.
TUR	7.0%	16.8%	4.2%	.	.	.	.	.	.	.
URY	-4.4%	-15.4%	-10.4%	-35.7%	-4.7%	-21.5%	.	.	.	.
USA	-0.2%	-0.2%	-1.4%	-4.6%	2.2%	-5.6%	.	-12.2%	0.0%	0.0%
ZAF	-19.5%	-40.4%	-80.2%	-140.1%	-80.2%	-143.2%	.	.	.	.
ZWE	10.2%	25.4%	12.4%	32.6%	4.0%	8.4%	.	.	.	.

Only trade flows with statistically significant estimates at 10% level are used.
Source: Authors' estimations.

5. Summary and concluding remarks

Mega trade deals and negotiations between the EU, on the one hand, and Canada and the US, on the other, have prompted debates concerning consumer preferences. The European Union has legislated numerous qualitative standards concerning food and consumer health and safety. These EU directives are mostly negotiated and demanded by the consumer safety unions in order to maintain a high quality of products available to all types of consumers, rich and poor. However, these regulations have become obstacles to trade and some countries have conveyed their concerns to the WTO meetings. There have also been requests for consultations within the dispute settlement mechanism (DSM) of the WTO, claiming that these regulations by the EU violate some of the WTO agreements.

The legal system in the EU is structured in a way obliging producers to prove that their products do not harm the consumer. In contrast, WTO regulations similar to the legal system in the USA stipulate that consumers have to prove that a product harms them. Therefore, unless there is scientific evidence proving the harms of a traded product in the focus of a non-tariff measure (NTM), it will be very hard for the DSM to judge the good faith behind such an EU regulation. In fact, some dispute settlement cases concluded penalties and remedies against EU regulations. Cases of prohibition of imports of meat produced with hormones and biotech feed such as GMOs have led to the imposition of large penalties against the European Community as it was unable to provide any scientific evidence of the products' harmfulness. Another ongoing dispute concerns the use of chlorinated chicken or poultry washed with certain antimicrobial treatments (AMT), which has recently been in the media spotlight. There is no evidence proving the good faith behind an EU regulation prohibiting such imports but the consumers' community is concerned about the availability of such products in the EU market.

In this study, we analyse the imports of poultry to the EU with a special focus on the role of NTMs imposed by the EU. The small share of extra-EU poultry imports and the downward trend of this share for the past several years might indicate that the EU poultry market is well protected. While tariffs have been gradually decreasing over the years, an increasing number of NTMs came into place. In a gravity framework, poultry imports (at 6-digit level of the Harmonised System, HS) to the 28 EU members during the period 1996-2014 were analysed. A statistically significant negative impact of tariffs and technical barriers to trade on the imports of poultry was found. However, in two specifications controlling for multilateral resistances and zero trade flows, results indicated that sanitary and phytosanitary measures (SPS) imposed by the EU increase the trade values and quantities significantly. Moreover, specific trade concerns (STC) raised on TBTs and SPS were found to increase the unit values of imports.

Exporting countries are heterogeneous in many aspects including the level of standards at which they are producing. A country that produces poultry with a quality much lower than the EU standards might be affected negatively. In contrast, a country that is producing with a similar standard as the EU can benefit from the regulative trade policy measures imposed by the EU. Using a two-stage methodology, we calculated the bilateral ad valorem equivalents (AVEs) for five types of NTMs imposed by the EU. The diverse impact of NTMs on different exporters resulted in various AVEs for NTMs. Some AVEs indicate trade promotion such as negative AVEs for SPS measures for the USA and China. Moreover,

findings suggest that SPS measures maintained by the EU were in favour of major exporters of poultry to the EU, while other measures were in general restrictive.

The last part of the analysis was dedicated to the quality impact of NTMs on poultry imports to the EU. Diverse impacts of EU regulations on the quality of imports from different countries again show that the standards frameworks in exporting countries are very heterogeneous. Results suggest that SPS have impacted on upgrading the quality of poultry imported from many countries, while degrading the quality and prices of imports from some major exporters. EU regulations prohibiting the use of AMT suggested that these chemicals were to maintain the low hygienic quality of poultry. This means that not using these materials would lead to lower quality of the imported products, which can also be concluded from the econometrics results.

