A PRELIMINARY ANALYSIS ON NEWLY COLLECTED DATA ON NON-TARIFF MEASURES

POLICY ISSUES IN INTERNATIONAL TRADE AND COMMODITIES
STUDY SERIES No. 53

UNITED NATIONS

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

A PRELIMINARY ANALYSIS ON
NEWLY COLLECTED DATA ON NON-TARIFF MEASURES

by

Alessandro Nicita
UNCTAD, Geneva

and

Julien Gourdon
CEPII, Paris

UNITED NATIONS
New York and Geneva, 2013

NOTE

The purpose of this series of studies is to analyse policy issues and stimulate discussions in the area of international trade and development. The series includes studies by UNCTAD staff, as well as by distinguished researchers from other organizations and academia. In keeping with the objective of the series, authors are encouraged to express their own views, which do not necessarily reflect the views of the UNCTAD secretariat or its member States.

The designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the United Nations Secretariat concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Material in this publication may be freely quoted or reprinted, but acknowledgement is requested, together with a reference to the document number. It would be appreciated if a copy of the publication containing the quotation or reprint were sent to the UNCTAD secretariat at the following address:

ABSTRACT

This paper makes use of data newly collected by UNCTAD and the World Bank to investigate the use of non-tariff measures (NTMs) in about 26 countries. The analysis is based on simple inventory methods: frequency indices and coverage ratios. The results indicate that the use of NTMs is extensive and increasing, especially with regard to technical measures. Technical barriers to trade (TBTs) are found to affect a large share (about 30 per cent) of international trade. Given the more limited scope for sanitary and phytosanitary (SPS) measures, these affect only about 15 per cent of trade but more than 60 per cent of agricultural products. In regard to non-technical measures, their use varies greatly across countries and economic sectors. The use of quantity controls has increased but is now largely limited to non-automatic licences. As a whole, quantity control measures affect approximately 16 per cent of products and 20 per cent of trade. Pre-shipment inspection requirements affect about 11 per cent of trade. These are implemented especially in low-income countries to help custom administrations in the correct evaluation of imports and their proper taxation. Price-control measures are only rarely used and affect less than 5 per cent of trade and only 2 per cent of products. The results also suggest the presence of correlation between the use of NTMs and traditional forms of trade policy. This may indicate that NTMs have been used, at least to some degree, as substitutes to tariffs in order to continue protecting key economic sectors in spite of the tariff liberalization of the last 10 years.

ACKNOWLEDGEMENTS

CONTENTS

List of figures

List of tables

1.   Introduction

Since the paper "The case of the missing trade and other mysteries" (Trefler, 1995), many studies have investigated the reasons why world trade is not as large as economic models predict. One of the most compelling explanations was provided by Obstfeld and Rogoff (2000), who suggested that large unobserved trade costs may explain most of the discrepancies between model estimates and trade statistics. The presence of hidden costs was supported by subsequent work, as in Anderson and Van Wincoop (2004), whose research indicated that the costs associated with cross-border trade, even between well-integrated countries, are well above those that can be explained by geographic distance and traditional trade policies. Although a number of studies have attempted to capture and quantify the impact of some of the hidden costs of trading (Maskus et al., 2005; Djankov et al., 2010; Hoekman and Nicita, 2011), these attempts are greatly constrained by the available data. The existing data on trade costs are largely related to tariffs, and only a few databases provide information on NTMs and behind-the-border trade costs (for example, the Doing Business database, the Trade Facilitation Database, the Logistic Performance Index, and the UNCTAD Trade Analysis and Information System (TRAINS) database). Moreover, most of the existing data are too aggregated to be utilized for detailed policy analysis and often only provides information on the effects of trade impediments rather than on the impediments 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 are available.

A particularly relevant issue for both researchers and policymakers is related to the impact of 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, encompassing a wide set of policies that can have very diverse effects. For example, requirements concerning marking, labelling and packaging, although adding to the costs of production, are not generally discriminatory and have low compliance costs, and thus have relatively unimportant effects on trade. On the other hand, quotas, voluntary export restraints and non-automatic import authorizations often have much more significant effects. A second reason to examine NTMs is their proliferation. While there exists a long history of application of NTMs,[1] the use of such measures to regulate trade has been rising since the 1990s both in terms of countries adopting such measures as well as in their variety. A third reason is that NTMs can be discriminatory: even when they are indiscriminately applied to all imported goods, many NTMs discriminate among a country's trading partners because the 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, different forms are emerging 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 the final consumer, with the exclusion of tariffs. For practical purposes NTMs are categorized according to their scope and/or design and are broadly distinguished as technical (SPS measures and TBTs) and non-technical. These are further distinguished as hard measures (for example, price and quantity control), threat measures (for example, anti-dumping measures and safeguards), and others such as trade-related finance and investment measures. In practice, NTMs have the potential to substantially distort international trade, whether their trade effects are protectionist or not. For example, measures such as

---

[1] For example, English laws in the seventeenth and eighteenth centuries required that all colonial trade be conducted on British ships manned by British sailors. Also, certain goods had to be shipped to Great Britain first before they could be sent to their final destination.

quality standards, although generally imposed without protectionist intent, may be of particular concern to poor countries whose producers are often ill-equipped to comply with them.

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 regarding what policy measures are imposed by countries, and what types 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 are available in the UNCTAD TRAINS database – accessible via the World Bank World Integrated Trade Solution (WITS) software.[2] However, the TRAINS 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 Centre 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 of updating, consolidating and freely disseminating NTM data.

As of early 2011, this joint effort has produced an updated NTMs classification as well as detailed new data for approximately 25 countries, with data from more countries in the pipeline. This present paper makes use of the new data to provide some preliminary information on the incidence of NTMs across countries and by economic sector and type of NTMs. Given limited coverage of the new data, the analysis is mainly descriptive in nature and employs simple indicators (an inventory approach based on frequency and coverage ratio) rather than trying to produce more complex measures such as price gaps or ad valorem equivalents. In practice, the analysis focuses on the identification of the relative use of various types of NTMs and their incidence across countries and products.

The study is organized as follows: section 2 provides some details on the definition and classification of NTM data, while the bulk of the descriptive analysis is contained in section 3. In section 3 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 so doing, we analyse differences both in terms of countries and product groups. We also examine the evolution in the use of NTMs by using original data from the TRAINS database and comparing them with the data collected recently. Section 4 explores the relationship between NTMs and traditional forms of trade policy. The last section summarizes the main findings and offers some policy conclusions.

---

[2] See http://wits.worldbank.org/wits.

2. Definition, classification and data collection

The definition of NTMs should encompass all measures altering the conditions of international trade, including policies and regulations that restrict trade as well as those that facilitate it. It is frequent that NTMs are incorrectly referred to as non-tariff barriers (NTBs). The difference between the two terms is that NTMs comprise a wider set of measures than NTBs, the latter term being now generally only used to describe discriminatory NTMs imposed by governments to favour domestic over foreign suppliers. The cause of this confusion is because in the past most NTMs were largely in the form of quota or voluntary export restraints. These measures are restrictive by design, which explains why the term barrier was used. In present times, policy interventions take many more forms, and it is therefore preferable to refer to them as measures instead of barriers, to underline that the measure may not necessarily be welfare or trade reducing.[3] For practical purposes, the commonly used definition of NTMs is (UNCTAD, 2010):

> Non-tariff measures (NTMs) are policy measures, other than ordinary customs tariffs, that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both.

This definition is broad and to a large extent uninformative as it was in the case of NTBs, which were defined as policies that are not tariffs. To better identify NTMs, and to distinguish among their various forms, a detailed classification is therefore of critical importance. To facilitate data collection and analysis, the multitude of NTMs are often aggregated into various groups, as already mentioned in the introduction. In more detail, these include hard measures (for example, measures of price and quantity control), threat measures (for example, anti-dumping measures and safeguards), SPS measures, TBTs, 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 Non-tariff Barriers takes this into account and develops a tree/branch structure where measures are categorized into chapters depending on their scope and design. Each chapter is then further differentiated into sub-groups to allow a finer classification of the regulations affecting trade. In practice, the NTMs classification encompasses 16 chapters (A to P) (see figure 1) and each individual chapter is divided into groupings with depth of up to three levels (one, two, and three digits). Although a few chapters reach the three-digit level of disaggregation, most of them stop at two digits. The complete classification can be found in UNCTAD (2010).

Each chapter of the classification comprises measures with similar purposes. All chapters reflect the requirements of the importing country concerning 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 measures under chapters (A) to (C) have a relatively clear relationship with the market imperfections they try to address (Beghin, 2006). These measures are largely regulatory policies in response to a variety of concerns raised by society in many areas such as the environment, animal welfare, food safety and consumer rights. The policies are not necessarily restrictive because they can also enhance consumer demand for goods by increasing quality attributes (technical requirements) or by

---

[3] For example, NTMs such as standards and regulations may expand trade by facilitating production and exchange of information, reducing transactions costs, guaranteeing quality, and achieving the provision of public goods (Maskus, Wilson and Otsuki 2003). Where trade in some products would have been difficult without clear standards, with it, trade could be created between two countries.

reducing informational asymmetries (standards). However, many of these policies involve considerations of institutional capacity and are likely to have distortionary impacts on trade. Sometimes they are imposed to address the possible capacity failures of trade partners; often they require an extensive domestic institutional capacity to be implemented. Although different types of requirements affect different inputs and stages of production, most of these policies also affect overall trade costs (for example, certification, inspections, and the like). In addition, compliance costs often vary depending on the infrastructure and institutional capacity of the exporting country, and thus ultimately these costs do affect trade flows.

