

# The political economy of non-tariff measures

Cristina Herghelegiu<sup>\*</sup>

Paris School of Economics – Université Paris 1 Panthéon-Sorbonne

September 29, 2015

**Very preliminary version. Do not cite.**

## Abstract

Over the last decades, non-tariff measures (NTMs) have seen an important upsurge. While the political economy of tariffs has been widely explored, little research has focused on the determinants of non-tariff protection, and the existing studies are mainly relying on a single country or a specific type of measure. This paper seeks to fill the gap by empirically evaluating the political economy factors which lead to the adoption of NTMs in several countries, both developed and developing. Using the most recent and comprehensive dataset on NTMs, we reveal the protectionist intentions behind their adoption in all countries, even after controlling for product and country fixed effects and other product- and industry-level variables. When the sample is split into developed and developing countries, these results still hold. Of course, the possibility of implementing NTMs for legitimate reasons cannot be completely ruled out, hence we also focus on measures perceived as restrictive by a country's trading partners. These measures have been raised as concerns at the WTO. Previous conclusions are reinforced, pointing to the adoption of NTMs for protectionist purposes. Moreover, international institutions play an increasing role in promoting free trade, whereas national governments become limited in their power to respond to protectionist pressures and raise trade barriers. In the last part of this research, we proxy the lobbying influence of national business groups at the international level by their participation in the Ministerial Conferences (MCs), the highest-decision making body of the WTO. Relying on an original and exhaustive dataset including all business groups that have attended the MCs over time, we show that lobbying at the transnational level has a positive and significant impact on the adoption of NTMs.

**JEL codes:** F13, F14, D72

**Keywords:** Non-tariff measures, Political Economy, International Trade, Lobbying

---

<sup>\*</sup>I owe special thanks to Anne-Célia Disdier for her support, encouragement and guidance. I wish to thank John C. Beghin, Olivier Cadot, Paola Conconi, Chantal Le Moüel and the GSIE Seminar participants for useful comments and suggestions. I am especially grateful to Marcel Hanegraaff for generous help with the data. I also thank INRA for my fellowship. Any remaining errors are mine.

<sup>†</sup>Contact information: Paris School of Economics, Building B, ground floor, office B026, E-mail: cristina.herghelegiu@gmail.com

# 1 Introduction

Over the last decades, multilateral and regional trade negotiations have led to massive trade liberalization through tariff cuts, in both developed and developing countries. As a result, attention has been shifted towards non-tariff measures (NTMs), which are more diverse and complex policy instruments. If the main goal of early measures was to replace tariff protection, over the years NTMs took subtler forms, having a declared purpose of pursuing public policy objectives. Globalization is associated with a greater interdependency among states and public policies have gained momentum. However, the same NTMs may be used to pursue both legitimate and protectionist goals and the boundary between the different motivations which lead to their implementation is very thin. Depending on the reasons that lay behind the adoption of NTMs, trade effects may be very different. Hence, it is important to analyze what motivates a government to apply a particular type of NTMs.

To a greater or lesser extent, NTMs affect both developed and developing countries. Figure 1 presents the occurrence of NTMs across several countries, through coverage and frequency ratios. Coverage ratios measure the percentage of trade subject to NTMs, whereas frequency ratios refer to the percentage of products to which one or several NTMs apply.

Figure 1 about here

In order to boost transparency of trade policies worldwide, countries are supposed to notify NTMs to the WTO. Also, WTO members considering to be negatively affected by NTMs imposed by other members and looking for further clarification can raise Specific Trade Concerns (STCs). STCs focus on two categories of NTMs, that is Sanitary and Phytosanitary measures (SPS) and Technical Barriers to Trade (TBT), which are more opaque and complex policy instruments. For instance, in 2011, Brazil raised concerns against South Africa which had suspended imports of beef and pork meat from Brazil a couple of years before, due to a foot-and-mouth disease (FMD) outbreak in the country. After several rounds of negotiations, exports of Brazilian bovine meat to South Africa were authorized, but not exports of Brazilian pork meat. However, the FMD outbreak had affected only the bovine herd, and South Africa's delay in accepting Brazilian pork meat could not be scientifically justified. Repeated checks related to swine disease imposed by South Africa had become a major and unnecessary obstacle to trade. Moreover, the FMD status of Brazil was higher than that of South Africa, so the ban was unjustified. By raising an STC, Brazil required South Africa to respect the SPS Agreement, so that exports of the affected products could resume

soon, as the ban was unjustified and excessive. Thus, STCs may reveal the restrictive character of NTMs, which take the form of SPS and TBT measures in most of the cases. As depicted in Figure 2, SPS and TBT measures constitute the bulk of NTMs (a complete classification is provided in section 3). They are characterized by a lower level of transparency, compared to other measures such as countervailing or quantity measures, being more difficult to track. Therefore, their use may be a sign of lurking protectionism.

Figure 2 about here

Several papers have found evidence for the adoption of NTMs for protectionist purposes, but they focused in the majority of cases on a single country or on a specific type of NTMs (anti-dumping measures, SPS, TBT...). Our contribution is two-fold. First, we seek to go a step further and explore the determinants of NTMs in several countries, both developed and developing, relying on the most recent and comprehensive dataset on NTMs. In the first place, the analysis is conducted on all NTMs in force. Of course, as mentioned before, public policies become more and more important and all NTMs cannot be adopted for protectionist purposes. Therefore, in the second place, the focus is on measures subject to STCs, which are more likely to reveal the protectionist intentions. Second, another contribution of the paper is to explore the influence of transnational lobbying on the adoption of NTMs at the national level. Taking into account the fact that national policies fall under the incidence of international rules, governments become limited in their power to set trade policy and raise trade barriers. Over the last decade, the WTO has increased its openness towards non-state actors and national business groups have been allowed to attend the Ministerial Conferences (MCs), the highest decision-making body of the WTO. The participation of domestic business groups in the MCs is used to proxy their lobbying influence at the international level.

A linear probability model (LPM) is adopted, in order to maintain a high level of disaggregation of the data (HS6). This approach also helps to go beyond the debate on the use of coverage and frequency ratios, previously used in the literature. Coverage ratios suffer from the endogeneity of the value of imports, whereas frequency ratios do not take into account the value of imports. The use of an LPM does not seem limiting since the main goal of this paper is to determine the factors that lead to the adoption of NTMs and not their trade effects.

Results point to the adoption of NTMs for protectionist purposes, even after controlling for country and product fixed effects, as well as for other product- and industry-level variables. Similar results are obtained for both developed and developing countries. As conclusions are unchanged

when either NTMs subject to STCs or all NTMs in force are used, this suggests that NTMs are implemented for protectionist purposes.

Relying on an original and exhaustive dataset including all economic organizations that have attended the MCs over time, we show that the presence of national business groups at these conferences has a positive and significant impact on the probability of adopting NTMs in both developed and developing countries.

