Working Paper

CEPII

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

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Highlights

- We provide a comprehensive dataset on non-tariff measures, dedicated to analytical work, for descriptive , trade policies or econometric analysis.

- Based on UNCTAD-TRAINS Data over the 2010-2012 period and for five different types of non-tariff measures.

- Gives three indicators: Frequency index, coverage ratio and prevalence score.

RESEARCH AND EXPERTISE
ON THE WORLD ECONOMY

▌ Abstract

This paper documents NTM-MAP, CEPII's database measuring the incidence of Non-Tariff Measures through different methodologies, based on UNCTAD multilateral database. Three indexes are proposed as proxies for NTMs occurrence: frequency index, coverage ratio and prevalence score. Those indices are systematically computed for several countries and products classifications and for five different categories of NTMs (SPS, TBT, PSI, Price Control and Quantitative Restrictions). 63 countries are covered, with reference year 2010, 2011 or 2012, using two different product disaggregation levels (HS-2 and HS-Section). This comprehensive dataset on non-tariff measures is intended for descriptive, trade policy or econometric analysis.

▌ Keywords

Commerce international et mesures non tarifaires.

▌ JEL

F13, F15, O19.

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

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1. Introduction

While a number of studies have attempted to capture and quantify the impact of some of the hidden costs of trading[1] these attempts are greatly constrained by the available data. The existing data on trade costs is largely related to tariffs, and only a few databases provide information on non-tariff measures and behind the border trade costs (e.g. the Doing Business database, the Trade Facilitation Database, the Logistic Performance Index, and the UNCTAD/TRAINS NTM database). Moreover, most of the existing data is too aggregated to be utilized for detailed policy analysis and often provides information only on the effects of trade impediments rather than on the impediment themselves. In practice, the analysis must compromise in terms of policy coverage focusing on the aggregate effects of the few countries or sectors where the data is available.

A particularly relevant issue for both researchers and policymakers is related to the impact of non-tariff measures (NTMs) on trade. There are several reasons to focus attention on NTMs as one of the main sources of trade costs. One reason is that their impact on trade is still poorly understood and not easily measured. NTMs encompass a wide set of policies that can have very diverse effect son trade. For example, requirements on marking, labeling and packaging, although adding to costs of production, generally are not discriminatory and have low compliance costs, and thus have relatively unimportant trade effects. On the other hand,

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[1] Djankov S., C. Freund and C. S. Pham, (2010) "Trading on Time," *The Review of Economics and Statistics*, 92(1), 166-173. Hoekman, B, and A. Nicita (2011) "Trade Policy, Trade Costs and Developing Country Trade" *World Development*, 39(12), 2069-2079. Maskus, K., Otsuki, T. and J.S. Wilson (2005), The costs of compliance with product standards for firms in developing countries: an econometric study, working paper 3590, World Bank, Washington DC.

quotas, voluntary export restraints and non-automatic import authorizations often have much more significant effects.

The second reason to examine NTMs is their proliferation. While NTMs have been around for years, the use of NTMs to regulate trade has been rising since the 1990s both in terms of countries adopting these measures as well as in their variety. Third reason is that NTMs can be discriminatory. Even when NTMs are indiscriminately applied to all imported goods, many NTMs discriminate among a country's trading partners because costs of compliance are often different across exporters. Compliance costs are generally higher in low income countries, as NTM related production processes and export services are often more expensive, or need to be outsourced abroad. Another reason to investigate NTMs is that they could be protectionist. Governments are using increasingly sophisticated methods about how they protect domestic industries. While trade barriers have historically taken more obvious forms, such as tariffs or quotas, trade barriers are now taking different forms which are harder to identify and quantify. A mounting concern is that liberalization in tariffs may be countered by the increasing number of restrictive NTMs.

Broadly defined, NTMs include all policy-related trade costs incurred from production to final consumer, with the exclusion of tariffs. For practical purposes, NTMs are categorized depending on their scope and/or design and are broadly distinguished in technical measures (Sanitary and Phytosanitary Standards, SPS; and Technical Barriers to trade, TBT) and non-technical measures.