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6. Appendix

6.1. AVES BY EXPORTER

Table 4 / Bilateral AVEs of SPS imposed by the EU during 1996-2014 – by exporter

Exporter	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
ALB	0.00%	-0.034	0.00%	-0.343	0	1	1	0
ARE	-0.15%	0.088	-0.74%	0.251	4	1	2	3
ARG	-0.57%	0.013	-2.47%	0.024	50	17	40	27
AUS	-1.04%	-0.002	0.07%	-0.056	2	8	8	2
AUT	0.74%	-0.007	-9.75%	0.012	16	16	15	17
BEL	2.65%	0.001	1.39%	0.099	16	15	16	15
BEN	15.84%	-0.356	33.09%	-0.578	0	6	5	1
BFA	0.00%	-0.008	0.01%	-0.030	0	2	2	0
BGD	0.35%	0.025	4.13%	-0.055	1	2	3	0
BGR	0.07%	-0.003	0.81%	-0.018	0	19	9	10
BRA	9.22%	0.001	-9.93%	0.026	78	27	80	25
BRB	0.00%	-0.245	0.00%	-0.408	0	3	0	3
CAN	-1.89%	0.024	-33.31%	0.272	15	6	11	10
CHE	16.31%	0.034	5.97%	0.027	23	18	25	16
CHL	-0.18%	-0.015	-1.35%	0.026	18	2	5	15
CHN	-28.03%	0.064	-2330.84%	2.911	22	0	4	18
COL	0.74%	-0.007	2.22%	-0.022	0	1	1	0
CYP	0.42%	-0.020	0.70%	0.030	3	5	5	3
CZE	-5.10%	-0.009	-58.74%	-0.010	26	18	20	24
DEU	2.67%	-0.022	-2.43%	0.010	20	21	22	19
DNK	1.46%	-0.012	-6.55%	0.066	16	15	17	14
EGY	-0.05%	0.036	-0.18%	0.179	2	0	1	1
ESP	-2.68%	-0.016	-11.75%	0.072	12	13	11	14
EST	0.01%	0.001	-0.42%	0.001	26	17	31	12
FIN	-0.20%	0.013	-2.45%	0.047	9	4	6	7
FRA	0.20%	-0.022	-0.25%	-0.015	20	21	21	20
GAB	-2.73%	0.022	-26.97%	0.109	2	0	1	1
GBR	22.36%	-0.024	-5.21%	0.121	17	17	18	16
GEO	0.89%	-0.018	4.66%	-0.073	0	2	2	0
GHA	0.22%	0.412	0.44%	0.825	1	0	1	0
GRC	-8.34%	0.002	-33.98%	-0.260	9	8	6	11
HKG	-5.34%	0.077	-0.42%	0.052	14	1	6	9
HRV	0.15%	-0.007	4.37%	-0.112	2	4	5	1
HUN	0.84%	0.005	-3.83%	0.050	36	17	30	23
IDN	-0.32%	0.079	1.16%	-0.086	3	3	3	3
IND	-1.61%	0.025	-0.47%	0.034	4	3	3	4
IRL	-0.42%	0.008	-8.36%	0.111	10	4	7	7
ISL	-9.44%	0.122	-36.63%	0.574	5	0	0	5
ISR	-0.17%	0.004	-0.07%	0.021	51	21	12	60
ITA	1.91%	-0.020	1.37%	0.001	19	20	22	17

ctd.

Table 4 / ctd.