The paper is organized as follows. Section 2 reviews the literature on the political economy determinants of protection. Section 3 describes the data. In section 4 we discuss the empirical strategy and the main results. The final section concludes.

## 2 Literature Review

A rich empirical and theoretical literature providing evidence for the political economy of trade protection has been developed over time.

First papers have focused on the study of tariffs. Baldwin (1985) suggests that governments tend to protect more industries with low wages and a high labor share and those characterized by high levels of employment. The degree of import penetration and export orientation turn out to have no statistically significant impact on tariff protection.

The “protection for sale” model, introduced by Grossman and Helpman in 1994, marks a milestone in the trade literature, offering theoretical foundations for the influence of interest groups on trade protection through political contributions. The model explains tariff protection through three variables: import penetration, import demand elasticity and whether an industry is politically organized or not. In this framework, the level of protection granted by a government is the level that maximizes a combination of the general welfare and the contributions of politically organized groups. Results show that trade protection should be higher in industries represented by lobbies and with a lower import elasticity. Additionally, in the group of non-organized sectors, protection should increase with import penetration, whereas in the group of politically organized industries protection should decrease with import penetration.

Taking into account the increasing importance of NTMs in world trade, a growing body of research on the political economy of non-tariff protection has begun to emerge.

Trefler (1993) is the first to take into account the endogeneity between NTM protection and import penetration, focusing on the US. According to him, a rise in import penetration leads

to greater protection. The magnitude of this effect is 10 times more important than what was previously obtained in the literature, in models where protection has been treated as exogenous.

Later on, Lee and Swagel (1997) study the political economy determinants of trade policy for 41 countries in 1988, relying on the method used by Trefler (1993). As in the previous case, protection is treated endogenously. Results show that, even after controlling for industry and country specific factors, governments have a special regard for industries that are weak, in decline, politically important, or threatened by import competition, and grant them more NTM protection. On the other hand, states provide less protection to industries in which exports are important.

The “protection for sale” model has been tested empirically in several papers. Goldberg and Maggi (1999) and Gawande and Bandyopdyay (2000) rely on corporate political action committees (PACs) campaign contributions to distinguish the organized industries from the non-organized ones in the US, defining a cutoff level. These papers support the “protection for sale” model, according to which protection decreases with the import penetration ratio if the sector is organized while protection significantly increases with import penetration if the sector is not organized. Results are not sensitive to the introduction of other variables previously used in the trade literature (Trefler (1993)) to explain political economy determinants of protection. However, these studies might suffer from several drawbacks, taking into account the fact that political contributions are not only used to steer trade policy, but other policies as well. Also, the method used to define the cutoff level might be ambiguous.

Facchini et al. (2006) argue that there is a discrepancy between the PFS model, designed for tariff protection, and its empirical tests which focused on NTM protection. An important characteristic of NTMs is that they do not allow governments to fully capture rents associated with protection. Therefore, empirical tests of the Grossman and Helpman model, using coverage ratios to measure protection may be biased. The authors allow for partial rent capturing and their results suggest that the low amount of protection granted by the US government reflects the importance of the general welfare and not the strategic interaction between competing lobbies.

Katayama and Krishna (2008) address the problem imposed by the classification of industries as organized and non-organized, by using quantile regressions. According to them, the “protection for sale” model would hold if there was a positive relationship between protection and the inverse import penetration ratio, for higher quantiles of the NTM protection. They expect a negative relationship for lower quantiles. This approach does not need data on political organization. Contrary to expectations, results do not validate the Grossman and Helpman model.

All the previous papers focused on the US, because the “protection for sale model” is appropriate for a context where political contributions are allowed. This model cannot be replicated for countries where lobbying legislation bans political contributions. However, a few papers tried to analyze the political economy determinants of trade protection outside the United States, relying on original methods.

For instance, Disdier and von Tongeren (2008) use a cluster analysis to study correlation between the occurrence of NTMs, their trade coverage and the incidence of trade frictions for 777 agri-food products in the OECD countries. According to them, if a high number of NTMs is associated with a high number of trade concerns, it shows that NTMs applied on products included in the cluster have a potential protectionist purpose. On the other hand, if a high number of notifications is associated with a low number of concerns, this would suggest that NTMs are motivated on public policy grounds. They find evidence for both of these statements, depending on the products included in the cluster.

Mitra et al. (2002) apply the protection for sale model to Turkey. They consider industries as politically organized if they are members of one of the most important Turkish industrialist organizations (the TUSIAD). Their results support the “protection for sale” model in Turkey. Nevertheless, the main weakness here is that membership to this organization cannot capture pure trade policy concerns because the TUSIAD is a general interest business organization.

Belloc (2014) studies the political economy determinants of trade policy in the European Union. She uses consultations organized by the DG Trade of the European Commission with the civil society, as a proxy for the lobbying influence of business groups at the European level. She argues that these meetings are likely to capture protectionist pressures from the European lobbies. Results show that consultations have a significant and positive impact on NTM protection, even after controlling for product fixed effects and other product and industrial variables.

Moore and Zanardi (2011) analyze if the adoption of antidumping measures has been influenced by reductions in tariffs, focusing on several countries, both developed and developing. The period under observation is from 1991 until 2002. Evidence for policy substitution is found only for a few countries that use intensively antidumping measures. For other developing countries or for the developed countries, they do not find significant results.

Aisbett and Pearson (2012) test the influence of tariff reductions on the adoption of additional SPS regulations, using SPS notifications. They show that smaller tariff binding overhang leads to increases in the probability of new SPS measures. On the other hand, they show that environmental

and governance variables also play a role in the notification of SPS measures.

Beverelli et al. (2014) build a political-economy model of "trade policy substitution" between tariffs and NTMs. They show that policy substitution occurs in developed countries, where it is less costly to comply with product standards. In developing countries, NTMs are rather used as complements for tariffs. The conclusions of the model are validated empirically, relying on STCs used in the WTO Committee on TBT.

Hanegraaff et al. (2011) study the evolution of the interest group system of the WTO, relying on an exhaustive dataset of interest groups that have attended the various MCs over time. They show that the number of interest groups attending the MCs has increased over time. The number of countries has also increased, and although the developed countries dominate the population of interest groups, the developing countries become more and more represented. Among the economic organizations, agricultural and manufacturing interests seem to be better represented.

This paper seeks to explore further the political economy determinants of NTMs, focusing on several countries, both developed and developing. Relying on all NTMs, but also on NTMs that gave rise to STCs, we are able to reveal the political economy behind the use of non-tariff protection. We also explore the impact that the participation of domestic business groups at the MCs may have on the national policy decisions.

