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## **ECONOMIC IMPLICATIONS OF NON-TARIFF MEASURES**

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### **Trade effects of regulatory heterogeneity and international regulatory cooperation**

#### **Main issues**

#### **Introduction:**

With the reduction in tariffs under successive GATT/WTO agreements and growing consumer concerns about food safety and quality, or environment protection, non-tariff measures (NTMs) are playing an increasing role in international trade. NTMs can be very diverse and may target very different objectives. Even if they address market failures without trade objectives, NTMs may affect flows between countries. International regulatory cooperation (IRC) mechanisms are therefore crucial to address these negative trade-related externalities. Three kinds of IRC mechanisms can be defined:

- At the national level, countries can implement unilaterally good regulatory policies (GRPs).
- Regulatory convergence can also be implemented at the supra-national level between some countries, often within the framework of Trade Agreements.
- Finally at the multilateral level, international organisations, in particular those setting standards, can promote regulatory cooperation.

The quantitative trade effects of IRC mechanisms can be assessed before or after their implementation. Various methodologies can be used, such as descriptive statistics, econometric quantification, simulations and cost-benefit analyses. The evaluation can be performed at the macro (country) level, sector level or firm-level. Furthermore, trade effects can be computed directly through the estimation of a gravity-like trade equation or indirectly through the price effects induced by the NTMs and IRC mechanisms (which in turn affect trade flows). In addition to the trade effects, the welfare impact may also be computed.

#### **1. Good regulatory practices (GRPs) at the national level**

##### **1-1. Definition and mechanisms**

The trade effects of GRPs work through three main channels (Basedow and Kauffmann, 2016):

- GRPs increase regulatory coherence and avoid unneeded divergence vis-à-vis international and foreign regulations.
- GRPs also encourage transparency and trust of trading partners in the regulatory framework.
- GRPs are less costly and more sustainable than non-GRPs and consequently should impede less – and even promote – trade flows.

To assess the trade effects of a NTM or an IRC mechanism before its implementation, a regulatory impact assessment (RIA) can be performed. For the assessment of existing NTMs

and IRC mechanisms, the World Bank recently developed a toolkit (see Cadot et al., 2012, for an extensive presentation). Reviews based on the toolkit rely on ex-post econometrics-based comparisons of outcomes (with and without the regulation). The scenario without the NTM is often proxied using outside references (e.g. countries without the regulation).

## **1-2. Ex ante and ex-post assessments of GRP impact**

**1-2-1. Ex-ante RIAs**

Van Tongeren et al. (2009) develop an analytical framework to assess the trade and non-trade related costs and benefits of regulatory measures for all stakeholders along the supply chain (e.g. domestic consumers, producers and governments, foreign suppliers). This framework can be used for both ex-ante and ex-post evaluations. Demand and supply can be calibrated to empirical data and welfare effects can be computed. Two types of agents can be distinguished: those that are concerned by the externality and those that are not concerned. Different regulations (ban, standard, tax, etc.) can be compared.

### **Trade & welfare effects of NTMs: graphical evidence**

Conceptually, NTMs' trade effects can be investigated through the shifts in supply and demand curves. As mentioned, NTMs affect traded quantities and prices, and their implementation leads to a supply shift induced by changes in the production cost and a demand shift due to changes in consumption behaviour. The figure below provides graphical evidence of these shifts. A specific good market is considered and the following assumptions are made: the market good is homogeneous except for a characteristic potentially dangerous to the consumers. Only foreign good carries this characteristic and domestic consumers may (or not) be aware of it. Demand is derived from quadratic preferences and domestic and foreign supplies from a quadratic cost function.  $S$  represents the total (domestic and foreign) supply, and  $S_F$  the foreign one. The figure reports the domestic demand ( $D'$ ), foreign supply ( $S_F'$ ) and total supply ( $S'$ ) (the domestic supply is omitted for the clarity). The price,  $p$ , is located on the vertical axis and the quantity,  $q$ , is shown along the horizontal axis.