Figure 1. NTM classification
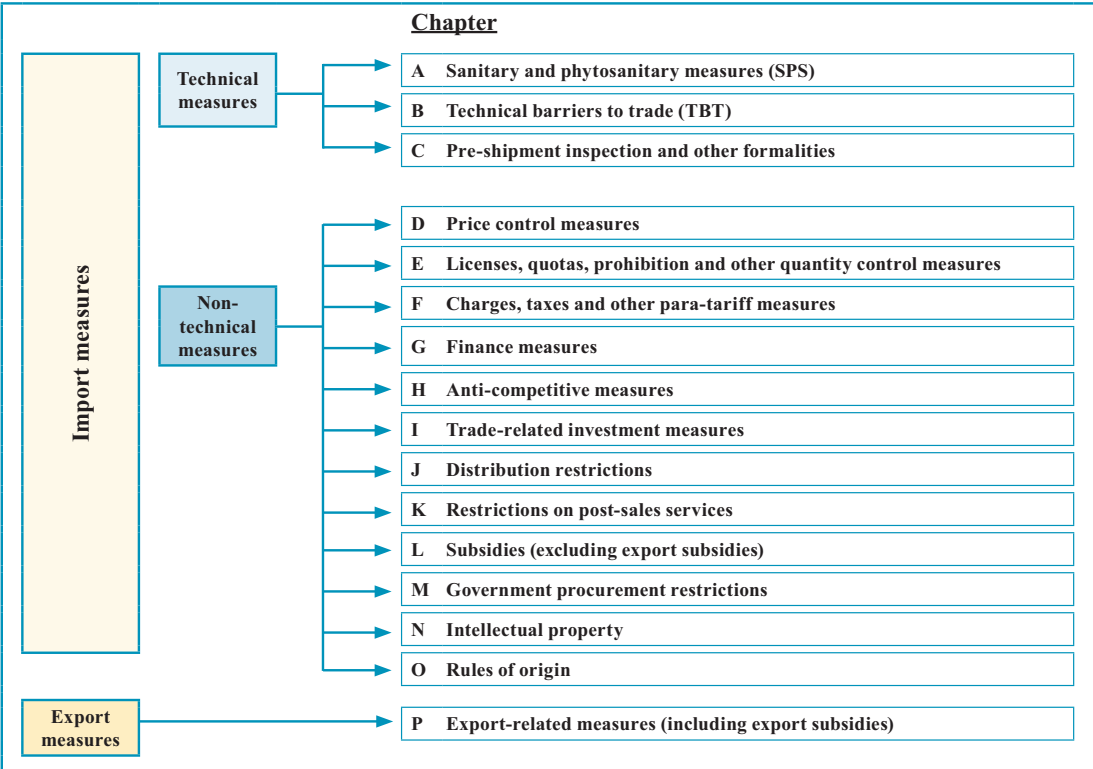
While the intent and scope of NTMs vary considerably, their effect on trade is generally more understood and easier to quantify. The effects of price-control measures are relatively simple to quantify, especially anti-dumping and safeguards. Quantity control instruments have been extensively examined in the analysis of quotas, tariff rate quotas and their administration (see Boughner et al., 2000). Para-tariff measures can be analysed as conventional tax instruments and their incidence is straightforward to perceive. Financial, anti-competitive, and trade-related investment measures have indirect effects on trade, and their actual impact is more difficult to assess. The box following provides some more details on the measures contained in each chapter.

Brief description of NTM chapters

Chapter A, on SPS measures, refers to measures affecting areas such as restriction of substances, and measures for preventing dissemination of disease. 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, other measures protecting the environment, standards on technical specifications, and quality requirements.

Chapter C classifies the measures related to pre-shipment inspections and other customs formalities.

Chapter D, price-control measures, includes measures that are intended to change the prices of imports, such as minimum prices, reference prices, anti-dumping 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 licences 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, licence 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. The chapter 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 requiring local content, 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.

Chapter K, on the restriction on post-sales services, refers to difficulties in allowing technical staff to enter the importing country to provide accessory services (for example, the repair or maintenance of imported technological goods).

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 problems arising from intellectual property rights.

Chapter O, on rules of origin, groups the measures that restrict the origins of products, or their inputs.

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

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, making the assembly of an exhaustive NTMs database quite a challenging task. In practice, the data have to be carefully scrutinized for possible duplications, omissions, or any other problems in order to minimize inaccuracies.

This paper provides an analysis based on the newly collected NTM data comprising 24 developing countries plus the European Union and Japan. The data cover measures from chapters A to I, and chapter P.[4] The data follow the Harmonized System (HS) classification at the six-digit level covering more than 5,000 different products.

3. The incidence of NTMs

There are various approaches to identify 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 the intent of this paper is mainly to explore the collected data, the simple inventory approach is used. This approach is based on two indices: the frequency index and the coverage ratio. 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 are subject to one or more NTMs.

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

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

(1)

where D is a dummy variable reflecting the presence of one or more NTMs and M indicates whether there are imports of product 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:

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

(2)

---

[4] Because of objective difficulties in the collection of data on some measures, data covering measures from chapters J to O were not actively collected.

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 weighted 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 an NTM- (and tariff-) free world. Otherwise, the coverage ratio would be systematically underestimated. While one cannot achieve that benchmark, it is possible to soften the endogeneity problem (and test the robustness of the results) by using trade values of past periods.

We start the descriptive analysis by aggregating all the data collected and examining the incidence of various types of NTMs. Figure 2 illustrates the distribution of NTMs across five main chapters for the 26 countries examined so far. For each chapter both the frequency indices and coverage ratios are reported.

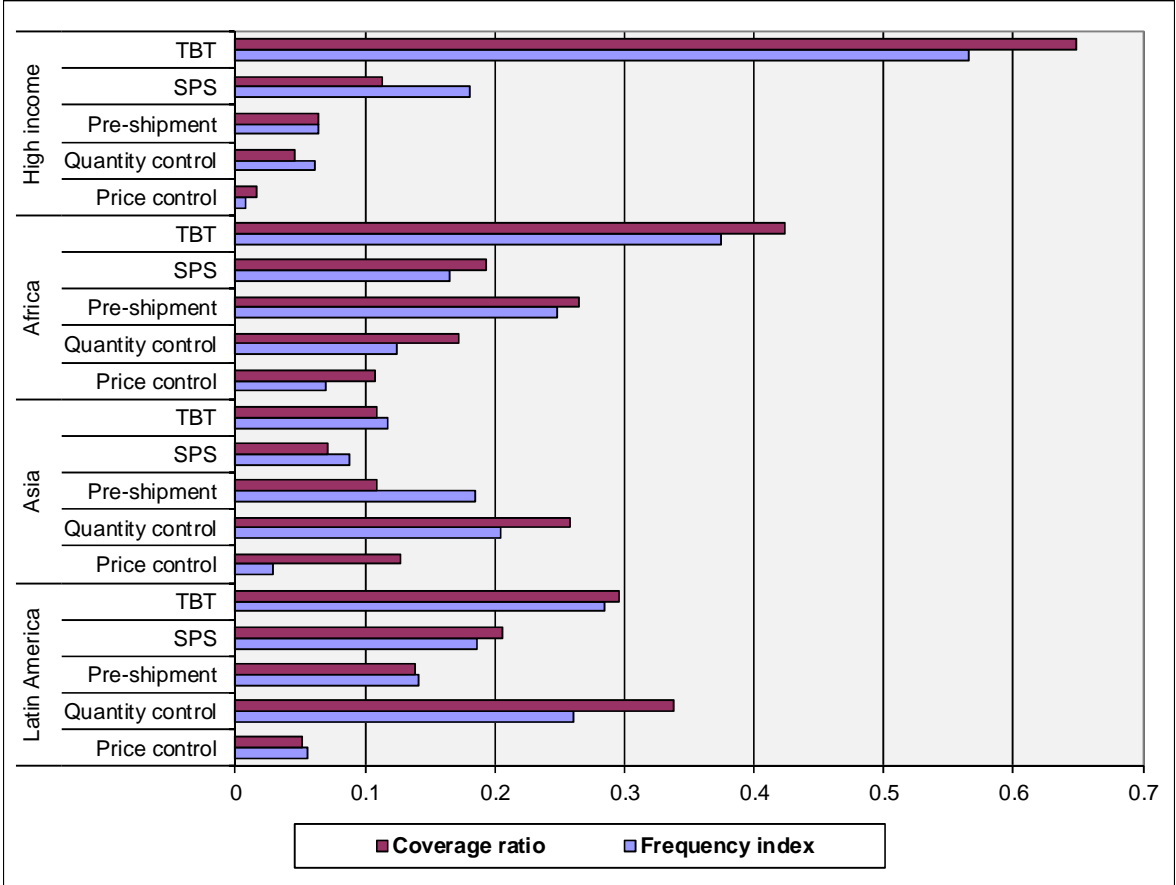**Figure 2. Frequency index and coverage ratios by chapter, all countries**
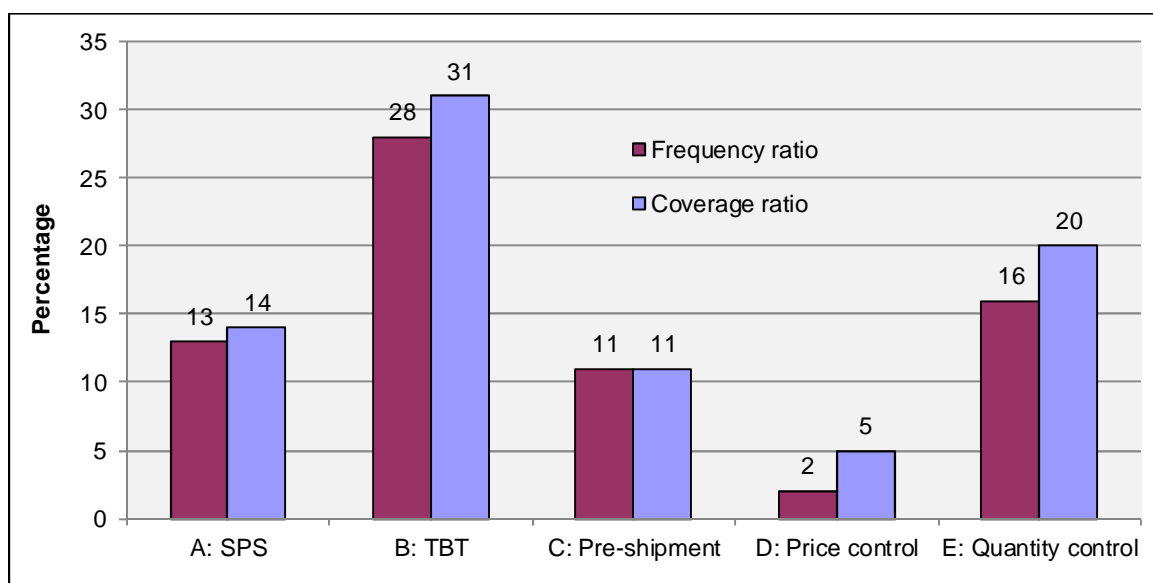
According to the newly collected data, TBTs are by far the most widely used regulatory measures, with about 30 per cent of products and trade values affected. Quantity controls affect about 16 per cent of products and 20 per cent of trade. Slightly less than 15 per cent of trade is affected by SPS measures. The large incidence of SPS measures and TBTs raises concerns for developing countries' exports. These measures impose quality and safety standards that often exceed multilaterally accepted norms. Although these measures are not protectionist in nature they often result in diverting trade from developing countries where the production process and certification bodies are often inadequate. Moreover, the cost of compliance with SPS measures and TBTs is often higher in low-income countries as infrastructure and export services are often more expensive or need to be outsourced abroad. In practice, SPS measures and TBTs may erode the competitive advantage that developing countries have in terms of labour costs and preferential access.