### 3 Data

#### **NTM protection**

Taking into account the growing importance of NTMs in world trade, UNCTAD, together with other international organizations<sup>1</sup> set a Multi-Agency Support Team (MAST) in order to improve the understanding of non-tariff measures and facilitate data collection process and analysis. Their joint effort has led to a new classification of NTMs, with a two-tier structure: import and export measures. Import measures are further categorized in technical and non-technical measures. Technical measures refer to SPS measures, TBTs and pre-shipment inspections. Non-technical measures include hard measures (price and quantity controls), threat measures (anti-dumping and safeguards)

---

<sup>1</sup>The Food and Agriculture Organization of the United Nations (FAO), International Monetary Fund (IMF), International Trade Centre UNCTAD/WTO (ITC), Organisation for Economic Co-operation and Development (OECD), United Nations Industrial Development Organization (UNIDO), World Bank and World Trade Organization (WTO). It was also represented by observers from the United States Department of Agriculture (USDA), the United States International Trade Commission (USITC) and the European Commission.

and other measures (trade-related finance and investment measures). An exhaustive classification is presented in Figure 3.

Figure 3 about here

First, the database on NTMs produced by the MAST is used for the purpose of this exercise. It includes only the first five chapters of the above classification<sup>2</sup>. The chapters with reference to non-technical measures, other than Chapters E and D, are not included because of difficulties in the collection of the data. However, the bulk of NTMs in the dataset is given by SPS and TBT measures and this does not seem to be influenced by the omission of other non-technical measures. The 2012 WTO report on NTMs shows that even if the share of lines and trade value covered by NTMs has not increased after 2005, there was a change in the types of NTMs used. Thus, trends on SPS and TBT measures show that there was an increase in the share of lines and trade value affected by these types of policy instruments.

The data follows the HS classification at the 6-digit level, covers about 5000 different products and includes NTMs in force during the period 2010-2012. As the specific year is not available, it is appropriate only for cross-section analysis. The study is conducted on both developed and developing countries (see Table 1). Although the initial dataset included several countries, the sample was restricted because of limitations imposed by the absence of other data.

Table 1 about here

The dataset on NTMs contains information on countries from the European Union, separately. However, taking into account the fact that trade policy is set at the European level and all countries have to comply with the European decisions, it seems appropriate to construct an overall measure for the European Union.

Available information refers to the total number of NTMs affecting a product line, regardless their nature. The total number of NTMs by chapter (SPS, TBT, ...) is also provided, as well as dummy variables for each chapter. Relying on this information, we construct the dependent variable, which is a dummy set to 1 if at least an NTM affects a product line and 0 otherwise.

We are also able to distinguish between technical and non-technical measures, in order to see which type of measures contributes the most to the overall results. Non-technical measures are

---

<sup>2</sup>Chapter A (Sanitary and Phytosanitary measures); Chapter B (Technical Barriers to Trade); Chapter C (Pre-shipment inspection and other formalities); Chapter D (Contingent trade-protective measures); Chapter E (Non-automatic licensing, quotas, prohibitions and quantity-control measures other than for SPS or TBT reasons)



transparent policy tools and the motivations behind their adoption are clear. On the other hand, technical measures are more opaque instruments and the reasons for their implementation are ambiguous. The increasing use of technical measures by national governments was accompanied by the implementation of SPS and TBT Committees at the WTO, so as to boost transparency. Thus, WTO members considering to be negatively affected by NTMs imposed by other members can raise specific trade concerns. When raising an issue, countries have to provide information about the targeted product and the nature of their issue. Many SPS and TBT measures are judged as discriminatory or unnecessary barriers to trade, that is why STCs are better suited to reveal the protectionist intentions behind the adoption of NTMs. The estimation based on all measures in force cannot completely rule out the possibility that NTMs pursue public policy goals. Thus, by conducting the same analysis on NTMs that have been subject to STCs, a much clearer pattern should emerge. Using not only NTMs as declared by importers, but also STCs raised against these importers by different exporters, we should be able to capture the motivations behind the adoption of NTMs.

For the second part of the analysis, databases on both SPS and TBT STCs are used. Data is aggregated at the 4-digit level of the HS classification and is added to the initial dataset on NTMs. As NTMs refer to HS6 products, 4-digit level STCs are assigned to all HS6 corresponding products. Information is available on the WTO website for all years between 1995 and 2014. Over these periods, an overall number of 381 SPS STCs and 452 TBT STCs were raised at the WTO.

In order to compute NTMs perceived as restrictive by a country's trading partners, STCs raised in both SPS and TBT Committees over the 2011-2013 period are considered. We assume that NTMs can lead to STCs within a year after their adoption. For instance, if no STCs have been raised against SPS measures, then we consider that there were no SPS measures. The same reasoning applies in the case of TBT measures. All other NTMs are conserved. A new dummy variable set to 1 if at least an NTM affects a product line and 0 otherwise is constructed, considering the previous transformations.

### **Tariff protection**

Data on tariffs is drawn from Market Access Map (MAcMap), a database developed jointly by the ITC (UNCTAD-WTO, Geneva) and the CEPII (Paris). MAcMap contains exhaustive information on bilateral measurement of applied tariff duties at the 6 digit-level of the HS, taking regional agreements and trade preferences into account.

As MAcMap contains information at bilateral level, weighted-trade average tariffs are computed, in order to have a unilateral measure for the importing countries. A measure for AVEs tariffs is then obtained for each country at the product line. We use tariffs as of 2007. A variation in tariffs between 2007 and 2010 is also considered, in order to detect possible substitution effects.

Trade data is extracted from the BACI database, constructed by the CEPII, relying on original data provided by the United Nations Statistical Division (COMTRADE database). The advantage of this database is that it reconciles the declarations of the exporter and the importer, extending the number of countries for which trade data is available. In BACI, values are FOB. It provides bilateral values of exports at the HS 6-digit product disaggregation, for more than 200 countries since 1995 and it is updated every year.

As in the case of tariffs, trade data is available at bilateral level. Thus, total imports and exports of a given product at the country level are computed for 2007.

### **Control variables**

Control variables include variables at the product level and at the industry level and are detailed below.

Import demand elasticities are extracted from Kee et al. (2008). Data is freely available on the World Bank website and suitable for the present analysis. It covers a broad group of countries and is aggregated at the 6-digit level of the HS classification, matching the level of aggregation of trade protection granted through NTMs. As data refers to individual countries from the European Union, when analysis is conducted on the European Union as a whole, import demand elasticities are computed using a weighted sum. The weights are the share of the individual country's imports over total imports.

Finally, industrial data is needed. This data is drawn from UNIDO 2013 and is detailed at the 3-digit ISIC level for each country. Concordance with HS is achieved on the basis of the international systems concordance tables. The industrial variables used in the estimation are: the total number of employees, the industry scale (value added per firm), the annual average earnings per employee, the labor share (the share of the value of output which goes to wages), the import penetration ratio (imports over value added) and the export ratio (ratio between exports and value added). Data used in the analysis corresponds to 2007, with few exceptions. For Egypt, Nepal, Peru and Philippines data on 2007 is not available. Therefore, information corresponding to 2006 will be used for these four countries.

In order to deal with the skewness of the variables, we take logs of all the independent variables.

### **Transnational lobbying**

Ministerial Conferences are the highest decision making body of the WTO, being held every two years. All WTO members are present and they discuss different trade-related topics.