Exporter	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
JPN	-19.32%	0.205	-10.32%	0.187	10	10	4	16
KOR	-120.25%	0.391	-275.95%	0.913	3	1	2	2
LKA	-18.72%	0.206	-40.12%	0.578	2	0	0	2
LTU	0.02%	-0.002	0.83%	-0.017	2	27	20	9
LUX	-0.05%	-0.006	0.33%	0.054	4	4	4	4
LVA	-0.07%	0.009	-0.72%	0.020	14	8	1	21
MAR	-0.03%	0.052	-0.05%	-0.002	2	1	1	2
MEX	0.51%	0.049	4.85%	-0.043	2	2	3	1
MLI	10.10%	-0.112	15.32%	-0.171	0	5	5	0
MLT	-0.01%	0.001	-0.15%	0.036	1	0	0	1
MYS	-0.12%	-0.005	-1.36%	-1.083	2	2	1	3
NER	0.85%	-0.009	2.56%	-0.026	0	2	2	0
NGA	-1.71%	0.017	-6.86%	0.066	1	0	0	1
NLD	-1.53%	-0.033	-32.47%	0.066	17	19	21	15
NOR	-3.37%	0.025	-11.46%	0.014	10	8	9	9
NZL	-0.38%	0.008	-0.26%	-0.013	9	10	9	10
PAK	-2.47%	0.015	-1.87%	-0.071	2	3	2	3
PAN	-0.02%	-0.009	-0.19%	-0.043	0	2	0	2
PER	-1.22%	0.012	-8.52%	0.082	1	0	0	1
PHL	0.00%	0.001	0.00%	-0.004	2	2	2	2
POL	1.14%	-0.016	5.66%	-0.072	6	56	32	30
PRT	0.00%	-0.013	-2.35%	0.160	8	11	9	10
ROM	-1.42%	0.009	22.71%	-0.230	12	2	1	13
RUS	0.00%	-0.002	0.00%	-0.040	0	2	2	0
SGP	-0.44%	0.041	-0.87%	-0.019	2	5	5	2
SLE	3.54%	-0.046	1.28%	-0.037	1	3	1	3
SVK	1.23%	-0.011	26.00%	-0.212	11	15	16	10
SVN	-0.47%	0.019	-1.94%	0.011	21	12	21	12
SWE	0.08%	-0.004	1.23%	0.036	9	7	6	10
THA	-2.69%	0.024	-1.04%	-0.015	25	72	66	31
TUN	-57.28%	0.351	-133.27%	0.838	2	0	0	2
TUR	-0.02%	0.048	-0.27%	-0.053	12	20	21	11
TWN	-3.96%	0.036	-19.81%	0.181	3	0	0	3
UGA	5.26%	-0.057	15.77%	-0.172	0	1	1	0
UKR	-2.54%	0.102	-6.39%	0.207	20	0	12	8
URY	-0.39%	-0.008	-1.49%	-0.023	5	6	6	5
USA	-0.12%	-0.016	-0.99%	-0.036	24	15	20	19
VNM	0.00%	-0.022	0.00%	-0.201	0	3	0	3
ZAF	0.01%	-0.002	0.04%	-0.196	2	9	6	5

Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.
Source: Authors' estimations.

Table 5 / Bilateral AVEs of SPS STC imposed by the EU during 1996-2014 – by exporter

Exporter	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
ARG	-46.15%	0.370	24.71%	0.197	40	23	12	51
AUS	0.00%	-0.426	1.06%	-1.474	0	13	12	1
AUT	0.23%	-0.006	17.28%	-0.407	1	1	1	1
BEL	0.22%	-0.004	53.19%	0.333	1	1	2	0
CAN	7.08%	-0.551	29.48%	-0.903	0	19	11	8
CHE	17.50%	0.513	74.62%	2.286	14	1	14	1
CZE	0.15%	0.009	-2.78%	0.866	2	0	1	1
DEU	13.52%	-0.004	29.96%	0.321	3	3	4	2
DNK	0.14%	0.006	-20.55%	0.399	3	1	2	2
ESP	-0.13%	0.001	-30.00%	0.339	1	0	0	1
EST	2.71%	0.003	314.05%	0.308	1	0	1	0
FIN	-0.04%	0.003	-6.07%	0.339	1	0	0	1
FRA	-0.50%	0.000	-24.63%	0.287	4	3	2	5
GBR	-0.55%	0.001	-32.24%	0.380	2	1	1	2
GRC	0.03%	0.012	3.87%	1.188	2	0	1	1
HUN	26.47%	0.002	18.04%	-0.345	4	3	4	3
IRL	-0.05%	0.002	-8.74%	0.339	1	0	0	1
ITA	-0.98%	0.000	-46.20%	-0.029	4	3	2	5
NLD	-3.06%	0.004	-546.75%	0.295	3	2	1	4
POL	-1.94%	-0.004	13.86%	-0.589	3	3	2	4
PRT	-0.01%	0.002	-0.94%	0.339	1	0	0	1
ROM	6.28%	0.009	861.26%	0.254	3	1	3	1
SVK	-0.02%	0.012	0.29%	0.604	2	0	1	1
SVN	0.46%	0.010	-96.70%	1.056	3	2	3	2
USA	-62.59%	-0.672	94.71%	-1.492	14	50	18	46

Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.
Source: Authors' estimations.