Among non-technical measures, pre-shipment inspections affect approximately 11 per cent of trade and products. Although pre-shipment inspections are often necessary to provide some assurance on the quality/quantity of the shipment, which may thus promote international trade, they add to the cost of trading. These additional costs may reduce the competitiveness of countries, thus distorting trade. Concerning price-control measures (5 per cent of trade and only 2 per cent of products), these constitute one of the least-used forms of NTMs. Price-control measures affect only a small share of goods and are largely related to anti-dumping and countervailing duties, as well as some form of administrative pricing for staple food, energy and other sensitive sectors. Finally, quantitative measures still affect about 20 per

cent of international trade. Only a small percentage of these measures still take the form of quotas and export restrictions, since most these quantitative restrictions are illegal under World Trade Organization (WTO) rules. Most of the measures are in the form of non-automatic licensing, often necessary to administer the importation of goods where SPS- and TBT-related issues are of particular importance. Some quantitative restrictions such as quotas, prohibitions and export restraints are in place, but are largely limited to a number of sensitive products.

The incidence of different forms of NTMs varies across geographic areas. Although SPS measures and TBTs are used extensively among the countries in our sample, Latin American and African countries also implement a large number of quantitative restrictions. In general, African countries appear to regulate their imports relatively more than many other countries. Although this may seem surprising, it may result, at least in the case of SPS measures and TBTs, from an effort to harmonize regulations with their main trading partner, the European Union. The reason behind this relatively large number of pre-shipment inspections is that these are often implemented to fight corruption, to facilitate and accelerate custom procedures, and ultimately to help in the correct evaluation of imports and their proper taxation.

Figure 3. Frequency index and coverage ratios by chapter, by region

The use of NTMs varies considerably not only across regions but more so between countries. Figure 3 summarizes the data collected so far in terms of frequency index and coverage ratio for each country for all NTMs as a whole. On average, countries apply some form of NTMs for slightly less than half of the approximately 5,000 products included in the HS six-digit classification. This figure varies greatly by country. While Egypt, Uganda, Kenya, Argentina and the European Union have many products covered by at least one NTM, NTMs are applied only to a subset of products in Peru, Uruguay,

the United Republic of Tanzania and the Plurinational State of Bolivia. 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 are collected by the same agency – the Associação Latinoamericana de Integração. The large differences found among Latin American countries are also found in other regions. In Africa the frequency index varies from 90 per cent in Burundi and Uganda to about 10 per cent of Senegal and Tanzania. Such large differences suggest that the use of NTMs varies greatly across countries, even within the same geographic areas (figure 4).

**Figure 4. Frequency indices and coverage ratios, by country**
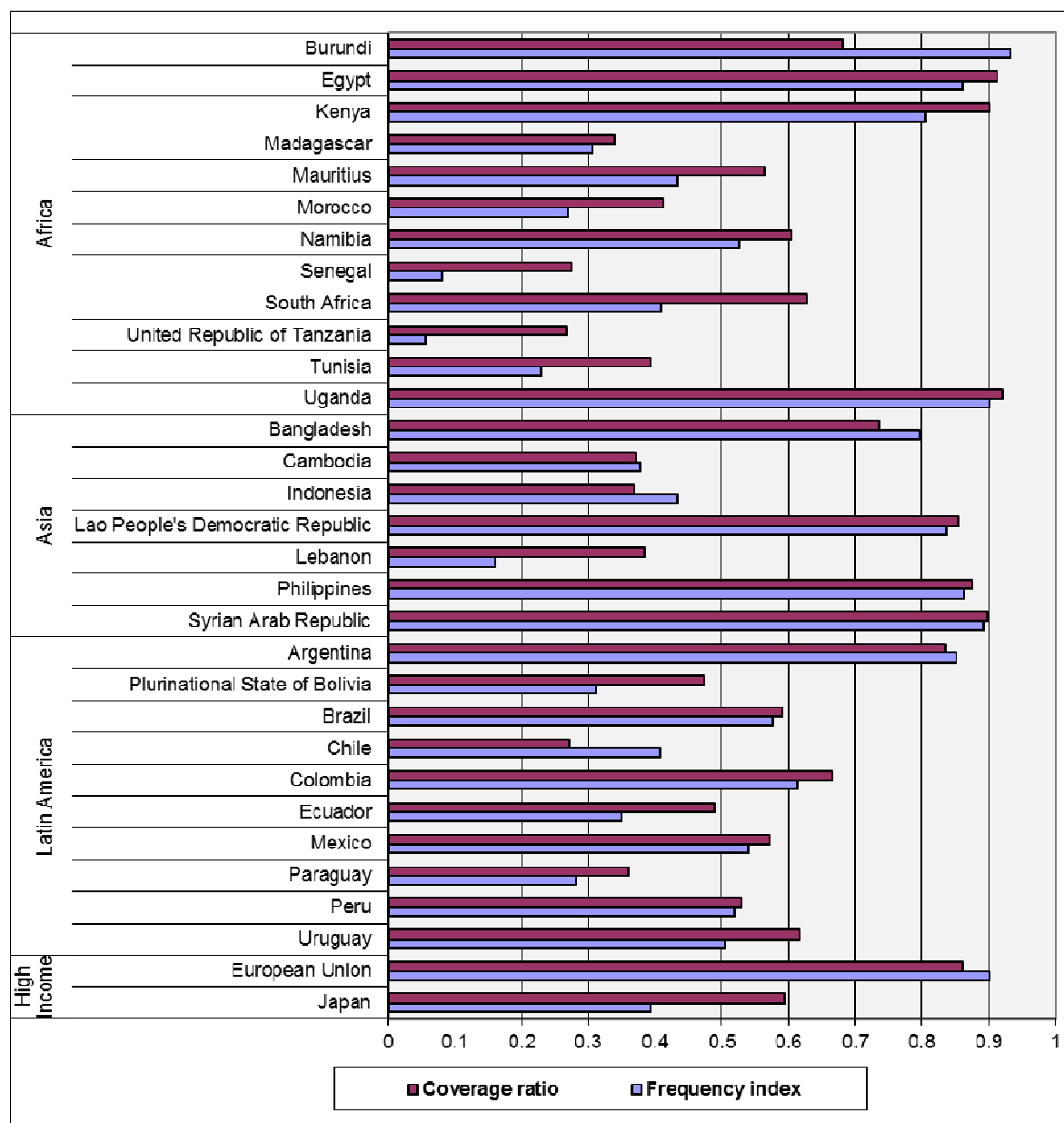
Similar conclusions can be reached by looking at coverage ratios (the percentage of imports subject to NTMs) as these are found to be highly correlated with frequency indices. Although correlated, coverage ratios are often larger than frequency indices. A coverage ratio relatively higher than the frequency index can be explained by two factors. The first is import composition. Countries, especially low-income countries, often import larger volumes of products where NTMs are more extensively used (agriculture). The second factor is a larger use of NTMs policies on products that are most traded (for example, for consumer protection). This is often the case in developed countries.