Figure 4 about here

As the WTO has opened its gates towards societal actors, national business groups have been allowed to attend these MCs. Information on all the business groups that have attended the MCs during the period 1996-2011 has been collected by Hanegraaff (2011), who kindly provided us with the data. The database contains information on each business group having attended the MCs and the industry it represents, classified according to the 3-digit level of ISIC. For some business groups, information at the 3-digit level was missing. However, information at the 2-digit level was available. For these cases, the missing sectors at the 3-digit level have been replaced with all possible 3-digit sectors corresponding to a 2-digit sector.

Only countries used in the previous analysis are considered. Of course, all of them do not attend the MCs. Therefore, as we use an exhaustive dataset, we consider that if a country from our initial sample is not in it, it means that the country was absent from the Ministerial Conferences.

Table 2 depicts the evolution of the interest group system of the WTO for the manufacturing sector across countries previously used in the analysis. The number of countries, industries and organizations present at the MCs has increased over time, except for the last two MCs. Their reduced presence at the last two MCs might be due to the economic crisis, taking into account the fact that interest groups are supposed to pay all costs associated with participation.

Table 2 about here

As shown in Figure 5, the European Union is by far the most represented region in terms of business groups. Individual European countries also attend these conferences. Among the developing countries, business groups from India participate the most in the MCs.

Figure 5 about here

## 4 Empirical strategy and results

The political economy determinants of NTMs are explored in both developed and developing countries, for the manufacturing sector.

First, the following equation is estimated through a linear probability model.

$$NTM_{ijk} = \alpha_0 + \alpha_1 \cdot X_{ik} + \alpha_2 \cdot D_{ik} + \alpha_3 \cdot D_{jk} + \delta_i + \gamma_k + \epsilon_{ijk} \quad (1)$$

$i$  indexes the product (6-digit HS classification),  $j$  indexes the industry (3-digit ISIC codes) and  $k$  stands for the country which implements non-tariff protection.  $X_{ik}$  is a vector of economic protectionism at the product level ( $i$ ) for country  $k$ : tariffs, tariff variation.  $D_{ik}$  is a vector of control variables at the product level ( $i$ ) for country  $k$ : elasticities.  $D_{jk}$  is a vector of control variables at the industry level ( $j$ ) for country  $k$ : employment, earnings, labor share, scale, import penetration, export ratio. Product ( $\delta_i$ ) and country ( $\gamma_k$ ) fixed effects are introduced in order to control for any omitted variables.

Two specifications are used. In the first specification, the dependent variable is a dummy variable which equals one if at least an NTM applies to a product line. In the second specification, the dependent variable is transformed so as to account for NTMs that have been subject to STCs, as explained in Section 3.

If NTMs were implemented for protectionist purposes, the results presented in the table below would be expected. The various underlying theories have been discussed by Gawande and Krishna (2003).

Independent variables	Expected signs	Underlying theory	Authors
tariffs (2007)	+	The status quo model	Corden (1967), Lavergne (1983)
tariff variation	-	The status quo model	Corden (1967), Lavergne (1983)
employment	+	The adding machine model	Caves (1976)
earnings	-	The social change model	Ball (1967), Constantopoulos (1974), Fieleke (1976)
labor share	+	The social change model	Ball (1967), Constantopoulos (1974), Fieleke (1976)
import penetration	+	The comparative cost hypothesis	Bhagwati (1982)
export ratio	-	The comparative cost hypothesis	Bhagwati (1982)
elasticities	-	The PFS model	Grossman and Helpman (1994)

According to the **status quo model**, by Corden (1974) and Lavergne (1983), governments seek to maintain the status quo. For instance, if protection granted through tariffs has decreased, in order to maintain the same level of protection, governments may replace it with NTMs. Therefore, a negative coefficient on tariff variation would point to the adoption of NTMs for protectionist purposes.

The **adding machine model** by Caves (1976) shows that industries with high levels of employment receive greater protection, as governments are interested in their political support.

The **social change model**, due to Ball (1967), Constantopoulos (1974), and Fieleke (1976) shows that governments may act on social justice grounds, trying to protect low income groups. If this was the case, protection should be higher in industries with low earnings per employee and with an important labor share.

The **comparative cost hypothesis**, explored by Bhagwati (1982) suggests that protection should be higher in industries affected by import competition and with a low ratio of exports.

Finally, the **protection for sale model**, by Grossman and Helpman, states that protection should be higher in industries with low import demand elasticities.

The specification relying on all NTMs is discussed in the first place. The estimation is run over the entire sample of countries, then the sample is split into developed and developing countries. Results are presented in Table 3.

Table 3 about here

The estimation over the entire sample shows that tariffs as of 2007 have a positive and significant impact on the probability of adopting additional NTMs. Thus, products characterized by high tariffs in 2007 experienced a more important increase in the probability of receiving non-tariff protection. Moreover, the coefficient on tariff variation between 2007 and 2010 is positive and statistically significant, providing evidence that, on average, there is policy substitution. For instance, a 1% reduction in tariffs over the period 2007-2010 increased the probability of having extra NTMs by almost 0.16 (for the EU aggregated). This suggests that NTMs are mainly used to replace tariffs, pointing to their adoption for protectionist purposes.

As for the other control variables, results also point to the adoption of NTMs for protectionist purposes. As expected, industries characterized by high levels of employment are associated with a higher probability of being granted NTM protection, as politicians are interested in their political support. Contrary to expectations, policy makers do not seem to protect more weak industries. We

find that earnings per employee have a positive and significant impact on the probability of adopting additional NTMs. Similarly, industries with an important labor share tend to be characterized by a smaller probability of getting NTM protection. Of course, we are not able to argue that governments do not care about vulnerable industries and that they only seek to maximize their own interests. Our results might simply be due to the fact that these industries do not face import competition. Furthermore, we show that the probability of adopting NTMs is more important in industries affected by high import penetration ratios. Surprisingly, export ratios do not seem to impact significantly the probability of implementing extra NTMs. As expected, high import demand elasticities decrease the probability of adopting NTMs.

When the sample is split into developed and developing countries, results are remarkably stable, pointing to the adoption of NTMs for protectionist purposes. In the case of developed countries, the coefficient on exports is negative and statistically significant. This suggests that the probability of being granted NTM protection is decreasing for an industry characterized by a high export ratio. The idea is that an industry able to export is competitive enough, hence it does not look for protection. Also, an exporting industry seeks to avoid foreign retaliation, which makes it less likely to lobby for protection. As for the developing countries, results are pretty much the same as those obtained for the whole sample.

Results are presented for both the individual countries from the European Union and the European Union as a whole and they are similar. Therefore, in subsequent regressions, the focus will be on the European Union aggregated.

Estimations are also run for technical and non-technical measures, separately. Results are presented in table 4.