The paucity of data on trade policy measures has been the main problem behind the study of the effect of NTMs on trade. Seemingly simple questions such as "what are the policy measures countries impose" or "what type of measures are faced by particular products" cannot be answered for most goods and countries because of the lack of detailed information. The fact that NTMs are increasingly used to regulate international trade makes the need to update data even more compelling.

The reason behind the scarcity of databases on NTMs is largely related to the difficulty in collecting the data and in assembling a consistent cross-country database. Unlike tariffs, NTM data are not merely numbers; the relevant information is often hidden in legal and regulatory documents. Moreover, these documents are generally not centralized but often reside in different regulatory agencies. All these issues make the collection of NTM data a very resource-intensive task. The first attempt to collect and categorize NTMs was conducted by UNCTAD in the late 1990s, and the data is available in the UNCTAD Trade Analysis and Information System database (TRAINS – accessible via WITS). However, the TRAINS NTMs database has not been consistently updated in the last 10 years. To fill this gap and in response to the increased interest of both researchers and policymakers, UNCTAD and the World Bank in collaboration with the International Trade Center and the African Development Bank, have initiated a new effort on NTMs data with the objectives of improving the coverage and classification of NTMs and to update, consolidate and freely disseminate NTM data. This joint effort has produced an updated NTM classification as well as detailed new data for about 40 countries plus the EU, with data from more countries in the pipeline.

Based on this raw data, NTM-MAP measures the incidence of non-tariff measures through different methodologies, by country, sector and type of NTMs. Given the limited coverage of the new data, the database favors simple indicators (an inventory approach based on frequency, coverage ratio and prevalence score) rather than trying to produce more complex measures such as price gaps or ad-valorem equivalents.

The rest of this paper is organized as follows. Next section provides some details on the definition and classification of NTM data. The bulk of the descriptive analysis is in Section 3. There we provide descriptive statistics on the incidence of NTMs in terms of frequency (number of product lines exposed to NTMs) and coverage (share of total imports exposed to NTMs). In doing so, we analyze differences both in terms of countries and product groups. The last section summarizes the main findings and offers some policy conclusions.

2.   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 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 NTBs[2] takes this into account and develops a tree/branch structure where measures are categorized into *chapters* depending on their scope and/or design. Each chapter is then 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. These measures are largely regulatory policies in response to a variety of

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[2] UNCTAD (2010). Non-tariff Measures: Evidence from Selected Developing Countries and Future Research Agenda. Developing Countries in International Trade Studies. United Nations Publication ISSN: 1817-1214. New York and Geneva.

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)

Imports	**Technical measures**	**A**	SANITARY AND PHYTOSANITARY MEASURES
		B	TECHNICAL BARRIERS TO TRADE
		C	PRE-SHIPMENT INSPECTION AND OTHER FORMALITIES
	Non technical measures	**D**	CONTINGENT TRADE-PROTECTIVE MEASURES
		E	NON-AUTOMATIC LICENSING, QUOTAS, PROHIBITIONS AND QUANTITY-CONTROL MEASURES OTHER THAN FOR SPS OR TBT REASONS
		F	PRICE-CONTROL MEASURES, INCLUDING ADDITIONAL TAXES AND CHARGES
		G	FINANCE MEASURES
		H	MEASURES AFFECTING COMPETITION
		I	TRADE-RELATED INVESTMENT MEASURES
		J	DISTRIBUTION RESTRICTIONS
		K	RESTRICTIONS ON POST-SALES SERVICES
		L	SUBSIDIES (EXCLUDING EXPORT SUBSIDIES UNDER P7)
		M	GOVERNMENT PROCUREMENT RESTRICTIONS
		N	INTELLECTUAL PROPERTY
		O	RULES OF ORIGIN
	Exports	**P**	EXPORT-RELATED MEASURES

Source: UNCTAD 2012[3].