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. The 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 (chapter A) as well as a technical measure on quality (chapter B), and finally to some licensing (chapter E). 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 one, two or three types of NTMs, where types are differentiated by chapter.

Although the majority of products affected by NTMs are concerned by only one chapter, a substantial number of countries apply NTMs from multiple chapters to many products. As the pervasiveness of NTMs depends also on the number affecting each product, this approach allows a better comparison across countries. For example, among the 4,550 products on which the European Union imposes NTMs, about 3,200 are subject to NTMs from only one chapter, about 1,100 are affected by NTMs from two different chapters, and about 250 by NTMs from three or more chapters. Although the European Union frequency index and coverage ratio are similar to those of Argentina, European Union imports can be considered relatively less regulated, as the majority of imports to Argentina are affected by NTMs from two or more chapters. These statistics also allow us to verify the quality of the data. The case of Namibia (and possibly also of Uganda) is particularly striking as all 2,900 products on which NTMs are applied are subjected to multiple forms from at least three different chapters. However, as this is unlikely to be the case, the data from Namibia need to be further scrutinized for possible errors in the classification procedure.

Figure 5. Number of products affected by number of NTM chapters
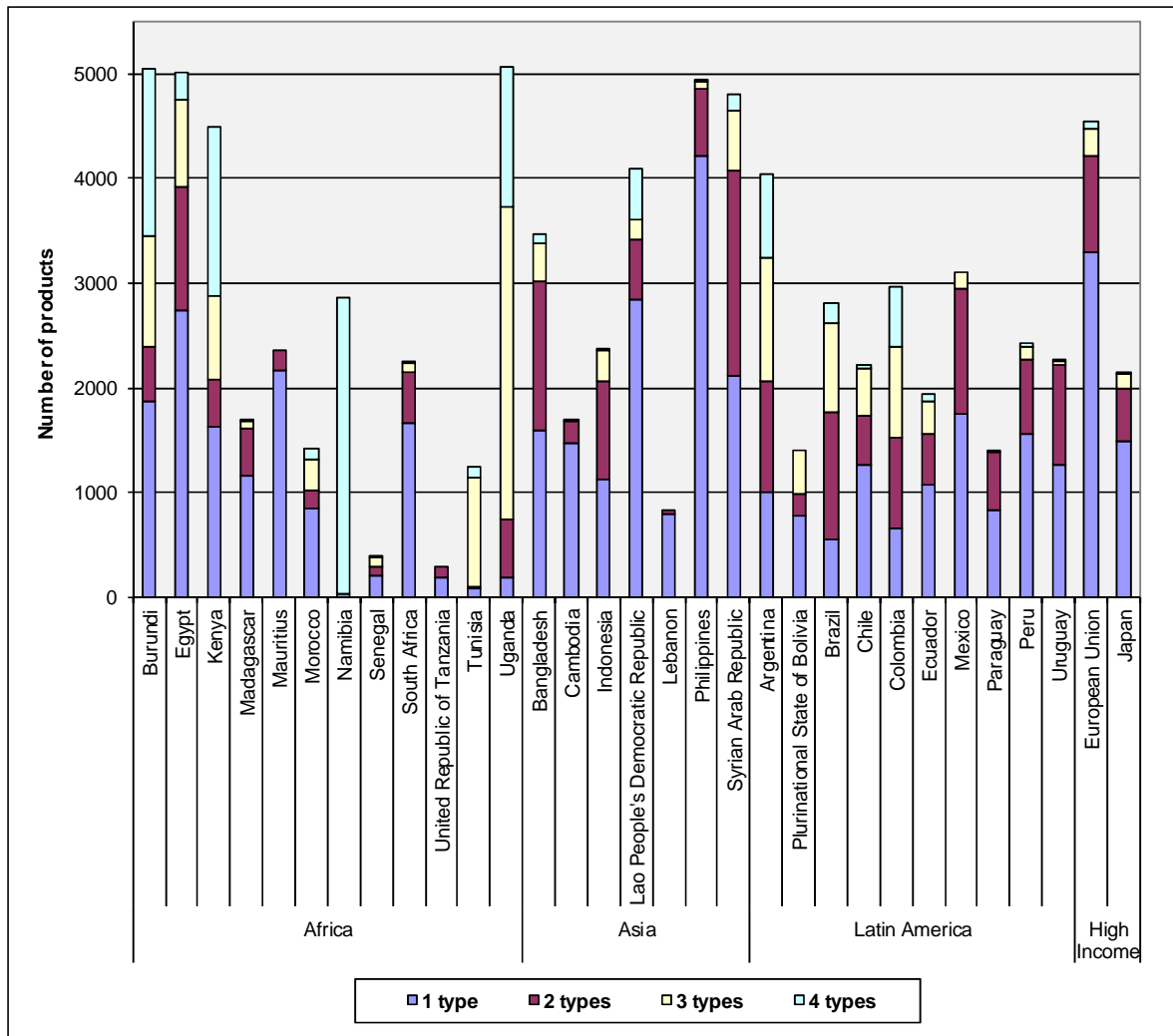
It is often the case that countries apply a wide number of NTMs within each chapter. For example, one specific product may be subject to geographical restriction, labelling, fumigation and some conformity assessments, which all fall under the SPS measures chapter A. Although some of these measures may 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 six-digit product. Table 1 reports for each country the average number of NTMs applied to the products facing at least one NTM at the various levels of aggregation of classification.

Table 1. Use of multiple types of NTMs at different levels of aggregation

|	Number of lines with at least one NTM	Average over number of lines with NTMs		
		Chapter level	One-digit level	All types of NTMs
Argentina	4 658	1.99	2.54	2.7
Bolivia, Plurinational State of	659	2.11	2.28	2.38
Brazil	3 332	2.24	3.06	3.14
Cambodia	1 661	1.1	1.43	1.83
Chile	2 224	1.68	1.83	1.87
Colombia	1 002	2.55	3.23	3.35
Ecuador	1 935	1.68	2.21	2.27
Egypt	5 006	1.29	1.66	1.91
European Union	4 550	1.35	3.78	5.16
Indonesia	2 342	1.64	2.04	2.83
Japan	2 122	1.21	4.74	8.26
Kenya	4 484	2.09	5.27	8.54
Lao People's Democratic Republic	3 530	1.5	2.61	3.88
Lebanon	829	1.03	1.28	1.45
Madagascar	1 479	1.31	1.61	1.62
Mauritius	2 354	1.08	1.08	1.45
Mexico	3 105	1.49	1.59	1.64
Morocco	1 376	1.51	2.85	3.8
Namibia	2 858	4.14	9.02	9.42
Paraguay	1 398	1.27	1.55	1.55
Peru	834	1.3	1.79	2.04
Philippines	1 044	1.13	1.37	1.62
Senegal	386	1.50	1.78	2.49
Syrian Arab Republic	2 612	1.16	1.76	2.34
Tunisia	1 166	2.08	5.33	11.07
Uganda	4 992	2.15	2.19	3.11
United Republic of Tanzania	288	1.33	1.73	1.84
Uruguay	828	1.53	2.05	2.21
Venezuela, Bolivarian Republic of	2 459	1.73	2.07	2.19
Average (simple)	2 259	1.66	2.61	3.38

With very few exceptions, products are rarely affected by only one type of NTM because several regulatory measures are often applied in parallel. The average number of NTMs affecting products facing at least one NTM is 1.66 at the chapter level, 2.61 at the one-digit level, and 3.38 when all possible NTMs are considered. These figures vary considerably across countries. For example, while Mauritius imposes about one NTM measure at the chapter level for each of its 2,354 HS six-digit products covered by NTMs, Namibia imposes an average of more than nine NTMs from about four different chapters on 2,858 HS six-digit goods. Similarly, Tunisia applies on average 11 different NTMs from two different chapters on each of its 1,166 products, while Egypt applies less than two types to its 5,006 products. Although these statistics provide valuable information, such large differences at the three-digit level should not be considered as proof of overregulated import regimes, because the discrepancies could also be due to data availability and collection procedures. In particular, differences may be related to whether the document is detailed enough to distinguish among several types of similar NTMs, in which case the measures are generally classified only under broader codes. Differences at the

one-digit level often reflect real differences in the use of regulatory measures for imports, and thus can provide a better assessment of the regulatory regime. For example, both Mexico and Brazil impose some form of NTM for about 3,000 products. However, while Mexico applies on average only 1.6 one-digit NTM measure on each of these products, Brazil applies about 3.1. Arguably, imports into Brazil can be considered on average to be more regulated than those of Mexico.