Table 4 about here

When the whole sample of countries is considered, the estimations show that technical measures are used to replace tariff protection, whereas non-technical measures are used as complements for tariff protection. Technical measures might be preferred to substitute tariff protection because they are complex policy measures, more difficult to track. For the rest of the variables, results are pretty similar for technical and non-technical measures. The only exception is constituted by labor share and export penetration. Results for developing countries are in line with those obtained for the whole sample. For the developed countries, results are very similar between technical and non-technical measures. So the adoption of both technical and non-technical measures seems to be

driven by protectionist purposes. If in the case of non-technical measures protectionist intentions are well-known, technical measures have a declared purpose of pursuing legitimate objectives. However, results reveal the protectionist intentions behind both technical and non-technical measures.

Of course, the adoption of NTMs for legitimate reasons cannot be completely ruled out with the previous estimations. Therefore, we conduct the same analysis, considering the measures which gave rise to STCs. The dependent variable is transformed so as to focus on NTMs perceived as restrictive by a country's trading partners. As before, the second specification is estimated for the entire sample in the first place. Then, the sample is split into developed and developing countries.

A potential problem related to the use of STCs is the selection of the countries complaining at the WTO. Exporters facing obstacles report to their governments which are supposed to raise the concern at the WTO. Some governments may never raise the concern, so STCs may not be representative of all restrictive NTMs. However, part of this problem is solved by the fact that we use a unilateral measure for STCs. If at least a country has raised a concern against a member maintaining an NTM, we consider that measure as restrictive. With this caveat in mind, we proceed to the analysis.

Table 5 about here

After running the estimation, previous conclusions are reinforced, pointing to the adoption of NTMs for protectionist purposes. When the entire sample is considered, NTMs seem to replace tariff protection. When the sample is split between developed and developing countries, the coefficient on tariff variation is significant only in the case of developing countries. All the other results are in line with those obtained for the whole sample of countries.

Finally, the following econometric specification is estimated.

$$NTM_{ijk} = \alpha_0 + \alpha_1 \cdot X_{ik} + \alpha_2 \cdot D_{ik} + \alpha_3 \cdot D_{jk} + \alpha_4 \cdot presence\_MC_{jk} + \delta_i + \gamma_k + \epsilon_{ijk} \quad (2)$$

This equation is the same as the first one, except for the fact that it includes a direct measure of lobbying at the transnational level. The measure for transnational lobbying is a dummy variable set to 1 if a specific industry from a given country has attended at least one of the eight MCs during the period 1996-2011, and 0 otherwise. The question we are trying to address is: After controlling for product and country fixed effects, as well as for a number of variables at the product or at the industry level, is any role left for transnational lobbying in influencing national trade policies?

According to Hanegraaff (2015), during Ministerial Conferences, negotiations are mainly conducted by states. One may argue that the impact of domestic interest groups on the transnational decision-making process which has further implications on national trade policies is rather limited. Lobbying at the national level would seem a more appropriate solution for domestic business groups. However, the population of domestic business groups at the MCs has grown over time. Since business groups are willing to pay all costs associated with the participation in these conferences, their impact may not be insignificant.

Interviews conducted by Hanegraaff (2015) with the interest groups that have attended the 2011 MC in Geneva show that advocacy is the primary reason invoked for the participation. Even interest groups that have not had as a primary goal to advocate mentioned that they did it. Also, when asked if they think that they have an impact on the decision-making process, all interest groups from every corner of the world say that they attend conferences to influence decisions.

Results for the estimation of the second equation are shown in table 6. The European Union is treated as a whole.

Table 6 about here

For instance, when the whole sample of countries is considered, the coefficient on the lobbying variable is positive and significant. The fact of having attended at least one of the 8 MCs held during the time span considered (1996-2011) increased the probability of adopting additional NTMs at the end of the period. Results still hold when we distinguish between developed and developing countries and the impact seems even greater in the case of developing countries.

## 5 Conclusion

This paper explores the political economy determinants of NTMs in several countries, both developed and developing. The first estimation relies on all NTMs in force, whereas the second estimation uses only those NTMs perceived as restrictive by a country's trading partners. Countries judging to be negatively affected by NTMs imposed by other WTO members can raise specific trade concerns at the WTO. As all NTMs do not pursue protectionist purposes, we consider only those measures that have been subject to STCs, in order to rule out the possibility that NTMs are implemented for legitimate reasons. Both estimations show that NTMs are substitutes for tariff protection, even after controlling for product and country fixed effects and other variables at the



product and industry level. Overall, results reveal the protectionist intentions behind the adoption of NTMs.

We also study the influence exerted by national business groups at the transnational level on the adoption of NTMs in their home countries. Since 1996, the WTO has welcomed participation of non-state actors during the MCs, its highest authority. Thus, domestic business groups started attending the conferences, aiming at influencing trade policy decisions. Results show that the fact of having attended at least one MC during the period 1996-2011 had a significant positive impact on the probability of adopting additional NTMs, in both developed and developing countries. However, we only consider the influence of business groups and other aspects remain unexplored. For instance, we do not take into account the influence of non-economic organizations such as NGOs, which also attend the MCs, as it is difficult to assign them to particular sectors. This issue invites for further research.

## References

- AISBETT, EMMA, & PEARSON, LEE M. 2012. *Environmental and Health Protections, or New Protectionism? Determinants of SPS Notifications by WTO Members*. Tech. rept.
- BALDWIN, ROBERT E. 1985. *The political economy of U.S. import policy*. MIT Press Cambridge, Mass.
- BALL, DAVID STAFFORD. 1967. United States Effective Tariffs and Labor's Share. *Journal of Political Economy*, **75**.
- BELLOC, MARIANNA. 2014. Neo-Protectionism and the European Lobbies. *CESifo Working Paper Series*, June.
- BEVERELLI, COSIMO, BOFFA, MAURO, & KECK, ALEXANDER. 2014. *Trade policy substitution: Theory and evidence from Specific Trade Concerns*. Tech. rept.
- CAVES, RICHARD E. 1976. Economic Models of Political Choice: Canada's Tariff Structure. *Canadian Journal of Economics*, **9**(2), 278–300.
- CONSTANTOPOULOS, MARIA. 1974. Labour protection in Western Europe. *European Economic Review*, **5**(4), 313–328.
- CORDEN, W. MAX. 1974. *Trade Policy and Economic Welfare*. Oxford University Press.
- DISDIER, ANNE-CELIA, & VAN TONGEREN, FRANK W. 2009. *Non-Tariff Measures in Agri-Food Trade: What Does the Data Tell Us? Evidence from a Cluster Analysis on OECD Imports*. Tech. rept.
- FACCHINI, GIOVANNI, BIESEBROECK, JOHANNES VAN, & WILLMANN, GERALD. 2005 (June). *Protection for Sale with Imperfect Rent Capturing*. Development Working Papers 207. Centro Studi Luca d'Ágliano, University of Milano.
- FEENSTRA, ROBERT, & BHAGWATI, JAGDISH N. 1982. Tariff Seeking and the Efficient Tariff. *Pages 245–262 of: Import Competition and Response*. National Bureau of Economic Research, Inc.
- FIELEKE, NORMAN S. 1976. The Tariff Structure for Manufacturing Industries in the United States: A Test of Some Traditional Explanations. *Columbia Journal of World Business*, **11**(4), 98.
- GAWANDE, KISHORE, & BANDYOPADHYAY, USREE. 2000. Is Protection for Sale? Evidence on the Grossman-Helpman Theory of Endogenous Protection. *The Review of Economics and Statistics*, **82**(1), 139–152.
- GAWANDE, KISHORE, & KRISHNA, PRAVIN. 2005. *The Political Economy of Trade Policy: Empirical Approaches*. International Trade. EconWPA.