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[3] Classification of Non-tariff Measures, UNCTAD (2012)

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. 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 such 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 groups the contingent measures, i.e. those measures implemented to counteract particular adverse effects of imports in the market of the importing country, including measures aimed at unfair foreign trade practices. They include antidumping, countervailing, and safeguard measures.

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

Chapter F lists price-control measures implemented to control or affect the prices of imported goods. Among the examples are those to support the domestic price of certain products when the import prices of these goods are lower. This category also includes measures other than tariffs measures that increase the cost of imports in a similar manner (para-tariff measures).

Chapter G, on finance measures, refers to measures restricting the payments of imports, for example

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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's **NTM-MAP** provides indicators measuring the incidence of Non-Tariff Measures by using different methodologies and those newly collected UNCTAD multilateral database based comprising 40 developing countries plus the European Union and Japan. The data in **NTM-MAP** contains three indexes as proxies for NTMs occurrence; frequency index, coverage ratio and prevalence score. Those indices are systematically computed for several countries and products classifications and for five different categories of NTM, from chapters A to E (SPS, TBT, PSI, Price Control and Quantitative Restrictions).[4] The data follows the HS classification at the 6 digit level covering more than 5,000 different products. 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). This is a comprehensive dataset on non-tariff measures, dedicated to analytical work, for descriptive, trade policies or econometric analysis.

3.   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, CEPII**'s NTM-MAP** provides three base 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.

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

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Box 2 – Description of 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

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

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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:

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

where *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[5]. 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. Figures 2 to 4 illustrate the incidence of NTMs for the 40 countries collected so far (the EU being considered as one single 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. In NTM-MAP, those indicators are calculated at three different levels: country level, country HS-Section level and country-HS-2 digit level.

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[5] 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.

From Figure 2, we observe that 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 NTMs much more than Cambodia or Indonesia. Although this large variance might be due to some extent to different primary data collection methods[6], 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). Such large differences suggest that the use of NTMs greatly varies across countries, even within the same geographic areas.

Figure 2 – Frequency index by country (percentage)
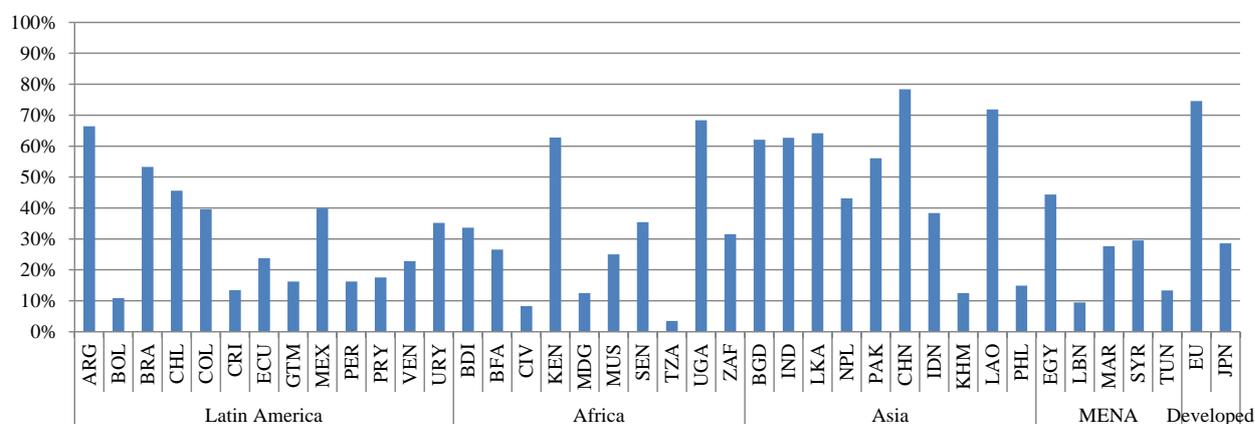
Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database.