As NTMs regulate different aspects of the production and trade of goods, it is often the case that various types of NTMs are applied in parallel to the same product. While in most cases NTMs are used complementarily and applied simultaneously to the same product for technical or procedural reasons, there are other cases where NTMs are applied in parallel to further insulate domestic industries from foreign competition. To explore to what extent the various types of NTMs are complementary, we have calculated correlation coefficients among one-digit NTMs. Figure 6, showing correlation statistics, suggests several key patterns in the concurrent use of various types of NTMs. First, several SPS measures are often applied in parallel – for example, tolerance limits (A2) are often used in conjunction with labelling (A3) and hygienic requirements (A4) and also with treatment measures such as fumigation (A5) and conformity assessments (A8). Second, SPS measures are also often paired with TBTs (B5). This is largely related to regulation on genetically modified organisms. SPS measures are also found to be correlated to direct consignment (C2), and to requirements to pass through specified custom ports (C3). This is possibly to facilitate the inspections and traceability of agricultural products. For similar reasons SPS measures are also correlated with non-automatic licensing (E1).

It is found that TBTs are relatively less correlated with other groups of NTMs. The only exceptions are the TBTs on production or post-production requirement (B4) which are often used simultaneously with price controls (D4, D5 and D6) and quantity controls (E2 and E3). As there is no clear explanation why such NTMs should be correlated, it would be interesting to further explore this pattern. We leave this, however, for future research. Finally, and not surprisingly, quantity and price-control measures appear closely interrelated. This specifically concerns quantity control – quota (E2) and prohibition (E3) – and price-control measures – anti-dumping (D4) and countervailing (D5) measures. All these measures are often used concomitantly to reinforce the protection of specific sectors.

Figure 6. Correlation of different one-digit NTMs
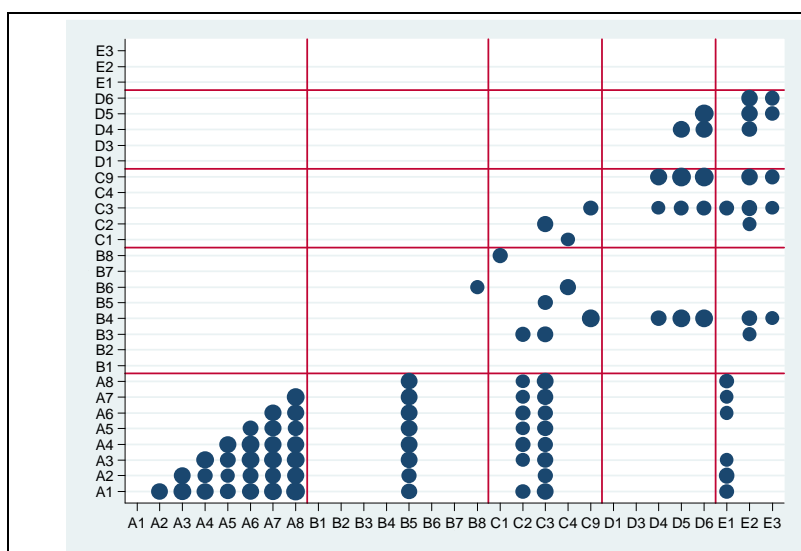
We now turn to analyse the impact of NTMs across economic sectors. Their use varies across economic sectors both for technical and economic reasons. While some products, such as agriculture, electrical machinery and weapons are highly regulated because of consumer and environmental protection, and technical standards, some other goods are by their nature less subject to laws and regulation. Table 2 reports frequency indices of five broad categories of NTMs for 18 economic sectors.

**Table 2. Frequency indices across economic sectors**

	A: SPS	B: TBT	C: Pre- shipment	D: Price control	E: Quantity control
Live animals	71.3	36.2	21.3	5.7	33.4
Vegetable products	69.2	31.7	24.0	3.6	27.1
Fats and oil	51.1	26.8	12.9	8.0	20.7
Processed food	57.0	41.7	17.7	3.6	20.3
Mineral products	9.8	25.5	8.1	0.6	10.9
Chemical products	11.3	35.8	6.8	1.7	19.6
Rubber and plastics	1.2	24.1	5.7	0.8	6.3
Rawhide and skins	12.8	23.7	9.9	0.0	12.9
Wood	26.2	30.2	12.4	0.8	15.2
Paper	1.7	18.4	8.2	0.6	11.4
Textile	1.8	34.3	15.6	4.7	16.3
Footwear	0.7	38.8	16.7	3.3	17.9
Stone and cement	3.1	19.0	9.7	1.1	6.3
Base metals	1.6	21.0	9.6	1.2	12.2
Machinery and electrical equipment	1.1	20.8	8.2	0.8	13.1
Motor vehicles	0.3	26.2	8.4	0.7	22.5
Optical and medical instruments	0.4	20.0	7.9	0.2	8.1
Miscellaneous goods	1.6	23.0	7.2	4.1	7.2

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 per cent of food-related products are found to be affected by at least one form of SPS measure. On the other hand, 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. Price-control measures such as administrative pricing, anti-dumping and countervailing duties are trade-defensive policies that are by their nature applied only to very specific products and thus result in low frequency indices. As for 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 licences, quotas, and sometimes outright prohibitions.

The distribution of NTMs across sectors, especially with regard to SPS measures and TBTs, is due more to the technical properties of products than to economic policy, and therefore does not vary substantially across countries. Other measures have a more heterogeneous distribution as the choice among different measures for the regulatory intent may be different across countries depending on

various factors, such as institutional capacity, implementation costs and effectiveness. Figure 7 illustrates regional averages of the frequency indices of five broad types of NTMs across six broad economic sectors. Although SPS measures are similarly applied to food products regardless of geographic region, countries in Asia, the Middle East and North Africa do not seem to apply as many TBTs for agricultural products, especially in comparison with Latin American or other African countries. The finding that more TBTs are applied in the African than in the Latin American and Asian regions is surprising, since one would expect fewer of these measures from lower-income countries. One hypothesis to explain this is that these countries are implementing European Union standards so as to better compete in the European market. Pre-shipment inspections are widely used in sub-Saharan Africa, while they are limited to food products, textiles, apparel and footwear in other regions. Price-control measures are limited to some food products across all geographic regions, and to textiles and apparel in Latin America. Finally, quantity control measures are found to have limited use in countries in the Middle East and North Africa. These measures are instead more widely used in Asian, sub-Saharan, African and Latin American countries.

