Pronto: deliverable WP1 – Existing NTM data

NTM-MAP: A Tool for Assessing the Economic Impact of Non-Tariff Measures

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Task 3

Submitted 19th December 2014

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NTM-MAP: A brief overview

The NTM-MAP database contains indicators measuring the incidence of Non-Tariff Measures by using different methodologies and the UNCTAD multilateral database. It has been built by CEPII.[1]

Three indexes are proposed as proxies for NTMs occurrence; frequency index, coverage ratio and prevalence score.

Those indices we proposed here are systematically computed for several countries and products classifications and for five different categories of NTMs (SPS, TBT, PSI, Price Control and Quantitative Restrictions).

The index is then provided for 63 countries for one year over the period 2010-2012 at the country level and two different product disaggregation levels (HS-2 and HS-Section).

Each of the three databases contains 27 variables:

isor is the country of interest (i.e. the importer country);

line is the number of hs-6 digit products under the selected aggregation

[1] This research has benefitted from support under the EC Seventh Framework Program for research, technological development and demonstration under grant agreement no 613504. PRONTO (productivity, non-tariff barriers, and openness)..

hs2 or hs-section indicates the sector of interest (respectively HS-2 and HS-Section);

Num is the prevalence score of different NTMs and of 5 sub-categories of NTMs

Pres is the number of products with at least one NTM / one of 5 sub-categories of NTMs

Freq is the frequency index of different NTMs and of 5 sub-categories of NTMs

Cov is the coverage ratio of different NTMs and of 5 sub-categories of NTMs

Definition, classification and data collection of Non-Tariff Measures

To better identify NTMs, and distinguish among the various forms of NTMs, a detailed classification is therefore of critical importance. To facilitate data collection and analysis, the multitude of NTMs are often aggregated in various groups: hard measures (e.g. price and quantity control measures), threat measures (e.g. antidumping and safeguards), sanitary and phytosanitary standard (SPS), technical barriers to trade (TBT), and other categories such as "export measures", "trade-related investment measures", "distribution restrictions", "restrictions on post-sales services", "subsidies", "measures related to intellectual property rights" and "rules of origin". Each of these groups comprises various and often very different forms of NTMs.

The classification proposed by UNCTAD and agreed by the Group of Eminent Persons on NTB[2] takes this into account and develops a tree/branch structure where measures are categorized into *chapters* depending on their scope and/or design. Then each chapter is further differentiated into several sub-groups to allow a finer classification of the regulations affecting trade. In practice, the NTMs classification encompasses 16 chapters (A to P) and each individual chapter is divided into groupings with depth up to three levels (1, 2, and 3 digits). Although a few chapters reach the 3-digits level of disaggregation, most of them stops at 2-digits. The complete classification can be found in UNCTAD (2010).