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[6] Data have been collected by different agencies across regions and they have sometimes different ways of collecting such information : some start with customs registry which list import measures while others start with regulations from ministry of health, environment etc…

Similar conclusions on the heterogeneity of NTMs incidence can be reached by looking at coverage ratios in Figure 3 (the percentage of import subject to NTMs) as these are found to be highly correlated with frequency indices. Although correlated, coverage ratios are often higher than frequency indices for most of the countries. The difference is particularly striking for Tanzania (from 5 to 35 percent) and Lebanon (from 15 to 40 percent). A relatively higher coverage ratio can be explained by two factors. First, import composition. Countries, especially low income countries, often import larger volumes of products where NTMs are more extensively used (agriculture). Second, a high coverage ratio may reflect a larger use of NTMs policies on most traded products (e.g. for consumer protection). This is often the case in developed countries.

This shows that the endogeneity issue described above (NTMs may restrict trade and this will bias downward the coverage ratio) is not at stake in those figures. This endogeneity issue was more important in the past when measures imposing quantity restrictions were still important.

Figure 3 – Coverage ratios by country (percentage)
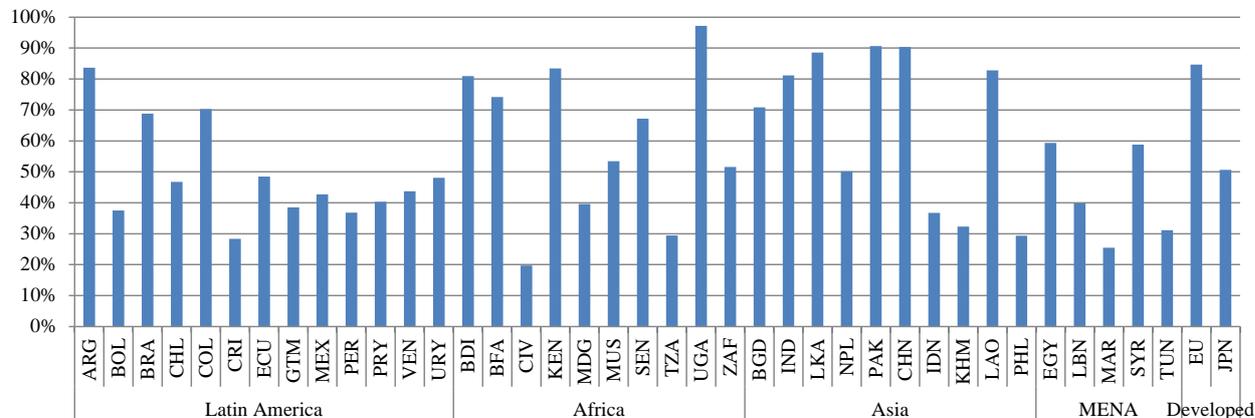
Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database.

The incidence of the use of NTMs depends on both the percentage of products (or imports) affected by NTMs, and the number of NTMs affecting each product. 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. First it is often the case that countries apply a wide

number of NTMs within each chapter. For example, one specific good may be subject to geographical restriction, labeling, fumigation and some conformity assessments which all fall under the SPS chapter (A). Although some of these measures may impose few additional costs, some others are quite distinct. A large number of measures within a chapter could imply an even stricter regulatory framework. Thus, it is important to provide some information on the actual number of NTMs applied to single products. This information is given by simply calculating the average number of NTMs applied to each HS 6-digit product. Figure 4 reports for each country the average number of NTMs applied to the products.