- GOURDON, JULIEN. 2014 (Dec.). *CEPII NTM-MAP: A Tool for Assessing the Economic Impact of Non-Tariff Measures*. Working Papers 2014-24. CEPII research center.
- GROSSMAN, GENE, & HELPMAN, ELHANAN. 1993 (June). *Protection for Sale*. CEPR Discussion Papers 827. C.E.P.R. Discussion Papers.
- HANEGRAAFF, MARCEL. 2015. Interest groups at transnational conferences : goals, strategies, interactions and influence. *Global governance*, **21**(November).
- HANEGRAAFF, MARCEL, BEYERS, JAN, & BRAUN, CAELESTA. 2011. Open the door to more of the same? The development of interest group representation at the WTO. *World Trade Review*, **10**(10), 447–472.
- HANEGRAAFF, MARCEL, BRAUN, CAELESTA, DE BIÈVRE, DIRK, & BEYERS, JAN. 2015. The Domestic and Global Origins of Transnational Advocacy: Explaining Lobbying Presence during WTO Ministerial Conferences. *Comparative Political Studies*, July.
- IMAI, SUSUMU, KATAYAMA, HAJIME, & KRISHNA, KALA. 2007 (Aug.). *A Quantile Based Test of Protection for Sale Model*. Working Papers 1132. Queen’s University, Department of Economics.
- KEE, HIAU LOOI, NICITA, ALESSANDRO, & OLARREAGA, MARCELO. 2004 (Oct.). *Import Demand Elasticities and Trade Distortions*. CEPR Discussion Papers 4669. C.E.P.R. Discussion Papers.
- LAVERGNE, R.P. 1983. *The political economy of U.S. tariffs: an empirical analysis*. Economic theory, econometrics, and mathematical economics. Academic Press.
- LEE, JONG-WHA, & SWAGEL, PHILLIP. 1994 (July). *Trade Barriers and Trade Flows across Countries and Industries*. NBER Working Papers 4799. National Bureau of Economic Research, Inc.
- MAGGI, GIOVANNI, & GOLDBERG, PINELOPI KOUJIANOU. 1999. Protection for Sale: An Empirical Investigation. *American Economic Review*, **89**(5), 1135–1155.
- MITRA, DEVASHISH, THOMAKOS, DIMITRIOS D., & ULUBAŞOĞLU, MEHMET A. 2002. "Protection For Sale" In A Developing Country: Democracy Vs. Dictatorship. *The Review of Economics and Statistics*, **84**(3), 497–508.
- MOORE, MICHAEL, & ZANARDI, MAURIZIO. 2008. *Trade Liberalization and Antidumping: Is There a Substitution Effect?* Tech. rept.
- OLSON, MANCUR. 1965. *The logic of collective action*. Cambridge, MA: Harvard University Press.
- PIEWITT, MARTINA. 2015. The creation of the World Trade Organization and the establishment of an advocacy regime. *Journal of Public Affairs*, **15**(1), 65–78.

- PINCUS, JONATHAN. 1975. Pressure Groups and the Pattern of Tariffs. *Journal of Political Economy*, **83**(4), 757–78.
- STIGLER, GEORGE. 1971. The Theory of Economic Regulation. *Bell Journal of Economics*, **2**(1), 3–21.
- TREFLER, DANIEL. 1993. Trade Liberalization and the Theory of Endogenous Protection: An Econometric Study of U.S. Import Policy. *Journal of Political Economy*, **101**(1), 138–60.
- WTO. 2012. World Trade Report 2012 – Trade and public policies: A closer look at nontariff measures in the 21st century.