**Figure 7. Frequency indices across economic sectors, by region**

/…
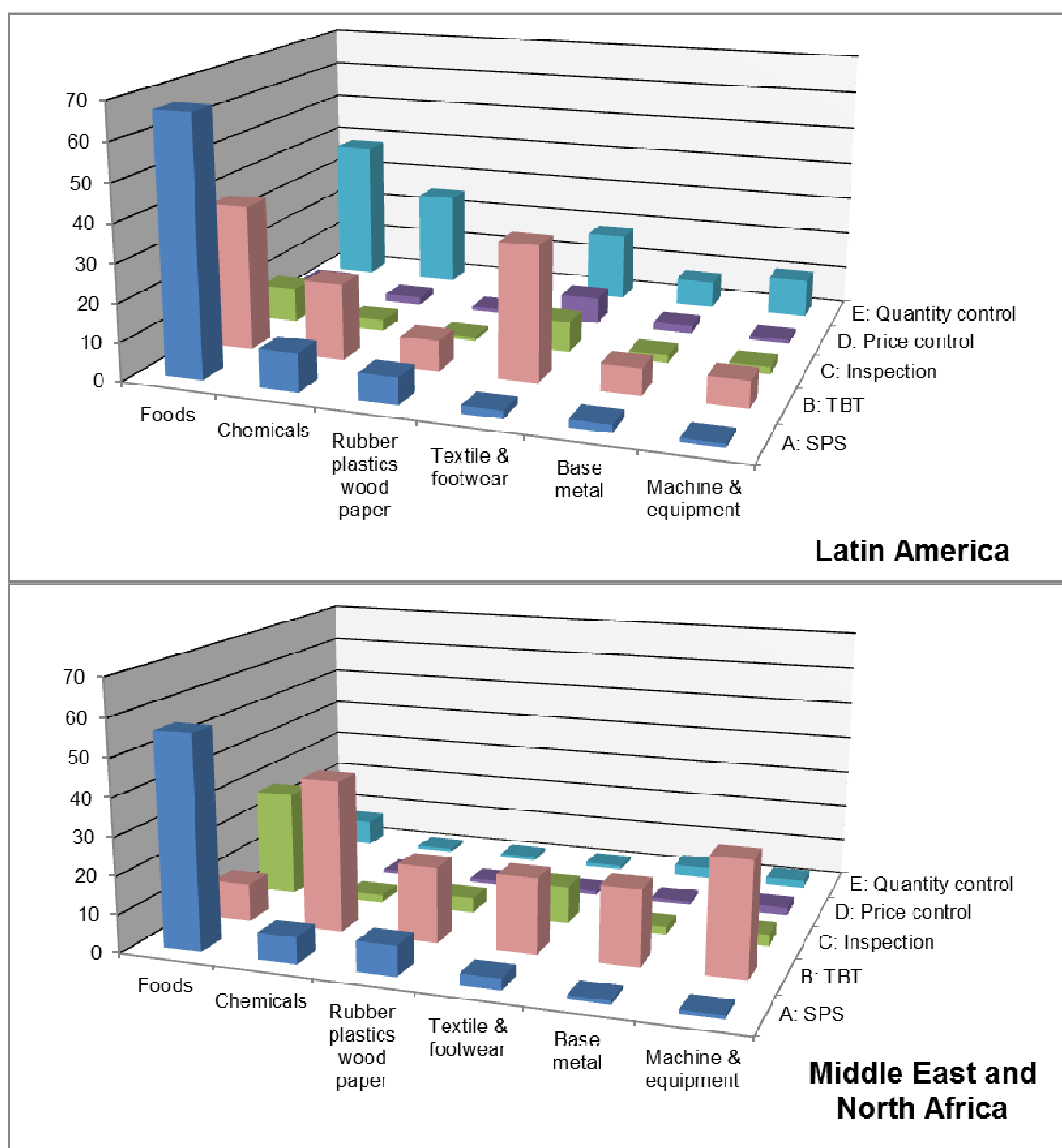
Figure 7. (cont'd…)
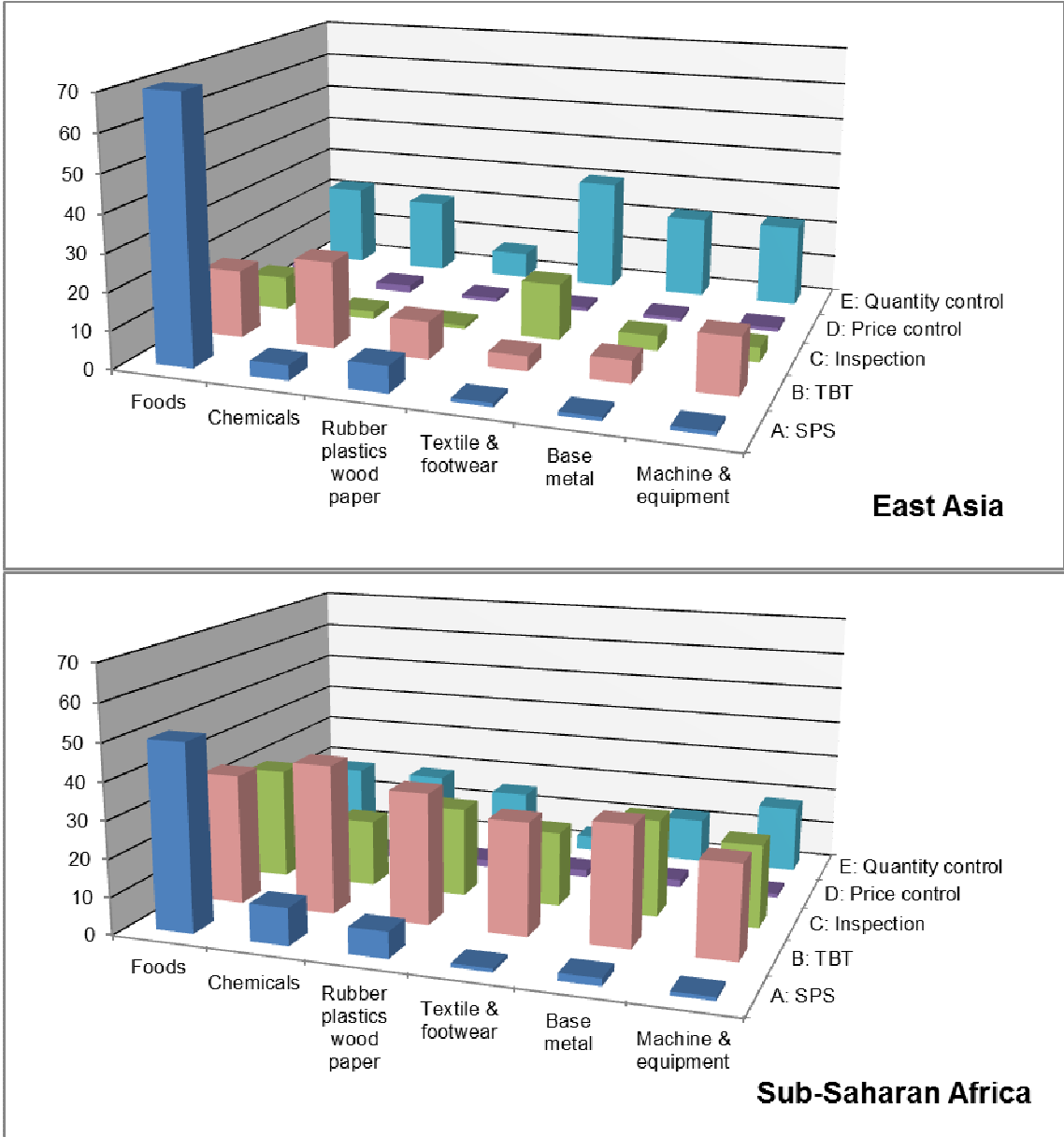
Countries are increasingly using NTMs to regulate their imports. Figure 8 illustrates the changes in the use of NTMs over the last 10 years. A caveat with this type of analysis is that there is a lack of comparable NTM data across time, and most that are available originate from Latin American countries. For all other countries the collection procedures have substantially changed and original data may not have been as complete as the data recently collected. Because of data limitation, figure 8 reports the share of four broad groups of NTMs. With the exception of prohibitions, the number of products affected by these measures has increased. In particular, the category where the number of products covered has increased the most is that of SPS measures and TBTs. In 2010, about one third of products in the sample of countries were affected by one or more types of either SPS measures or TBTs.

**Figure 8. Number of products covered by NTMs (years 1999 and 2010)**
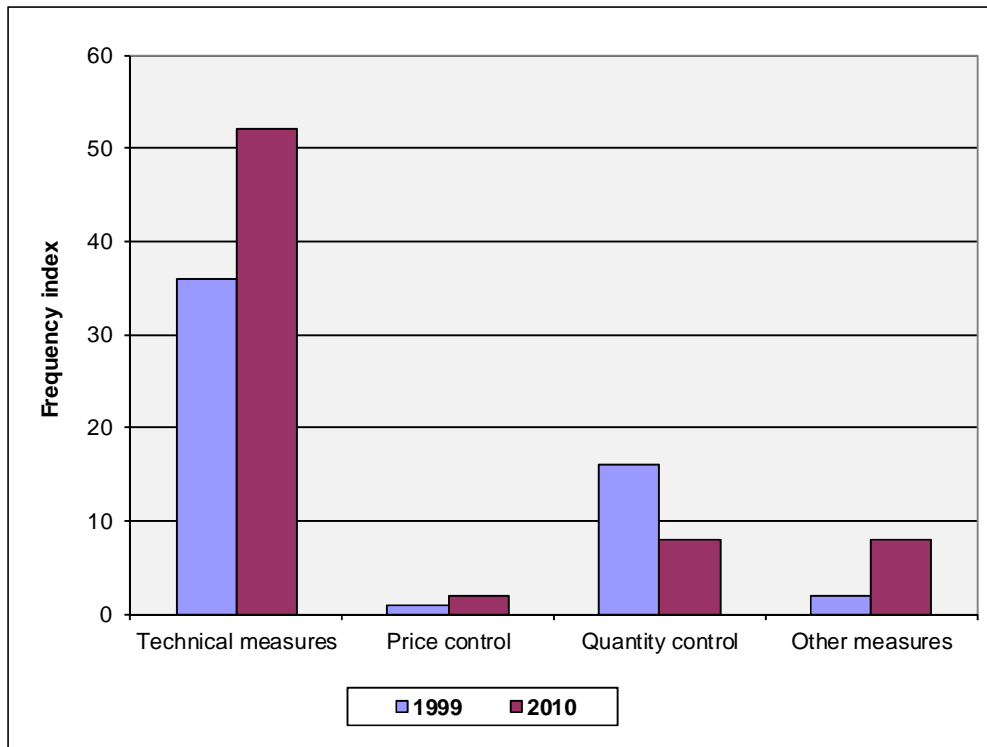
4. NTMs and traditional forms of trade policy

The use of multiple instruments of trade policy to regulate imports involves not only NTMs but also traditional forms of trade policy. In this section we explore the question of whether NTMs are used as the complements or substitutes of traditional trade policy, namely tariffs. The relationship between NTMs and tariffs can be assessed across countries or across products. In relation to countries, the analysis investigates whether countries applying restrictive traditional trade policies (high tariffs) also apply NTMs more frequently so as to better protect their domestic industry from foreign competitors. If this is the case, it would result in a positive relationship between the use of NTMs and the level of tariffs. Although a large number of NTMs may result from the nature of the product, when these are accompanied by a high tariff it may indicate the intent to use NTMs as a complement to tariffs to further insulate domestic industries from foreign competition.

The relationship between NTMs and tariffs across countries is illustrated in Figure 9, where NTMs are defined by their frequency index and coverage ratio, and tariffs are defined by their most favoured nation (MFN) level.