Figure 4 – Prevalence score by country (average number of NTM by product)
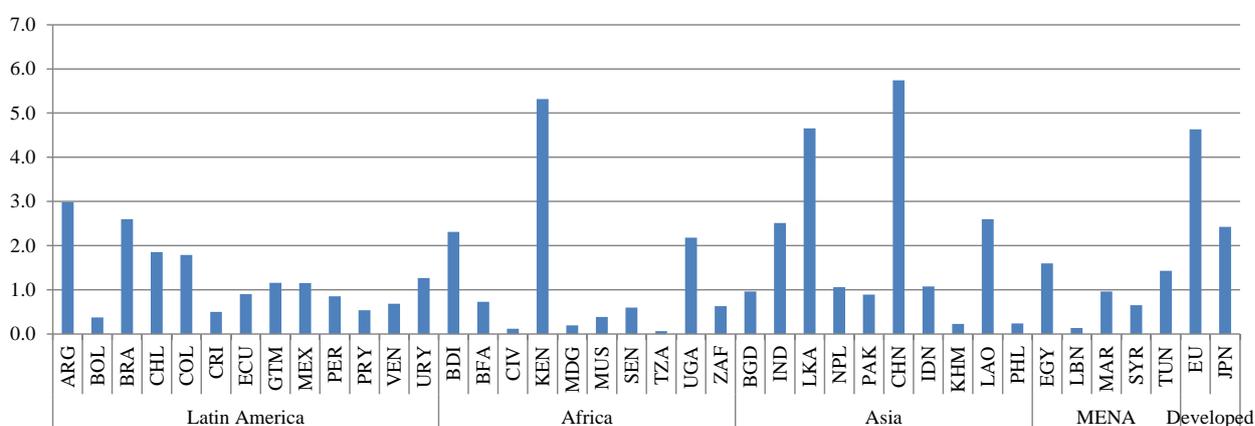
Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database

Also, 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. 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. To better illustrate the pervasiveness of NTMs, Figure 5 reports the number of products affected by 1, 2, 34 or 5 types of NTMs, where types are differentiated by Chapter.

Although a large share of products affected by NTMs are subject to NTMs from only one Chapter, a substantial number of products are affected by multiple types of NTMs. For example, among about 3450 products where Argentina imposes NTMs, about 838 are subject

to NTMs from only one Chapter, about 1986 are affected by NTMs from two different Chapters, and about 250 by NTMs from 3 or more Chapters. Although the EU frequency index and coverage ratio are higher to that of Argentina, EU imports can be considered relatively less regulated, as most of Argentina's imports (50 percent) are affected by NTMs from two or more Chapters while in EU the majority of imports (55 percent) are affected by NTMs from one chapter.