Table 6 / Bilateral AVEs of TBT imposed by the EU during 1996-2014 – by exporter

Exporter	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
ALB	0.00%	-0.031	0.01%	-0.094	0	3	3	0
ARE	-0.17%	0.090	-0.82%	0.271	5	1	3	3
ARG	0.00%	-0.012	0.29%	-0.029	6	33	27	12
AUS	0.05%	-0.035	0.17%	-0.121	0	15	15	0
AUT	2.16%	-0.048	85.90%	-1.529	2	7	6	3
BEL	-0.10%	-0.016	6.83%	-0.916	1	4	2	3
BEN	32.28%	-0.846	62.76%	-1.596	0	6	5	1
BFA	0.01%	-0.016	0.02%	-0.064	0	2	2	0
BGD	1.16%	-0.016	3.47%	-0.043	0	5	5	0
BLZ	-48.56%	0.318	-121.40%	0.795	2	0	0	2
BRA	-0.24%	0.006	-1.50%	-0.031	9	78	37	50
CAN	-1.58%	-0.040	-2.38%	-0.009	12	6	5	13
CHE	6.42%	-0.130	-1.60%	-0.002	21	19	26	14
CHL	0.21%	0.057	3.86%	0.722	4	0	4	0
CHN	-0.26%	0.012	-3.71%	0.051	32	11	14	29
COL	1.12%	-0.011	3.36%	-0.034	0	1	1	0
CYP	-0.49%	0.005	-8.73%	0.084	4	0	0	4
CZE	-1.52%	0.016	-16.45%	0.059	39	22	35	26
DEU	1.00%	-0.024	65.34%	-1.208	3	6	6	3
DNK	0.40%	-0.011	51.85%	-0.948	2	3	4	1
ESP	-2.16%	-0.032	-124.95%	-1.455	0	5	2	3
EST	0.05%	0.007	-1.11%	0.098	22	14	28	8
FIN	0.01%	-0.012	0.71%	-1.678	0	1	1	0
FRA	0.36%	-0.028	-4.46%	0.005	3	7	7	3
GAB	-4.22%	0.033	-41.64%	0.164	2	0	1	1
GBR	-0.71%	-0.021	5.64%	-0.315	2	4	3	3
GEO	3.39%	-0.050	17.86%	-0.236	0	2	2	0
GHA	0.18%	0.353	0.35%	0.706	1	0	1	0
HKG	-1.89%	0.022	-1.26%	0.183	15	1	6	10
HRV	3.56%	-0.047	67.17%	-0.676	8	15	19	4
HUN	0.47%	-0.009	-7.42%	0.083	16	8	7	17
IND	0.67%	-0.003	0.46%	0.027	3	5	5	3
IRL	-0.04%	-0.009	-0.66%	-0.170	1	1	1	1
ISL	2.86%	-0.139	-15.34%	-0.643	0	5	3	2
ISR	-2.45%	0.017	-8.98%	0.044	22	20	18	24
ITA	1.26%	-0.031	69.64%	-1.375	3	7	7	3
JPN	-0.76%	-0.082	-0.37%	-0.088	2	11	3	10
KOR	7.44%	-0.116	3.41%	0.008	1	1	1	1
LTU	0.18%	-0.013	3.23%	-0.104	0	15	15	0
LUX	0.00%	-0.008	-0.08%	-0.714	0	1	0	1
MAR	4.72%	-0.072	21.47%	-0.247	0	4	4	0
MEX	0.83%	-0.154	8.18%	-0.107	0	2	2	0
MLI	1.51%	-0.016	12.12%	-0.129	0	1	1	0
MYS	-0.11%	-0.095	-1.48%	-1.230	0	1	0	1
NER	9.43%	-0.111	28.28%	-0.332	0	2	2	0
NGA	-5.94%	0.053	-23.75%	0.213	1	0	0	1
NIC	-0.65%	-0.065	-4.51%	-0.226	0	2	0	2
NLD	2.63%	-0.022	-9.09%	-0.900	2	5	5	2
NOR	-5.22%	0.001	-10.01%	-0.015	10	10	8	12

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Table 6 / ctd.