Figure 9. Frequency index and coverage ratios versus tariffs
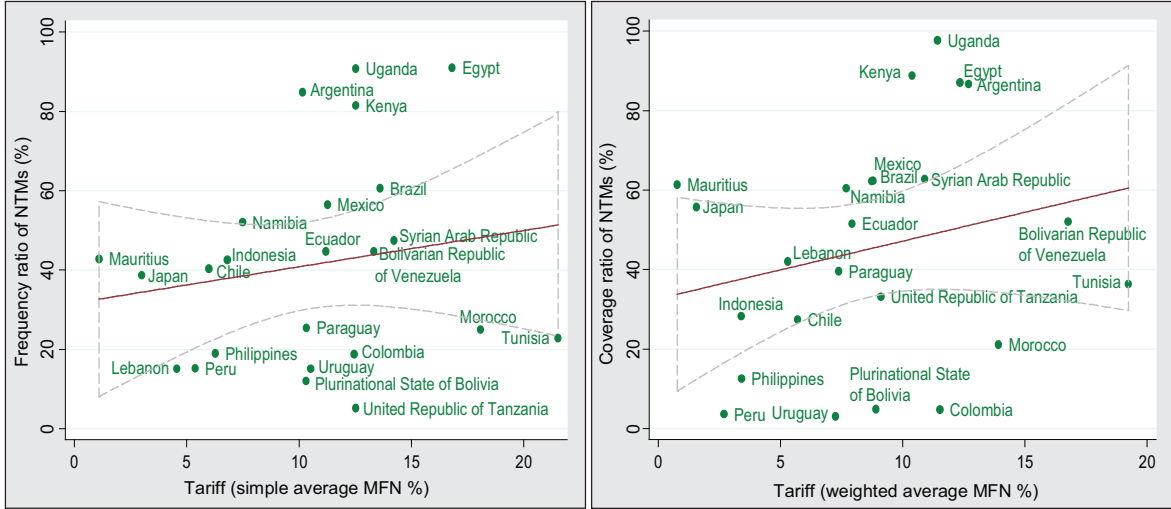
Although Figure 10 indicates a high degree of dispersion, it also shows a clear positive correlation between tariffs and NTMs. The countries which apply more restrictive traditional trade policies (higher MFN tariffs) are also those that have a larger number of products (frequency index) and a larger value of imports (coverage ratio) affected by NTMs. The positive correlation appears to be stronger for the coverage ratio suggesting that NTMs and tariffs are more strongly correlated for most traded products.

Similar conclusions are drawn by the correlation of tariffs and the number of products affected by NTMs. Figure 10 shows the correlation between the average number of NTMs at the one-digit level and the MFN tariffs. The figure shows a stronger positive relationship indicating that countries where tariffs are higher also apply a larger number of NTMs per product.

Figure 10. Correlation of NTM pervasiveness with MFN tariffs in 2008
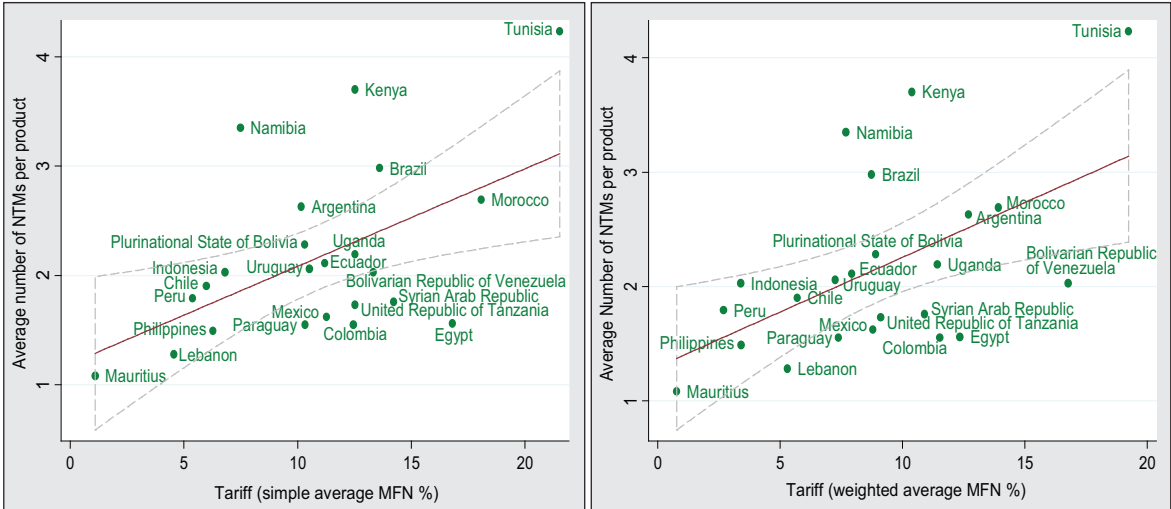
Taken together, these results indicate that protectionist tariff policy is often paired with more regulated NTMs regimes. To better explore whether NTMs are used in addition to tariffs to protect specific sectors, one needs to assess their relationship at the product level. Figure 11 illustrates the relationship between NTMs and tariffs across economic sectors.

The correlation between tariffs and the number of products covered by NTMs is weak. Although Figure 11 shows a clear positive relationship, the correlation is largely driven by four agricultural product groups.

Figure 11. Correlation of NTM pervasiveness with MFN tariffs, by product
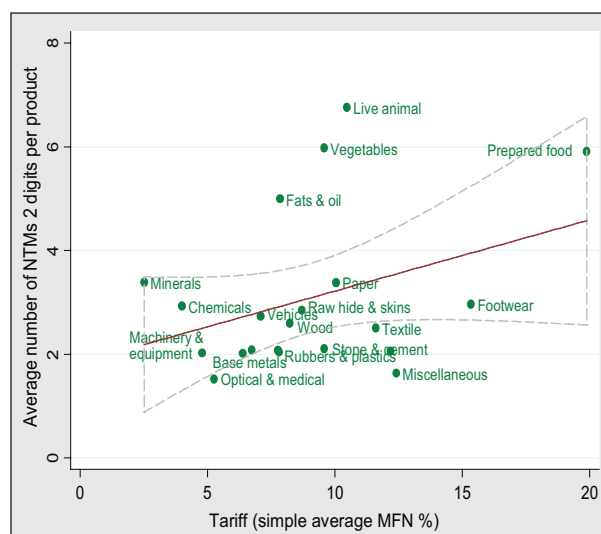
5. Conclusions

This study has made use of data newly collected by UNCTAD and the World Bank to investigate the use of NTMs in a selection of more than 26 countries. The analysis explored the incidence of various types of NTMs across both countries and economic sectors. The empirical approach consisted of simple inventory methods: frequency indices and coverage ratios.

Although our results have to be taken as mainly descriptive and 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 per cent to more than 90 per cent of products or trade covered by NTMs.

Regarding the incidence of technical measures (SPS measures and TBTs), these are found to be widely used. A large share (about 30 per cent) of international trade is found to be affected by TBTs; SPS measures are also frequently used, but they are exclusively related to agriculture and food products. Given their more limited scope, SPS measures affect only about 15 per cent of trade but more than 60 per cent of agricultural products. The large incidence of SPS measures and TBTs raises concerns for developing countries' exports. Although these measures are 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 measures and TBTs may erode the competitive advantage that low-income developing countries have in terms of labour 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 licences, 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 16 per cent of products and 20 per cent of trade. Pre-shipment inspection requirements affect about 11 per cent of trade. These are implemented especially in low-income countries to help customs administrations in the correct evaluation of imports and their proper taxation. Price-control measures are only rarely used and affect less than 5 per cent of trade and only 2 per cent of products. Finally, the results suggest a correlation between the use of NTMs and traditional forms of trade policy. Countries that apply higher MFN tariffs are also those that have a larger number of products and a larger extent of imports affected by NTMs. This may indicate that NTMs have been used, at least to some degree, as substitutes for tariffs to continue protecting key economic sectors in spite of the tariff liberalization of the last 10 years.

References

Anderson J and Van Wincoop E (2004). Trade costs. *Journal of Economic Literature*. 42(3):691–751.

Beghin JC (2006). *Non-tariff Barriers.* Center for Agricultural and Rural Development Publications 06-wp438. Iowa State University.

Boughner DS, de Gorter H and Sheldon IM (2000). The economics of two-tier tariff-rate import quotas in agriculture. *Agricultural and Resource Economics Review*. 29(1):58–69.

Djankov S, Freund C and Pham CS (2010). Trading on time. *The Review of Economics and Statistics*. 92(1):166–173.

Hoekman B and Nicita A (2011). Trade policy, trade costs and developing country trade. *World Development*. World Development, 39(12): 2069-2079.

Maskus K, Otsuki T and Wilson JS (2005). The costs of compliance with product standards for firms in developing countries: an econometric study. Working paper No. 3590. World Bank, Washington DC.

Obsfeld M and Rogoff K (2000). The six major puzzles in macroeconomics: Is there a common cause? *NBER Macroeconomics Annual.* MIT Press. Cambridge, Massachusetts.

Trefler D (1995). The case of the missing trade and other mysteries. *American Economic Review*. 85(5):1029–1046.

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.

UNCTAD study series on

POLICY ISSUES IN INTERNATIONAL TRADE
AND COMMODITIES

No. 1   Erich Supper, **Is there effectively a level playing field for developing country exports?**, 2001, 138 p. Sales No. E.00.II.D.22.

No. 2   Arvind Panagariya, **E-commerce, WTO and developing countries**, 2000, 24 p. Sales No. E.00.II.D.23.

No. 3   Joseph Francois, **Assessing the results of general equilibrium studies of multilateral trade negotiations**, 2000, 26 p. Sales No. E.00.II.D.24.

No. 4   John Whalley, **What can the developing countries infer from the Uruguay Round models for future negotiations?**, 2000, 29 p. Sales No. E.00.II.D.25.