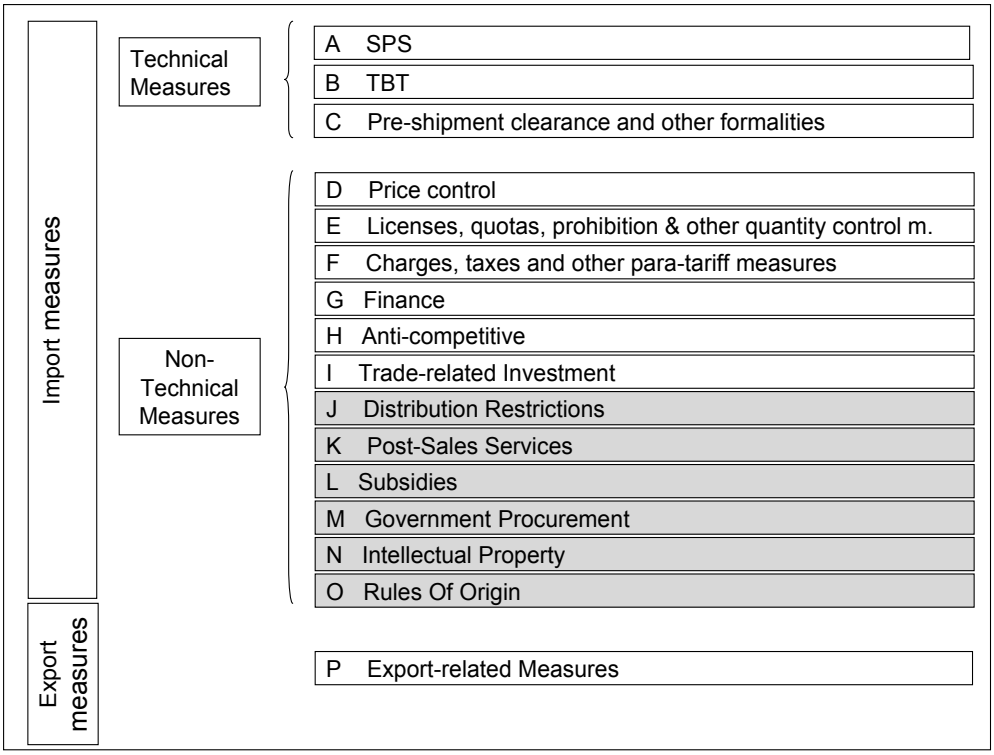
The classification organizes NTMs into various chapters, each comprising measures with similar purposes. All chapters reflect the requirements of the importing country on its imports, with the exception of measures imposed on exports (chapter P). The effect on trade of each group of measures varies considerably. While some groups of NTMs have clear restrictive impacts, others produce uncertain effects. For example, the subset of measures under categories (A) through (C) has a relatively clear relationship with the market imperfections they try to address (Beghin, 2006). These measures are largely regulatory policies in response

[2] UNCTAD (2010) or at:

to a variety of concerns raised by society in many areas such as the environment, animal welfare, food safety and consumers' rights.

These policies are not necessarily restrictive because these types of instruments can also enhance consumer demand for goods by increasing quality attributes (technical requirements) or by reducing informational asymmetries (standards). However, many of these policies involve considerations of institutional capacity and likely have distortionary impacts on trade. Sometime they are imposed to address the possible capacity failures of trade partners; and often they require an extensive domestic institutional capacity to implement these policies. Although different types of requirements affect different inputs and stages of production, most of these policies also affect overall trade costs (e.g. certification, inspections, etc). In addition, compliance costs often vary depending on infrastructure and institutional capacity of the exporting country, and thus ultimately these costs do affect trade flows.

Figure 1 – Non tariff measure classification (1st tier - chapters)



Non-technical measures vary considerably by intent and scope. However, their effect on trade is generally more understood and easier to quantify. The effects of price control measures are relatively simple to measure, especially anti-dumping and safeguards. Quantity control instruments have been extensively examined in the analysis of quotas, tariff rate quotas and their administration (see Boughner, de Gorter, and Sheldon, 2000). Para-tariff measures can

be analyzed as conventional tax instruments and their incidence is straightforward to perceive. Finance, anti-competitive, and trade related investment measures have indirect effects on trade, and their actual impact is more difficult to assess. Box 1 provides some more details on the measures contained in each chapter.

Box 1 – Brief description of NTMs chapters

Chapter A, on sanitary and phytosanitary measures, refers to measures affecting areas such as restriction for substances, restrictions for non eligible countries' hygienic requirements, or other measures for preventing dissemination of diseases, and others. Chapter A also includes all conformity assessment measures related to food safety, such as certification, testing and inspection, and quarantine.

Chapter B, on technical measures, refers to measures as labelling, marking, packaging, restrictions to avoid contamination or other measures protecting the environment, standards on technical specifications, and quality requirements.

Chapter C, classifies the measures related to customs formalities.

Chapter D, price control measures, includes measures that have the intention to change the prices of imports, such as minimum prices, reference prices, antidumping or countervailing duties.