Exporter	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
NZL	-0.16%	-0.007	-0.33%	-0.051	6	11	11	6
PAK	4.64%	-0.085	-4.82%	-0.430	0	5	4	1
PHL	0.00%	-0.072	-0.01%	-0.230	0	3	0	3
POL	2.07%	-0.032	12.08%	-0.128	0	62	47	15
PRT	0.66%	-0.017	48.51%	-1.017	0	3	3	0
ROM	-1.23%	0.022	3.40%	0.084	28	0	16	12
SGP	-0.07%	-0.107	-0.49%	-0.277	0	5	4	1
SLE	1.73%	-0.039	0.51%	-0.054	1	3	1	3
SVK	2.64%	0.015	27.01%	-0.017	21	9	13	17
SVN	-1.84%	0.015	-10.59%	0.095	21	14	26	9
SWE	0.17%	-0.013	23.85%	-0.762	1	2	1	2
SWZ	0.11%	0.047	0.11%	0.047	1	0	1	0
THA	-0.33%	0.000	1.55%	-0.045	7	27	22	12
TUR	1.32%	-0.019	1.45%	-0.050	5	24	13	16
TWN	-4.84%	0.043	-24.19%	0.217	3	0	0	3
UGA	4.43%	-0.048	13.30%	-0.143	0	1	1	0
UKR	-2.87%	0.118	-6.88%	0.221	26	0	14	12
URY	-1.59%	-0.022	-1.19%	-0.042	5	17	7	15
USA	-4.09%	0.076	2.23%	-0.034	31	33	34	30
VNM	0.00%	-0.011	0.00%	-0.101	0	3	0	3
ZAF	0.07%	-0.151	0.06%	-0.324	0	6	2	4

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

Table 7 / Bilateral AVEs of TBT STC imposed by the EU during 1996-2014 – by exporter

Exporter	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
ARG	-14.32%	-0.490	7.09%	-3.101	8	18	18	8
AUS	0.54%	-0.953	1.37%	-2.663	0	19	18	1
BRA	15.94%	-0.296	104.39%	0.850	34	23	38	19
CAN	2.55%	-0.173	23.55%	-0.939	0	7	4	3
IND	-0.03%	0.309	-0.20%	2.264	3	0	0	3
URY	0.00%	-0.191	0.01%	-1.386	0	4	4	0
USA	9.50%	-0.267	78.50%	-1.804	0	20	18	2

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

Table 8 / Bilateral AVEs of SSG imposed by the EU during 1996-2014 – by exporter

Exporter	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
ARG	-21.70%	0.251	-427.70%	1.080	23	0	17	6
AUS	0.09%	-0.243	0.94%	-1.129	0	9	9	0
AUT	-0.54%	0.011	-30.14%	0.502	7	0	3	4
BEL	0.91%	0.009	23.39%	0.193	8	0	7	1
BEN	-0.74%	-0.126	-5.20%	-0.881	0	1	0	1
BRA	17.84%	0.113	-58.01%	0.463	93	10	71	32
CAN	-0.25%	-0.001	-12.18%	-0.044	0	1	0	1
CHE	2.49%	0.031	67.27%	0.222	8	0	6	2
CHL	-6.54%	0.107	-30.74%	0.482	16	1	1	16
COL	12.15%	-0.151	36.45%	-0.453	0	1	1	0
CZE	-2.35%	-0.016	-72.72%	-0.133	7	11	5	13
DEU	-0.72%	0.008	-16.62%	0.147	9	0	0	9
DNK	-0.69%	0.010	-26.26%	0.315	8	0	1	7
ESP	-0.87%	0.011	-21.41%	0.205	8	0	5	3
EST	-0.34%	-0.041	-15.48%	0.078	12	10	18	4
FIN	-0.73%	0.014	-48.33%	0.089	6	0	1	5
FRA	-0.06%	0.008	-1.86%	0.131	9	0	2	7
GBR	-0.59%	0.008	-8.00%	0.089	8	0	0	8
GEO	8.77%	-0.151	70.15%	-1.209	0	1	1	0
GHA	0.20%	0.380	0.39%	0.760	1	0	1	0
GRC	0.01%	0.010	0.24%	0.209	6	0	4	2
HKG	-3.41%	0.303	0.84%	0.918	9	0	3	6
HUN	-0.02%	-0.020	-35.31%	0.108	17	11	16	12
IND	0.00%	0.067	-0.01%	0.493	3	0	0	3
IRL	-0.64%	0.009	-8.65%	0.143	6	0	2	4
ISR	-0.54%	-0.016	3.69%	0.221	21	8	4	25
ITA	-0.29%	0.009	-7.56%	0.121	9	0	2	7
JPN	0.54%	-0.154	5.89%	-0.554	0	7	2	5
LTU	0.24%	-0.017	4.28%	-0.140	0	15	15	0
LUX	0.11%	0.004	3.44%	0.107	4	0	3	1
LVA	-0.01%	0.003	-0.51%	0.217	1	0	0	1
NER	10.77%	-0.130	32.31%	-0.390	0	2	2	0
NGA	-58.69%	0.302	-234.75%	1.208	1	0	0	1
NIC	-0.87%	-0.090	-6.02%	-0.315	0	2	0	2
NLD	-2.68%	0.008	-97.62%	0.222	9	0	1	8
NOR	-2.10%	0.019	-14.31%	0.133	6	0	0	6
NZL	-0.33%	0.066	-1.01%	-0.272	4	9	8	5
POL	-6.71%	-0.108	26.67%	-0.376	0	57	30	27
PRT	-0.15%	0.010	-7.86%	0.407	6	0	0	6
SVK	0.04%	0.033	21.20%	-0.146	10	1	3	8
SVN	-0.03%	-0.014	-0.74%	-0.218	2	7	3	6
SWE	-0.07%	0.006	-5.69%	0.152	5	0	1	4
THA	3.14%	-0.136	14.40%	-0.578	30	45	43	32
TUR	-0.07%	-0.054	-0.57%	-0.355	0	7	0	7
URY	-1.03%	-0.149	-6.37%	-0.393	0	11	1	10
USA	2.09%	-0.371	15.37%	-0.342	0	34	25	9
VNM	3.60%	-0.113	2.97%	-0.278	0	9	2	7
ZAF	0.29%	-0.362	2.66%	-3.136	0	3	3	0