No. 5   Susan Teltscher, **Tariffs, taxes and electronic commerce: Revenue implications for developing countries**, 2000, 57 p. Sales No. E.00.II.D.36.

No. 6   Bijit Bora, Peter J. Lloyd, Mari Pangestu, **Industrial policy and the WTO**, 2000, 47 p. Sales No. E.00.II.D.26.

No. 7   Emilio J. Medina-Smith, **Is the export-led growth hypothesis valid for developing countries? A case study of Costa Rica**, 2001, 49 p. Sales No. E.01.II.D.8.

No. 8   Christopher Findlay, **Service sector reform and development strategies: Issues and research priorities**, 2001, 24 p. Sales No. E.01.II.D.7.

No. 9   Inge Nora Neufeld, **Anti-dumping and countervailing procedures – Use or abuse? Implications for developing countries**, 2001, 33 p. Sales No. E.01.II.D.6.

No. 10   Robert Scollay, **Regional trade agreements and developing countries: The case of the Pacific Islands' proposed free trade agreement**, 2001, 45 p. Sales No. E.01.II.D.16.

No. 11   Robert Scollay and John Gilbert, **An integrated approach to agricultural trade and development issues: Exploring the welfare and distribution issues**, 2001, 43 p. Sales No. E.01.II.D.15.

No. 12   Marc Bacchetta and Bijit Bora, **Post-Uruguay round market access barriers for industrial products**, 2001, 50 p. Sales No. E.01.II.D.23.

No. 13   Bijit Bora and Inge Nora Neufeld, **Tariffs and the East Asian financial crisis**, 2001, 30 p. Sales No. E.01.II.D.27.

No. 14   Bijit Bora, Lucian Cernat, Alessandro Turrini, **Duty and quota-free access for LDCs: Further evidence from CGE modelling**, 2002, 130 p. Sales No. E.01.II.D.22.

No. 15   Bijit Bora, John Gilbert, Robert Scollay, **Assessing regional trading arrangements in the Asia-Pacific**, 2001, 29 p. Sales No. E.01.II.D.21.

No. 16   Lucian Cernat, **Assessing regional trade arrangements: Are South-South RTAs more trade diverting?**, 2001, 24 p. Sales No. E.01.II.D.32.

No. 17   Bijit Bora, **Trade related investment measures and the WTO: 1995-2001**, 2002.

No. 18   Bijit Bora, Aki Kuwahara, Sam Laird, **Quantification of non-tariff measures**, 2002, 42 p. Sales No. E.02.II.D.8.

No. 19   Greg McGuire, **Trade in services – Market access opportunities and the benefits of liberalization for developing economies**, 2002, 45 p. Sales No. E.02.II.D.9.

No. 20   Alessandro Turrini, **International trade and labour market performance: Major findings and open questions**, 2002, 30 p. Sales No. E.02.II.D.10.

No. 21   Lucian Cernat, **Assessing south-south regional integration: Same issues, many metrics**, 2003, 32 p. Sales No. E.02.II.D.11.

No. 22   Kym Anderson, **Agriculture, trade reform and poverty reduction: Implications for Sub-Saharan Africa**, 2004, 30 p. Sales No. E.04.II.D.5.

No. 23   Ralf Peters and David Vanzetti, **Shifting sands: Searching for a compromise in the WTO negotiations on agriculture**, 2004, 46 p. Sales No. E.04.II.D.4.

No. 24   Ralf Peters and David Vanzetti, **User manual and handbook on Agricultural Trade Policy Simulation Model (ATPSM)**, 2004, 45 p. Sales No. E.04.II.D.3.

No. 25   Khalil Rahman, **Crawling out of snake pit: Special and differential treatment and post-Cancun imperatives**, 2004.

No. 26   Marco Fugazza, **Export performance and its determinants: Supply and demand constraints**, 2004, 57 p. Sales No. E.04.II.D.20.

No. 27   Luis Abugattas, **Swimming in the spaghetti bowl: Challenges for developing countries under the "New Regionalism"**, 2004, 30 p. Sales No. E.04.II.D.38.

No. 28   David Vanzetti, Greg McGuire and Prabowo, **Trade policy at the crossroads – The Indonesian story**, 2005, 40 p. Sales No. E.04.II.D.40.

No. 29   Simonetta Zarrilli, **International trade in GMOs and GM products: National and multilateral legal frameworks**, 2005, 57 p. Sales No. E.04.II.D.41.

No. 30   Sam Laird, David Vanzetti and Santiago Fernández de Córdoba, **Smoke and mirrors: Making sense of the WTO industrial tariff negotiations**, 2006, Sales No. E.05.II.D.16.

No. 31   David Vanzetti, Santiago Fernandez de Córdoba and Veronica Chau, **Banana split: How EU policies divide global producers**, 2005, 27 p. Sales No. E.05.II.D.17.

No. 32   Ralf Peters, **Roadblock to reform: The persistence of agricultural export subsidies**, 2006, 43 p. Sales No. E.05.II.D.18.

No. 33   Marco Fugazza and David Vanzetti, **A South-South survival strategy: The potential for trade among developing countries**, 2006, 25 p.

No. 34   Andrew Cornford, **The global implementation of Basel II: Prospects and outstanding problems**, 2006, 30 p.

No. 35   Lakshmi Puri, IBSA: **An emerging trinity in the new geography of international trade**, 2007, 50 p.

No. 36   Craig VanGrasstek, **The challenges of trade policymaking: Analysis, communication and representation**, 2008, 45 p.

No. 37   Sudip Ranjan Basu, **A new way to link development to institutions, policies and geography**, 2008, 50 p.

No. 38   Marco Fugazza and Jean-Christophe Maur, **Non-tariff barriers in computable general equilibrium modelling**, 2008, 25 p.

No. 39   Alberto Portugal-Perez, **The costs of rules of origin in apparel: African preferential exports to the United States and the European Union**, 2008, 35 p.

No. 40   Bailey Klinger, **Is South-South trade a testing ground for structural transformation?**, 2009, 30 p.

No. 41   Sudip Ranjan Basu, Victor Ognivtsev and Miho Shirotori, **Building trade-relating institutions and WTO accession**, 2009, 50 p.

No. 42   Sudip Ranjan Basu and Monica Das, **Institution and development revisited: A nonparametric approach**, 2010, 26 p.

No. 43   Marco Fugazza and Norbert Fiess, **Trade liberalization and informality: New stylized facts**, 2010, 45 p.

No. 44   Miho Shirotori, Bolormaa Tumurchudur and Olivier Cadot, **Revealed factor intensity indices at the product level,** 2010, 55 p.

No. 45   Marco Fugazza and Patrick Conway, **The impact of removal of ATC Quotas on international trade in textiles and apparel,** 2010, 50 p.

No. 46   Marco Fugazza and Ana Cristina Molina, **On the determinants of exports survival,** 2011, 40 p.

No. 47   Alessandro Nicita, **Measuring the relative strength of preferential market access,** 2011, 30 p.

No. 48   Sudip Ranjan Basu and Monica Das, **Export structure and economic performance in developing countries: Evidence from nonparametric methodology,** 2011, 58 p.

No. 49   Alessandro Nicita and Bolormaa Tumurchudur-Klok, **New and traditional trade flows and the economic crisis,** 2011, 22 p.

No. 50   Marco Fugazza and Alessandro Nicita, **On the importance of market access for trade,** 2011, 35 p.

No. 51   Marco Fugazza and Frédéric Robert-Nicoud, **The 'Emulator Effect' of the Uruguay Round on US regionalism,** 2011, 45 p.

No. 52   Sudip Ranjan Basu, Hiroaki Kuwahara and Fabien Dumesnil, **Evolution of non-tariff measures: Emerging cases from selected developing countries,** 2012, 38 p.

No. 53   Alessandro Nicita and Julien Gourdon, **A preliminary analysis on newly collected data on non-tariff measures,** 2013, 31 p.

QUESTIONNAIRE

UNCTAD Study series on

POLICY ISSUES IN INTERNATIONAL TRADE
AND COMMODITIES

*(Study series no. 53: A preliminary analysis on
newly collected data on non-tariff measures)*

Readership Survey

Since 1999, the Trade Analysis Branch of the Division on International Trade in Goods and Services, and Commodities of UNCTAD has been carrying out policy-oriented analytical work aimed at improving the understanding of current and emerging issues in international trade and development. In order to improve the quality of the work of the Branch, it would be useful to receive the views of readers on this and other similar publications. It would therefore be greatly appreciated if you could complete the following questionnaire and return to:

Trade Analysis Branch, DITC
Rm. E-8065
United Nations Conference on Trade and Development
Palais des Nations, CH-1211 Geneva 10, Switzerland
(Fax: +41 22 917 0044; E-mail: tab@unctad.org)

1. Name and address of respondent (optional):

    _____

    _____

    _____

    _____

2. Which of the following describes your area of work?

Government	☐	Public enterprise	☐
Private enterprise institution	☐	Academic or research	☐
International organization	☐	Media	☐
Not-for-profit organization	☐	Other (specify)	_____

3. In which country do you work? _____

4. Did you find this publication ☐ Very useful ☐ Of some use ☐ Little use to your work?

5. What is your assessment of the contents of this publication?
    ☐ Excellent   ☐ Good   ☐ Adequate   ☐ Poor

6. Other comments:

    _____

    _____

    _____

    _____