Chapter E, licensing, quotas and other quantity control measures, groups the measures that have the intention to limit the quantity traded, such as quotas. Chapter E also covers licenses and import prohibitions that are not SPS or TBT related.

Chapter F, on charges, taxes and other para-tariff measures, refers to taxes other than custom tariffs. Chapter F also groups additional charges such as stamp taxes, licenses fees, statistical taxes, and also decreed customs valuation.

Chapter G, on finance measures, refers to measures restricting the payments of imports, for example when the access and cost of foreign exchange is regulated. It also includes measures imposing restrictions on the terms of payment.

Chapter H, on anticompetitive measures, refers mainly to monopolistic measures, such as state trading, sole importing agencies, or compulsory national insurance or transport.

Chapter I, on trade related investment measures, groups the measures that restrict investment by requesting local content and thus restricting imports, or requesting that investment should be related to export in order to balance imports.

Chapter J, on distribution restrictions, refers to restrictive measures related to the internal distribution of imported products. These measures would hinder trade from taking place because there would be difficulty in distributing the products once entering the country.

Chapter K, on the restriction on post sales services, refers to difficulties in allowing technical staff to enter the importing country to install or repair technological goods imported.

Chapter L, contains measures that relate to the subsidies that affect trade.

Chapter M, on government procurement restriction measures, refers to the restrictions bidders may find when trying to sell their products to a foreign government.

Chapter N, on intellectual property measures, refers to the problems arising from intellectual property rights.

Chapter O, on rules of origin, groups the measures that restrict the origin of products so that they could benefit from reduced tariffs according to certain rules often set in multiple simultaneous agreements with different countries.

Chapter P, on export measures, groups the measures a country applies to its exports. It includes export taxes, export quotas or export prohibitions, etc.

The classification discussed above greatly simplifies the data collection. However, being able to classify laws and regulations into the appropriate NTM category is only part of the challenge in assembling a database of NTMs. Besides a proper classification, one of the problems related to data collection is that, in most cases, there is not one sole national repository agency of NTMs data as laws and regulations affecting trade are often promulgated by different government agencies and regulatory bodies. This makes the assembly of an exhaustive NTMs database quite a challenging task. In practice, the data has to be carefully scrutinized for possible duplications, omissions, or any other problems in order to minimize inaccuracies.

CEPII NTM-MAP provides indicators for an analysis based on those newly collected NTM data comprising 40 developing countries plus the European Union and Japan. The data in

CEPII NTM-MAP covers measures from chapters A to E.[3] The data follows the HS classification at the 6 digit level covering more than 5,000 different products.

Incidence of Non-Tariff Measures: The inventory approach

There are various approaches for identifying the importance of trade measures and assessing their effects on international trade. Methodologies include simple inventory measures, computation of price gaps and the estimation of ad-valorem equivalents. As for the simple inventory approach the **NTM-MAP** provide three based indices: the frequency index, the coverage ratio and the prevalence score. The frequency index simply captures the percentage of products that are subject to one or more NTMs. The coverage ratio captures the percentage of imports that is subject to one or more NTMs. The prevalence score captures the average number of NTMs which apply to a product.

The frequency index accounts only for the presence or absence of an NTM, and summarizes the percentage of products *i* to which one or more NTMs are applied. In more formal terms, the frequency index of NTMs imposed by country *j* is calculated as:

$$F_j = \left[\frac{\sum D_i M_i}{\sum M_i} \right] \cdot 100$$

where *D* is a dummy variable reflecting the presence of one or more NTMs and *M* indicates whether there are imports of good *i* (also a dummy variable). Note that frequency indices do not reflect the relative value of the affected products and thus cannot give any indication of the importance of the NTMs on overall imports.