Figure 5 – Number of NTMs from different Chapters affecting HS 6 digit products
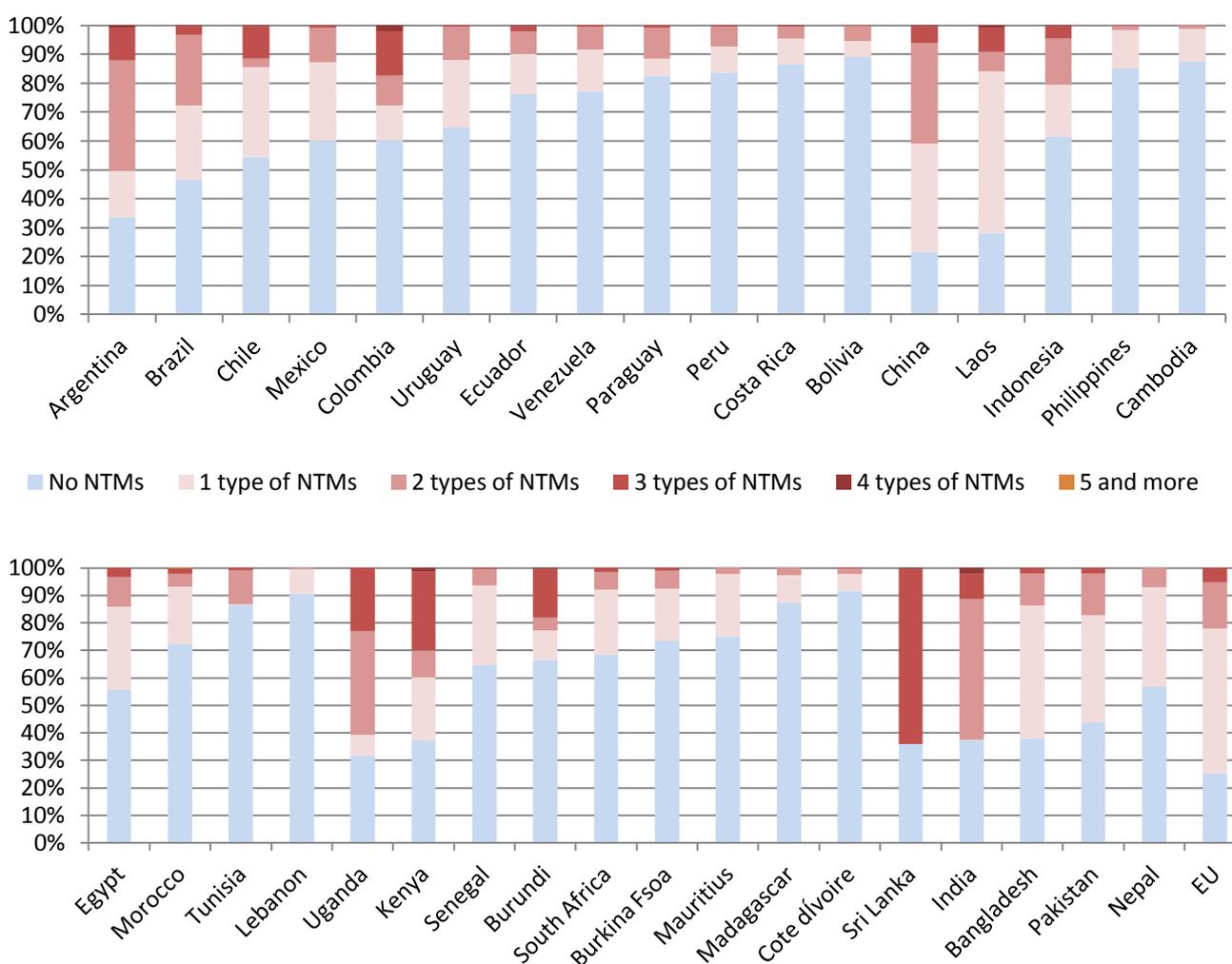
Source: NTM-MAP: CEPII'calculations using UNCTAD multilateral NTM database.

16

The incidence of different forms of NTMs varies across geographic areas. Figure 6 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 6 –Frequency index-coverage ratios – prevalence score by NTM chapter (by region)
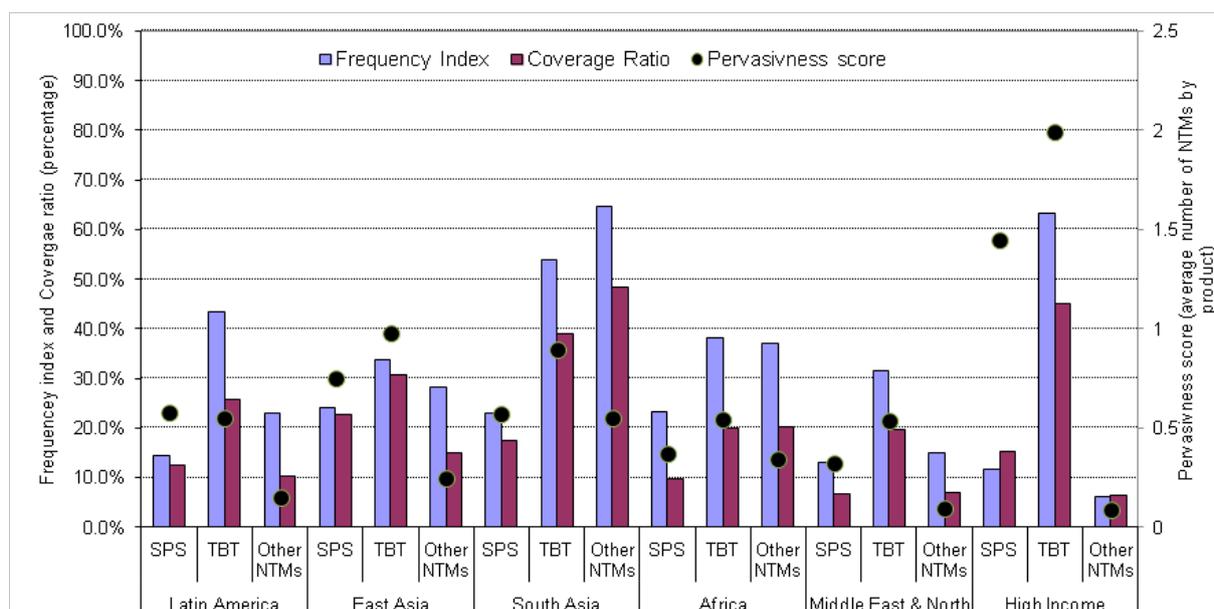
Source: NTM-MAP: CEPII' calculations using UNCTAD multilateral NTM database.