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

6.2. AVES BY IMPORTER

Table 9 / Bilateral AVEs of SPS imposed by the EU during 1996-2014 – by importer

Importer	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
AUT	-0.25%	0.003	-2.09%	0.020	34	39	38	35
BEL	-0.01%	0.001	3.67%	0.013	24	20	23	21
BGR	4.37%	-0.022	77.81%	-0.114	41	62	55	48
CYP	1.02%	-0.035	25.57%	-0.472	18	29	27	20
CZE	1.87%	0.002	13.50%	-0.156	41	53	63	31
DEU	-0.08%	-0.005	0.20%	0.003	40	58	54	44
DNK	-0.05%	0.003	0.82%	-0.001	25	23	26	22
ESP	0.08%	0.002	1.42%	0.014	20	21	28	13
EST	-0.23%	0.004	-4.26%	0.041	16	9	13	12
FIN	-0.12%	0.004	0.16%	0.006	19	18	24	13
FRA	0.09%	-0.001	0.79%	0.003	39	44	45	38
GBR	-0.10%	0.003	0.03%	0.008	28	17	24	21
GRC	-0.44%	0.001	-0.78%	-0.005	16	14	18	12
HRV	1.58%	-0.091	-0.10%	-0.011	8	13	9	12
HUN	-2.08%	0.051	-20.22%	0.158	58	8	28	38
IRL	-0.26%	0.002	0.88%	-0.011	25	27	26	26
ITA	-0.26%	0.003	2.25%	0.019	18	17	18	17
LTU	0.17%	0.004	0.54%	0.013	6	1	5	2
LUX	0.15%	-0.005	0.79%	0.012	3	11	9	5
LVA	-0.03%	0.001	-0.77%	0.001	25	19	20	24
MLT	-0.13%	0.001	-2.44%	0.021	6	4	5	5
NLD	0.06%	0.000	-30.41%	0.012	30	26	30	26
POL	13.94%	0.027	-25.27%	0.219	106	22	51	77
PRT	-0.17%	0.002	-0.01%	0.014	12	6	10	8
ROM	-0.81%	0.016	-21.87%	0.107	75	34	42	67
SVK	-18.54%	0.012	-249.37%	0.441	35	25	22	38
SVN	3.08%	-0.113	3.52%	-0.091	17	69	58	28
SWE	0.17%	-0.002	-0.38%	0.007	14	14	17	11

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

Table 10 / Bilateral AVEs of SPS STC imposed by the EU during 1996-2014 – by importer