A measure of the importance of NTMs on overall imports is given by the coverage ratio which measures the percentage of trade subject to NTMs for the importing country *j*. In formal terms the coverage ratio is given by:

$$C_j = \left[\frac{\sum D_i V_i}{\sum V_i} \right] \cdot 100$$

[3] Because of objective difficulties in the collection of data on some measures, data covering measures from chapters F to P is partial

where, the *D* is defined as before, and *V* is the value of imports in product *i*. One drawback of the coverage ratio, or any other weighed average, arises from the likely endogeneity of the weights (the fact that imports are dependent on NTMs). This problem is best corrected by using weights fixed at trade levels that would arise in a NTM (and tariff) free world. Otherwise, the coverage ratio would be systematically underestimated. While one cannot get to that benchmark, it is possible to soften the endogeneity problem (and testing for the robustness of the results) by using trade values of past periods.

Frequency and coverage ratios illustrated above do not take into account whether more than one type of NTM is applied to the same product. In practice, a large number of products have more than one regulatory measure applied to them. For example, a product could be subject to a sanitary standard as well as a technical measure on quality, and finally to some licensing. Arguably, the greater the number of NTMs applied to the same product, the more regulated the commerce of that product is, especially if measures are from different Chapters[4]. To measure the prevalence of NTMs, the score *P* below gives the average number of NTMs *N*, affecting an imported product *M*.

$$P_j = \left[\frac{\sum N_i M_i}{\sum M_i} \right]$$

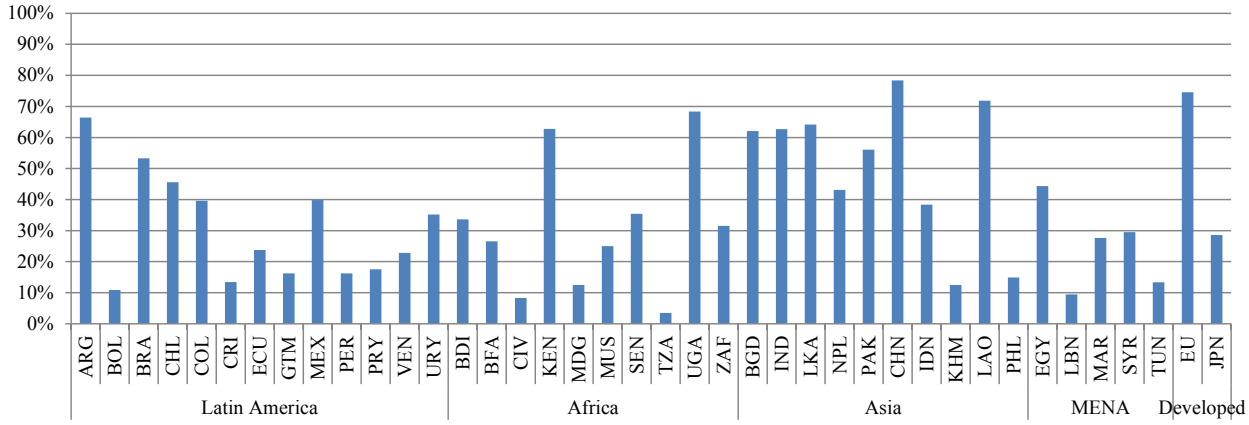
We start the descriptive analysis by aggregating all the data collected and examining the incidence of various types of NTMs. Figure 2 to 4 illustrates the incidence of NTMs for the 40 countries collected so far (EU representing one country). It summarizes the data in terms of frequency index, the coverage ratio and the pervasiveness score for each country for all NTMs as a whole

The use of NTMs varies considerably not only across regions but more so among countries. On average, countries apply some form of NTMs for slightly less than half of the about 5000 products included in the HS 6-digit classification. This figure greatly varies by country.
For example, within Africa, Tanzania and Senegal use NTMs substantially less than Egypt, Kenya or Uganda. In Latin America, Argentina use of NTMs is double than that of Chile of Paraguay. In Asia, Bangladesh, Syria and the Philippines, utilize NTM much more than Cambodia or Indonesia. Although this large variance may be due to some extent to different primary data collection methods, this is likely to explain only part of the differences, as a large variance is also found for Latin American countries whose data is collected by the same agency: the Associación Latinoamericana de Integración **(**ALADI).