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

	A: SPS	B: TBT	C: Pre-Shipment	D: Contingent	E: Quantity control
Live animals	38.5	30.2	6.2	1.4	6.8
Vegetable products	39.5	32.1	6.6	1.0	5.1
Fats and Oil	61.9	51.8	10.6	1.7	5.4
Processed food	66.1	57.8	12.3	1.6	8.8
Minerals products	4.4	27.8	3.5	1.3	2.7
Chemical products	8.9	46.3	5.8	1.5	3.0
Rubber and Plastics	4.6	50.6	6.5	1.4	2.7
Raw hide and skins	15.9	18.7	3.7	0.7	12.2
Wood	15.1	16.8	4.0	0.6	0.7
Paper	3.5	28.0	6.1	1.4	3.2
Textile	2.4	47.9	13.7	1.0	15.1
Footwear	1.0	45.1	7.7	1.2	3.0
Stone and Cement	3.3	29.7	5.5	1.1	1.5
Base Metals	3.2	35.9	11.3	1.5	8.9
Machinery & Electrical Equipment	4.8	37.1	6.5	1.2	4.9
Motor Vehicles	1.4	43.2	6.4	1.7	8.8
Optical and Medicals instruments	1.1	36.1	9.9	1.2	2.6
Miscellaneous goods	3.2	32.1	5.8	2.2	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, TBTs 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. Contingent measures 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.

4.   Conclusions

CEPII's NTM-MAP database, presented in this paper, makes use of data newly collected by UNCTAD and the World Bank to investigate the use of NTMs in about 63 countries. The incidence of various types of NTMs is analysed across countries and economic sectors, based on simple inventory methods: frequency indices, coverage ratios and prevalence score.

Although our results have to be taken as mainly descriptive, preliminary, and not to be generalized given the limited number of countries covered by the data, they reveal some important issues. The results find that the incidence of NTMs varies considerably across countries, across economic sectors and across types of NTMs. Across countries, overall inventory measures range from less than 10 percent to more than 90 percent of products or trade covered by NTMs.

Regarding the incidence of technical measures (SPSs and TBTs), these are found to be widely used. TBT are found to affect a large share (about 39 percent for the frequency index, 48 percent with the coverage ratio) of international trade. SPS are also frequently used, but they are exclusively related to agriculture and food products. Given the more limited scope for SPS, they affect only about 15 percent of trade but more than 60 percent of agricultural

products. The large incidence of SPS and TBT raises concerns for developing countries' exports. Although these measures are generally not protectionist in intent, they often result in diverting trade from developing countries where production processes and certification bodies are inadequate, or where the cost of compliance to these measures is higher. In practice, SPS and TBT may erode the competitive advantage that low income developing countries have in terms of labor costs and preferential access.

The use of non-technical measures varies greatly across countries and economic sectors. Among these measures the use of quantity controls has increased but they are now largely limited to non-automatic licenses while the use of quotas has declined since most of them were made illegal by WTO rules. As a whole, quantity control measures affect about 6 percent of products and 12 percent of trade. Pre-shipment inspection requirements affect about 13 percent of trade. These are implemented especially in low income countries to help custom administrations in the correct evaluation of imports and their proper taxation.

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