# Appendix

Figure1

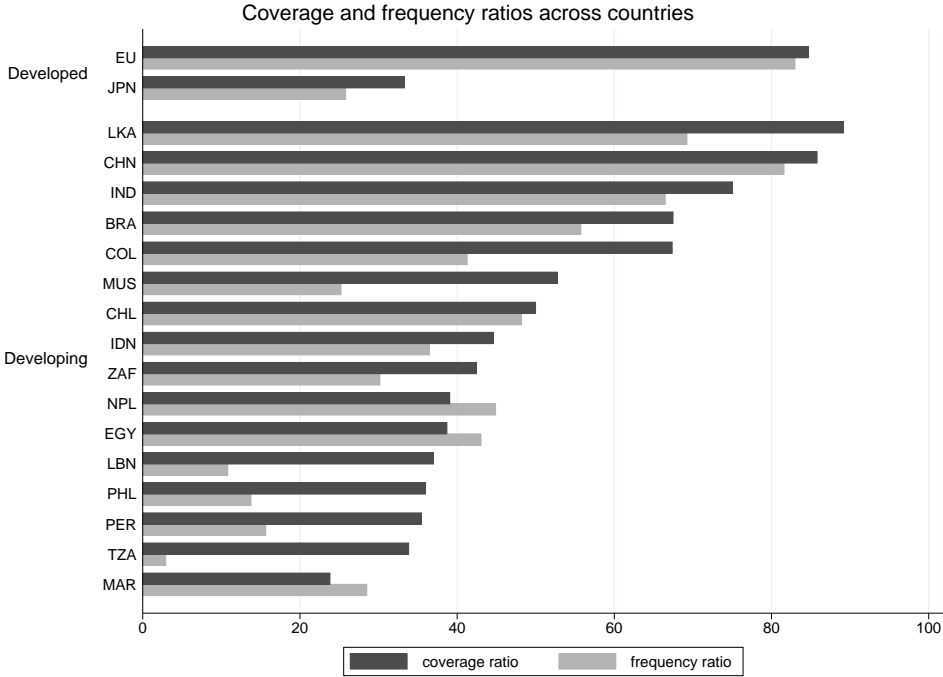


Figure2

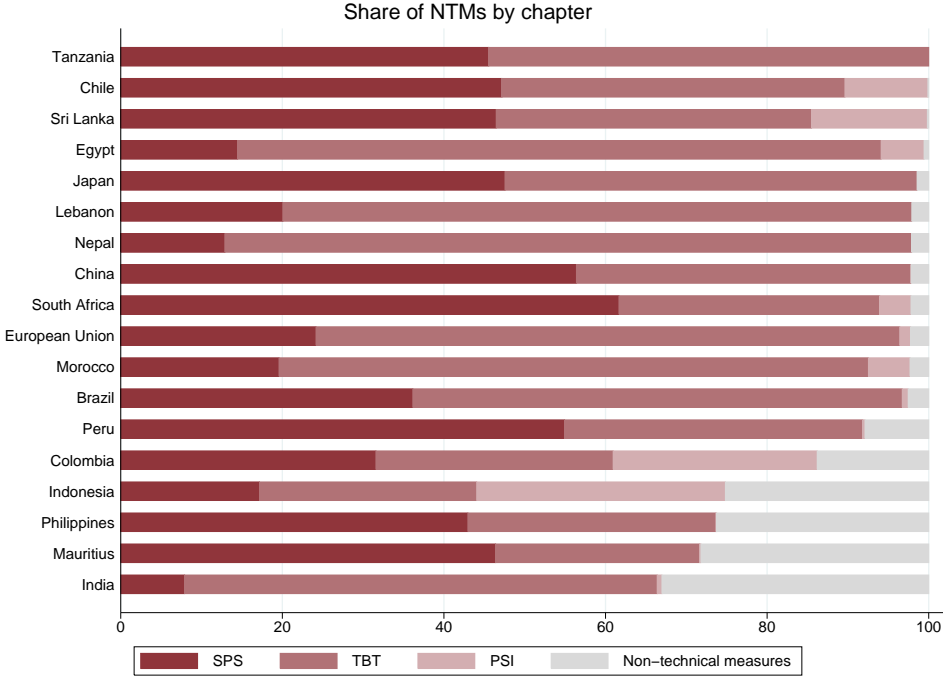
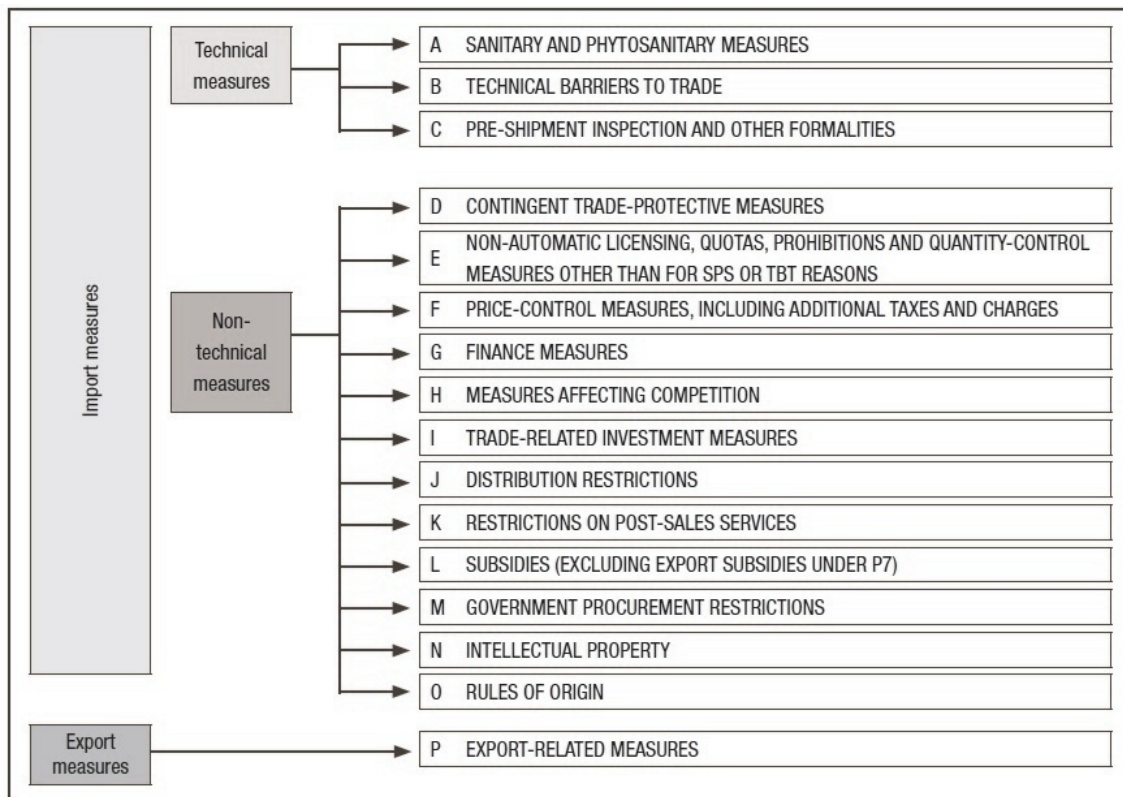


Figure 3: Classification of NTMs

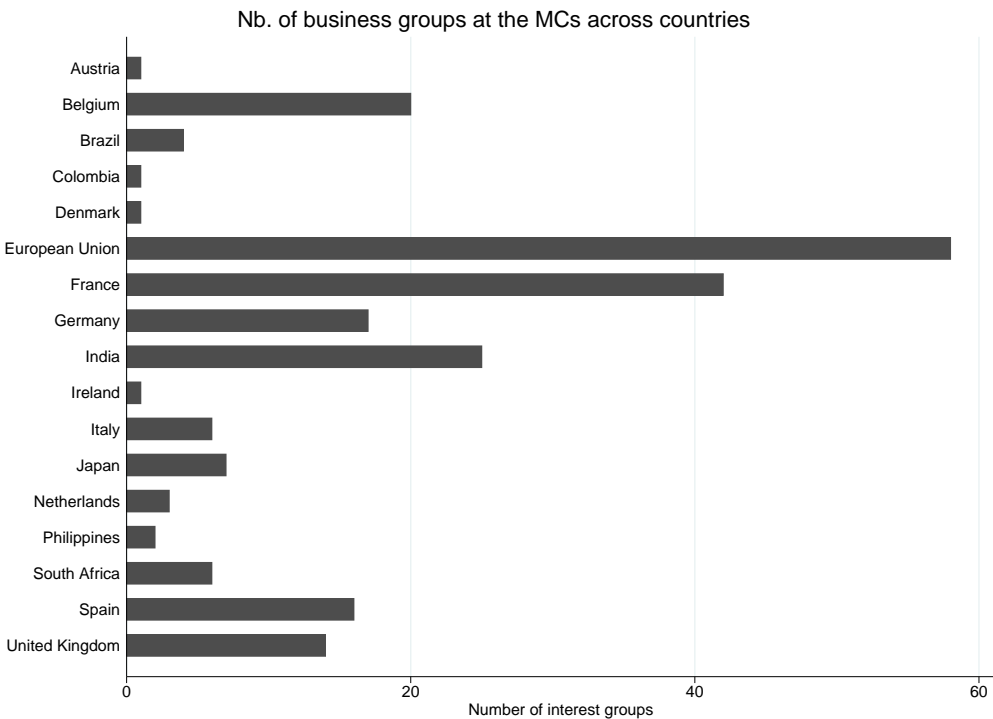


Source: UNCTAD secretariat.