[4] The rationale is that measures within the same Chapter are similar in nature and thus often impose relatively less burden than measures from different Chapters.

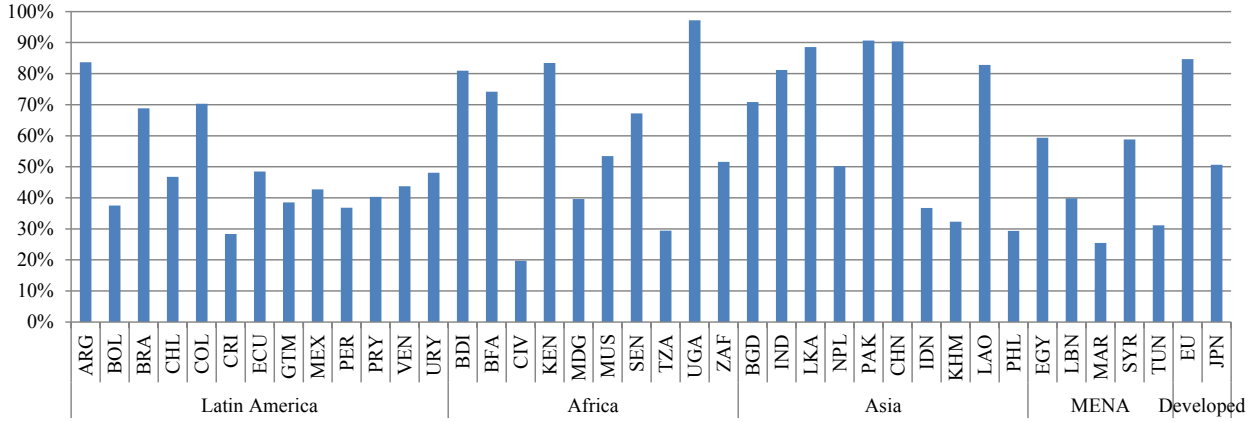
In the **CEPII NTM-MAP** database those indicators are calculated at three different levels: country level, country HS-Section level and country-HS-2 digit level.

Figure 2 –Frequency index by country (percentage)



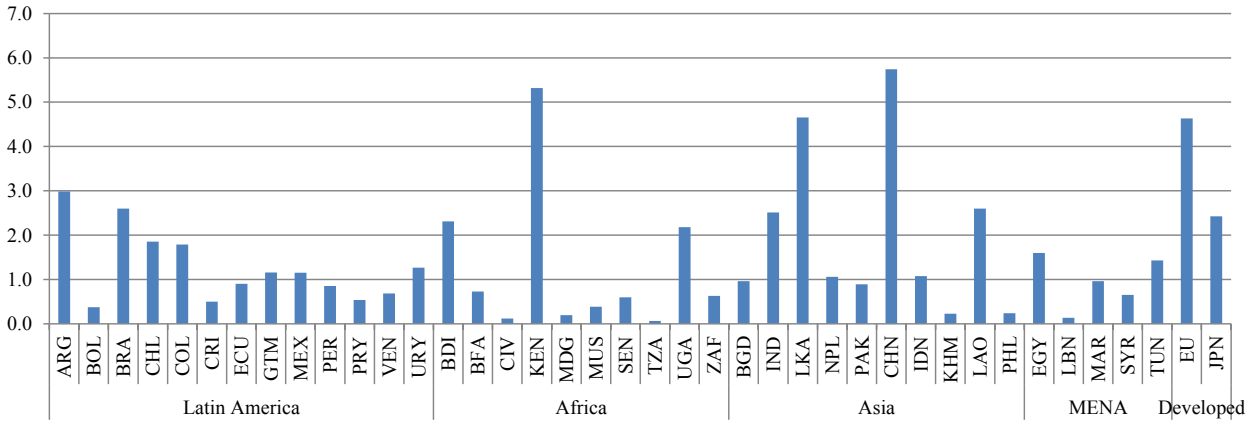
Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database