Importer	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
AUT	-2.23%	-0.010	-33.83%	1.174	4	6	2	8
BEL	0.05%	-0.005	-1.54%	0.606	2	2	2	2
BGR	1.33%	-0.023	68.45%	-1.053	2	7	6	3
CYP	-0.68%	0.009	11.89%	-0.235	3	2	1	4
CZE	-0.01%	0.030	-107.51%	-0.217	4	2	1	5
DEU	0.00%	-0.016	-2.86%	0.386	6	10	6	10
DNK	-0.07%	-0.002	-9.77%	-0.352	2	2	0	4
ESP	0.01%	-0.029	-1.43%	0.129	2	4	2	4
EST	-10.27%	0.004	-24.88%	-1.387	4	6	6	4
FIN	-0.40%	0.015	-1.78%	0.787	2	1	1	2
FRA	0.13%	-0.035	13.29%	-0.656	2	8	6	4
GBR	0.74%	-0.013	93.29%	-0.273	4	7	5	6
GRC	5.54%	-0.039	164.87%	-0.065	1	5	4	2
HRV	76.41%	0.050	-27.59%	0.108	47	25	33	39
HUN	-0.06%	-0.017	-9.14%	-1.517	1	3	2	2
IRL	-2.65%	-0.009	-320.33%	1.348	4	5	3	6
ITA	-0.14%	-0.012	1.03%	-0.253	2	3	1	4
LTU	-7.50%	-0.033	-2.79%	-1.206	1	4	2	3
LVA	-13.15%	-0.017	-465.90%	-1.952	1	2	0	3
MLT	-15.22%	-0.025	-81.42%	-0.448	2	4	2	4
NLD	-0.15%	-0.005	-14.38%	0.547	3	3	1	5
POL	0.18%	-0.007	120.18%	-1.484	3	6	4	5
PRT	-12.23%	0.016	-40.76%	0.615	2	1	1	2
ROM	-0.28%	0.010	199.46%	-0.708	3	4	3	4
SVK	-3.96%	-0.009	-129.49%	0.255	3	4	0	7
SVN	-0.61%	0.020	-61.32%	1.857	2	0	1	1
SWE	-0.01%	-0.031	-1.85%	0.622	1	4	3	2

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

Table 11 / Bilateral AVEs of TBT imposed by the EU during 1996-2014 – by importer

Importer	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
AUT	-0.90%	0.001	-0.29%	0.017	30	41	37	34
BEL	-0.01%	-0.001	9.12%	-0.104	19	20	22	17
BGR	-0.32%	0.000	-4.59%	-0.012	8	17	13	12
CYP	-1.03%	0.005	-14.58%	-0.015	6	5	7	4
CZE	-0.42%	0.011	10.16%	-0.113	29	18	24	23
DEU	0.06%	-0.029	4.38%	-0.066	39	62	55	46
DNK	-0.15%	0.000	9.41%	-0.105	20	30	30	20
ESP	0.35%	0.002	5.75%	-0.084	16	24	29	11
EST	-0.76%	-0.002	3.45%	-0.036	13	13	14	12
FIN	0.36%	0.001	4.98%	-0.065	10	20	18	12
FRA	0.49%	-0.007	8.97%	-0.079	32	49	45	36
GBR	-0.09%	0.008	5.88%	-0.068	24	22	29	17
GRC	-1.18%	-0.002	3.11%	0.001	14	17	19	12
HRV	0.02%	-0.001	0.54%	-0.003	1	7	6	2
HUN	-0.23%	0.003	5.91%	0.030	11	6	6	11
IRL	-0.09%	-0.004	4.15%	-0.073	17	27	24	20
ITA	-0.80%	0.001	-5.29%	0.025	14	21	18	17
LTU	-0.22%	0.008	-3.48%	-0.029	4	3	3	4
LUX	4.62%	-0.005	454.70%	-0.095	2	8	6	4
LVA	-0.43%	0.006	5.49%	-0.038	3	3	4	2
MLT	-0.68%	0.005	2.30%	-0.018	4	6	4	6
NLD	0.59%	-0.005	5.65%	-0.030	25	24	29	20
POL	0.13%	-0.002	-4.30%	-0.034	19	29	27	21
PRT	-0.20%	-0.001	10.90%	-0.123	5	10	7	8
ROM	-0.75%	0.007	3.17%	-0.023	11	11	10	12
SVK	-0.68%	0.002	0.78%	0.006	14	16	13	17
SVN	13.18%	-0.458	64.47%	-1.171	12	74	56	30
SWE	-0.35%	0.000	0.78%	-0.076	10	17	17	10

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

Table 12 / Bilateral AVEs of TBT STC imposed by the EU during 1996-2014 – by importer