Figure 4: Structure of the WTO



Figure 5: Number of business groups having attended the MCs over time by country



**Table 1: List of countries**

Developed countries (EU disaggregated)	Developing countries
Austria	Brazil
Belgium	Chile
Cyprus	China
Czech Republik	Colombia
Denmark	Egypt
Estonia	India
Finland	Indonesia
France	Lebanon
Germany	Mauritius
Greece	Morocco
Hungary	Nepal
Ireland	Peru
Italy	Philippines
Japan	South Africa
Latvia	Sri Lanka
Lithuania	Tanzania
Netherlands	
Poland	
Portugal	
Slovakia	
Slovenia	
Spain	
Sweden	
United Kingdom	

**Table 2: The interest group system of the WTO**

Ministerial Conferences	Year	nb. of countries	nb. of industries	nb. of business groups
Singapore	1996	1	1	1
Geneva	1998	1	1	1
Seattle	1999	6	25	31
Doha	2001	12	29	43
Cancún	2003	16	41	67
Hong Kong	2005	11	34	47
Geneva	2009	7	21	24
Geneva	2011	6	10	10



**Table 3: Overall NTMs**

	All		Developed		Developing
	EU disagg.	EU agg.	EU disagg.	EU agg.	
<b>tariff variation</b>	<b>-0.300***</b> (0.041)	<b>-0.160***</b> (0.058)	<b>-0.256**</b> (0.117)	<b>-0.244</b> (0.303)	<b>-0.115*</b> (0.067)
<b>tariffs 2007</b>	<b>0.209***</b> (0.038)	<b>0.166***</b> (0.039)	<b>0.220***</b> (0.080)	<b>0.519***</b> (0.181)	<b>0.114***</b> (0.043)
employment	0.037*** (0.002)	0.051*** (0.004)	0.018*** (0.002)	0.083** (0.036)	0.047*** (0.004)
earnings	0.009 (0.006)	0.039*** (0.008)	0.050*** (0.006)	0.604*** (0.077)	0.031*** (0.008)
labor share	-0.004 (0.004)	-0.027*** (0.006)	-0.006** (0.003)	-0.484*** (0.083)	-0.030*** (0.006)
import penetration	0.007*** (0.002)	0.012*** (0.003)	0.025*** (0.002)	0.153*** (0.024)	0.012*** (0.004)
export ratio	0.001 (0.002)	0.005* (0.003)	-0.013*** (0.002)	-0.056*** (0.013)	0.003 (0.003)
elasticity	-0.010*** (0.001)	-0.013*** (0.002)	-0.009*** (0.001)	-0.030*** (0.010)	-0.012*** (0.002)
Observations	94161	37349	62458	5646	31703
R <sup>2</sup>	0.591	0.464	0.828	0.779	0.461
Product FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 4: Technical versus Non-technical NTMs**

	All		Developed		Developing	
	Technical	Non-technical	Technical	Non-technical	Technical	Non-technical
<b>tariff variation</b>	<b>-0.153***</b> (0.058)	<b>0.272***</b> (0.046)	<b>-0.184</b> (0.303)	<b>0.322</b> (0.267)	<b>-0.105</b> (0.067)	<b>0.184***</b> (0.044)
<b>tariffs 2007</b>	<b>0.148***</b> (0.040)	<b>0.161***</b> (0.028)	<b>0.561***</b> (0.200)	<b>-0.202</b> (0.222)	<b>0.091**</b> (0.043)	<b>0.167***</b> (0.029)
employment	0.053*** (0.004)	-0.005* (0.002)	0.078** (0.036)	0.102*** (0.018)	0.048*** (0.004)	0.007*** (0.003)
earnings	0.042*** (0.008)	0.011* (0.006)	0.587*** (0.077)	0.436*** (0.055)	0.034*** (0.008)	0.010 (0.006)
labor share	-0.036*** (0.006)	0.015*** (0.003)	-0.490*** (0.083)	-0.465*** (0.053)	-0.040*** (0.006)	0.016*** (0.003)
import penetration	0.012*** (0.003)	0.001 (0.002)	0.160*** (0.024)	0.069*** (0.013)	0.012*** (0.004)	0.003 (0.002)
export ratio	0.006** (0.003)	-0.017*** (0.002)	-0.055*** (0.013)	-0.026*** (0.008)	0.004 (0.003)	-0.018*** (0.002)
elasticity	-0.011*** (0.002)	-0.007*** (0.002)	-0.028*** (0.010)	-0.007 (0.008)	-0.011*** (0.002)	-0.007*** (0.002)
Observations	37349	37349	5646	5646	31703	31703
R <sup>2</sup>	0.478	0.421	0.778	0.685	0.476	0.449
Product FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 5: Restrictive NTMs (EU agg.)**

	All	Developed	Developing
	(1)	(2)	(3)
<b>tariff variation</b>	<b>-0.189***</b> (0.055)	<b>0.390</b> (0.356)	<b>-0.203***</b> (0.059)
<b>tariffs 2007</b>	<b>0.159***</b> (0.039)	<b>-0.105</b> (0.258)	<b>0.110***</b> (0.040)
employment	0.025*** (0.003)	0.259*** (0.039)	0.040*** (0.004)
earnings	0.005 (0.007)	0.331*** (0.074)	0.007 (0.007)
labor share	-0.037*** (0.005)	-0.472*** (0.070)	-0.032*** (0.005)
import penetration	0.004 (0.003)	0.098*** (0.025)	0.009** (0.003)
export ratio	-0.005** (0.002)	-0.113*** (0.012)	-0.002 (0.002)
elasticity	-0.001 (0.002)	0.007 (0.010)	-0.001 (0.002)
Observations	37349	5646	31703
R <sup>2</sup>	0.496	0.789	0.498
Product FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes

Note: Robust standard errors in parentheses

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 6: Transnational lobbying (EU agg.)**

	All	Developed	Developing
	(1)	(2)	(3)
presence MC	<b>0.071***</b> ( <b>0.008</b> )	<b>0.038*</b> ( <b>0.021</b> )	<b>0.122***</b> ( <b>0.011</b> )
tariff variation	-0.179*** (0.058)	-0.333 (0.306)	-0.118* (0.067)
tariffs 2007	0.177*** (0.040)	0.550*** (0.189)	0.141*** (0.043)
employment	0.050*** (0.004)	0.105*** (0.039)	0.044*** (0.004)
earnings	0.031*** (0.008)	0.587*** (0.078)	0.017** (0.008)
labor share	-0.022*** (0.006)	-0.479*** (0.083)	-0.024*** (0.006)
import penetration	0.010*** (0.004)	0.152*** (0.024)	0.008* (0.004)
export ratio	0.004 (0.003)	-0.055*** (0.013)	0.001 (0.003)
elasticity	-0.013*** (0.002)	-0.029*** (0.010)	-0.012*** (0.002)
Observations	37349	5646	31703
R <sup>2</sup>	0.465	0.779	0.463
Product FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes

Note: Robust standard errors in parentheses

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$