Figure 3 – Coverage ratios by country (percentage)



Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database

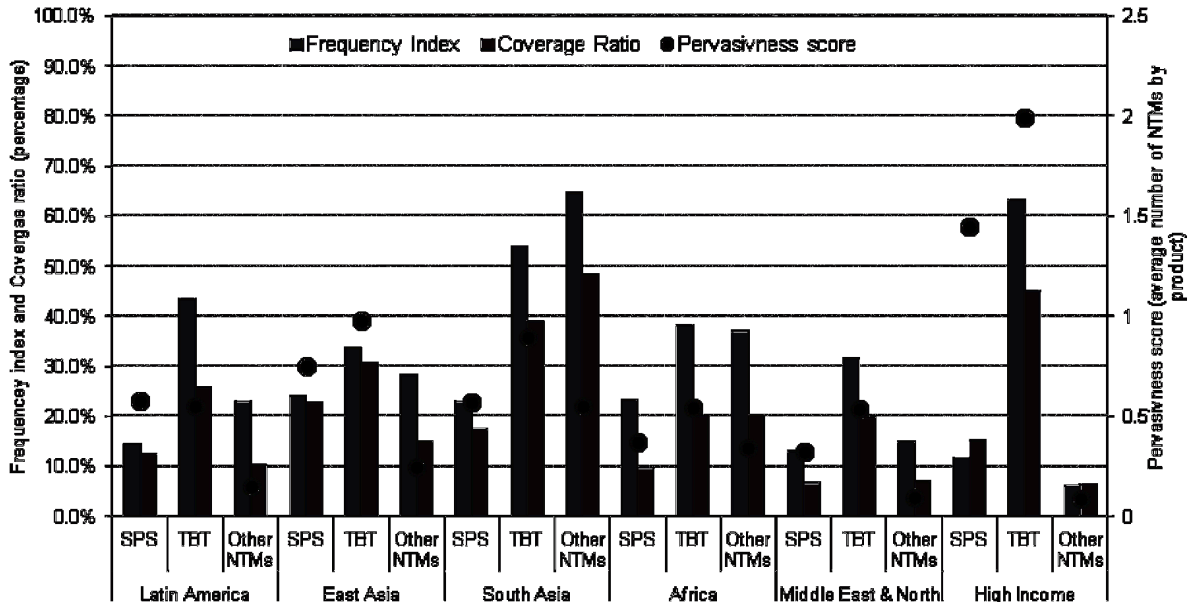
Figure 4 –Prevalence score by country (average number of NTM by product)



Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database

The incidence of different forms of NTMs varies across geographic areas. Figure 5 illustrates the use of NTMs by differentiating the countries in the sample in five broad developing regions and a high income group. It shows the distribution of NTMs across three main categories (A: SPS, B: TBT and C-D-E: Others) for the 40 countries. Although SPS and TBT are most used forms of NTMs independently of the region, many countries especially in South Asia and Africa still implement a large number of quantitative restrictions (largely in the form of licensing). Developed countries are really different in terms of TBT use and average number of NTMs by products. The important use of SPS and TBT by African countries may result from an effort to harmonize regulations with their main trading partner, the EU.

Figure 5 –Frequency index-coverage ratios – prevalence score by NTM chapter (by region)



Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database

We now turn to analyze the impact of NTMs across economic sectors. The use of NTMs greatly varies across economic sectors both for technical and economic reasons. While some products, such as agriculture, electric machinery, weapons, are highly regulated because of consumers and environmental protection and technical standards, some other goods are by their nature less subject to laws and regulation. Table 1 reports frequencies indices of 5 broad categories of NTMs for 20 economic sectors.