Importer	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
AUT	-0.24%	-0.039	30.46%	-2.659	3	8	6	5
BEL	0.02%	-0.004	3.37%	0.778	1	1	2	0
BGR	8.82%	-0.025	1676.05%	0.100	1	5	6	0
CYP	-0.57%	-0.011	-106.26%	0.527	1	1	1	1
CZE	0.12%	-0.048	17.45%	-0.427	2	3	4	1
DEU	-0.10%	-0.055	-2.03%	-0.420	3	14	12	5
DNK	0.44%	-0.027	38.73%	0.928	1	4	5	0
ESP	0.25%	-0.022	201.72%	0.967	3	4	4	3
EST	0.53%	-0.053	-130.62%	0.516	1	6	6	1
FIN	-0.68%	-0.067	10.33%	-1.363	2	4	5	1
FRA	-0.23%	-0.017	5.86%	-0.007	4	6	5	5
GBR	0.28%	-0.030	58.00%	0.962	1	5	6	0
GRC	3.68%	-0.030	98.60%	-0.012	1	4	5	0
HRV	-0.24%	0.001	-33.16%	0.097	1	0	0	1
HUN	0.26%	0.005	49.76%	0.968	1	0	1	0
IRL	-0.63%	-0.050	31.61%	-4.410	3	5	6	2
ITA	0.03%	-0.007	9.22%	0.938	2	2	2	2
LTU	1.09%	-0.010	95.36%	-0.190	1	1	2	0
LUX	0.52%	0.006	86.50%	0.968	1	0	1	0
LVA	-1.26%	-0.023	-198.26%	0.962	1	2	2	1
MLT	0.05%	-0.013	13.68%	0.953	1	2	2	1
NLD	-0.22%	-0.004	-4.36%	0.222	2	3	3	2
POL	0.63%	-0.033	9.79%	0.806	1	2	2	1
PRT	0.41%	-0.029	102.66%	0.377	1	1	2	0
ROM	0.34%	-0.057	60.41%	-0.473	2	4	4	2
SVK	-1.33%	-0.003	6.01%	-2.554	2	1	2	1
SVN	0.00%	-0.020	0.27%	-1.664	2	3	4	1
SWE	-0.24%	-0.039	30.46%	-2.659	3	8	6	5

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

Table 13 / Bilateral AVEs of SSG imposed by the EU during 1996-2014 – by importer

Importer	AVE (s.a.)	α_n (s.a.)	AVE (w.a.)	α_n (w.a.)	Positive α_n	Negative α_n	Positive AVE	Negative AVE
AUT	1.17%	-0.031	3.57%	-0.020	12	21	18	15
BEL	0.44%	-0.021	21.06%	-0.263	10	14	15	9
BGR	0.20%	-0.005	39.78%	0.051	9	7	5	11
CYP	11.41%	0.027	179.83%	0.665	8	1	3	6
CZE	2.49%	0.018	-68.81%	0.169	27	7	12	22
DEU	0.34%	-0.022	18.89%	-0.268	15	22	18	19
DNK	-8.39%	-0.002	-188.72%	-0.252	11	13	15	9
ESP	0.88%	-0.044	60.79%	0.119	12	18	17	13
EST	0.41%	-0.013	28.09%	-0.330	8	7	9	6
FIN	0.51%	-0.016	10.95%	-0.040	10	13	14	9
FRA	1.12%	-0.020	24.94%	-0.174	17	22	20	19
GBR	-1.67%	-0.003	-22.28%	-0.112	13	15	14	14
GRC	-5.14%	-0.030	-241.51%	0.005	6	11	13	4
HRV	-0.45%	-0.004	-8.83%	0.048	7	4	2	9
HUN	0.30%	0.004	14.00%	-0.091	4	2	4	2
IRL	-0.50%	-0.016	-2.34%	0.057	11	14	15	10
ITA	-0.22%	-0.009	-3.07%	0.214	9	12	12	9
LTU	0.72%	-0.022	-19.49%	-0.371	1	2	2	1
LUX	-0.08%	-0.021	0.77%	0.210	3	7	5	5
LVA	1.11%	-0.006	41.74%	-0.337	1	2	3	0
MLT	-2.28%	-0.027	-113.00%	0.623	4	4	4	4
NLD	0.24%	-0.010	30.37%	-0.181	12	15	15	12
POL	-0.52%	0.024	-11.29%	0.008	99	11	44	66
PRT	-0.68%	-0.003	-15.92%	-0.015	8	6	7	7
ROM	0.84%	0.003	32.04%	-0.206	7	3	6	4
SVK	-9.41%	0.078	-213.71%	0.304	34	7	12	29
SVN	1.09%	0.006	158.79%	0.395	5	2	6	1
SWE	-0.29%	-0.030	2.04%	-0.154	9	11	12	8

Source: Authors' estimations.
Only trade flows with statistically significant estimates at 10% level are used.
s.a refers to simple averages, w.a. refers to import-weighted averages.

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