Table 1 – Frequency indices across economic sectors (HS-Sections) across all countries

	SPS	TBT	C: Pre-Shipment	D: Price Control	E: Quantity control
Live animals	67.9	29.7	6.1	1.4	6.7
Vegetable products	68.9	31.6	6.5	1.0	5.0
Fats and Oil	61.0	51.0	10.4	1.6	5.3
Processed food	65.0	56.9	12.1	1.6	8.6
Minerals products	5.5	27.3	3.4	1.3	2.7
Chemical products	8.8	45.6	5.7	1.5	3.0
Rubber and Plastics	4.5	49.8	6.4	1.4	2.7
Raw hide and skins	15.7	18.4	3.7	0.6	12.0
Wood	14.9	16.5	3.9	0.6	0.7
Paper	3.4	27.6	6.0	1.4	3.1
Textile	3.6	47.1	13.4	1.0	14.8
Footwear	2.2	44.4	7.5	1.1	3.0
Stone and Cement	4.3	29.3	5.4	1.1	1.5
Base Metals	4.2	35.3	11.1	1.5	8.8
Machinery Electrical Equipment	5.7	36.5	6.3	1.2	4.8
Motor Vehicles	2.4	42.5	6.3	1.7	8.7
Optical & Medicals instruments	2.2	35.6	9.7	1.2	2.6
Miscellaneous goods	4.1	31.6	5.7	2.1	2.0

Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database

The use of SPS measures is largely limited to agricultural sectors and products from animal origin, as their control is essential for ensuring the health and well being of consumers and the protection of the environment. As a result, more than 60 percent of food related products are found to be affected by at least one form of SPS. On the contrary, TBT can suit a much wider set of products and indeed these are found to be more uniformly applied across economic sectors with peaks in textiles, footwear, processed food, and chemicals. Measures involving pre-shipment requirement are widely distributed across economic sectors but concern a more limited number of products. Pre-shipment inspections are found to be more relevant for agricultural products, wooden products, textiles and footwear. Price control measures such as administrative pricing, anti-dumping and countervailing duties are trade defensive policies that by their nature are applied only to very specific products and thus result in low frequency indices. Like pre-shipment requirements, price control measures are more concentrated in agricultural products, textiles and footwear. Finally, quantity control measures are applied more or less uniformly across economic sectors with peaks on agricultural goods, animal products, motor vehicles, and chemical products. These are sectors where particularly sensitive products are often regulated by non-automatic licenses, quotas, and sometimes outright prohibitions.

Region	Code	Country Name	Year of collection
Latin America	ARG	Argentina	2012
	BOL	Bolivia	2012
	BRA	Brazil	2012
	CHL	Chile	2012
	COL	Colombia	2012
	CRI	Costa Rica	2012
	ECU	Ecuador	2012
	GTM	Guatemala	2012
	MEX	Mexico	2012
	PER	Peru	2012
	PRY	Paraguay	2012
	VEN	Venezuela	2012
	URY	Uruguay	2012
Africa	BDI	Burundi	2012
	BFA	Burkina Faso	2012
	CIV	Cote d'Ivoire	2012
	GIN	Guinea	2012
	KEN	Kenya	2011
	MDG	Madagascar	2011
	MUS	Mauritius	2011
	SEN	Senegal	2011
	TZA	Tanzania	2011
	UGA	Uganda	2011
	ZAF	South Africa	2011
Asia	BGD	Bangladesh	2012
	IND	India	2012
	LKA	Sri Lanka	2012
	NPL	Nepal	2012
	PAK	Pakistan	2012
	CHN	China	2012
	IDN	Indonesia	2009
	KHM	Cambodia	2011
	LAO	Laos	2011
	PHL	Philippines	2010
Middle East & North Africa	EGY	Egypt	2011
	LBN	Lebanon	2011
	MAR	Morocco	2011
	SYR	Syria	2011
	TUN	Tunisia	2011
Developed	EU	European Union	2011
	JPN	Japan	2011