In the first graph, a NTM is adopted by public authorities in order to exclude unsafe foreign good from the domestic market. The implementation of the NTM by foreign producers increases their production costs and reduces their supply. Foreign supply curves shifts from  $S_F'$  to  $S_F''$ . Following NTM's implementation, domestic price increases (from  $P_{A'}$  to  $P_{A''}$ ), imports decrease, and therefore domestic consumption also decreases (from  $q_{A'}$  to  $q_{A''}$ ).

The second graph illustrates the welfare analysis. The damage linked to foreign products is not internalized by consumers and therefore does not impact the demand. However, the damage should be accounted for in the welfare calculations. Domestic welfare is the sum of domestic producers' profits and consumer surplus minus the damage. International welfare is the sum of domestic welfare and foreign producers' profits. With this initial situation preceding a reinforcement of the regulation, parameters of the model are calibrated in such a way as to replicate prices and quantities over a period. When a regulation is reinforced, the market allocation is modified as represented in the figure with new foreign supply  $S_F''$  and total supply  $S''$ . A stringent NTM reduces the proportion of entering the domestic market for foreign products. The supply shifts upward from ( $S'$ ) to ( $S''$ ). The stricter policy increases the price with  $p_{A''} > p_{A'}$  and decreases the quantity with  $q_{A''} < q_{A'}$ . It also reduces the probability of having unsafe products and the overall damage for unaware consumers. The net welfare effect of a stricter NTM, i.e. the comparison between the initial domestic welfare and the new domestic welfare, suggests a reduction in the damage, illustrated by the move from  $damA_1'$  to

$damA_I''$ . This reduction results from a fall in the probability of unsafe products' consumption following the NTM implementation. The triangle  $abc$  represents the standard deadweight loss. As long as the "savings" in the damage cost are larger than the deadweight loss, the net welfare impact remains positive; that is, as long as the area defined by  $q_A'q_A''defg$  (the reduction in damage cost) remains larger than the area  $abc$  (deadweight loss).

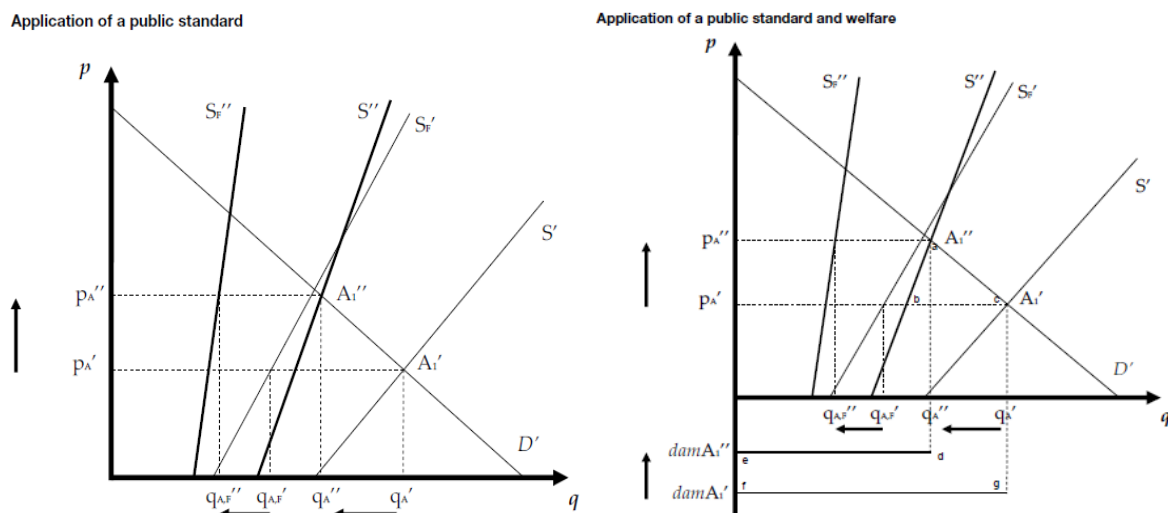


Figure: Trade and welfare effects of NTMs

Source: Fugazza (2013)

### **Example: effects of a label on fish**

The trade and welfare effects of a label on fish are studied by van Tongeren et al. (2009). The focus is on consumption in France and the study relies on the analytical framework previously described. The label aims to provide health information on tuna and sardine. From a health policy perspective, a shift of consumption from tuna (methylmercury) to sardines (omega-3 fatty acids) is desirable. Such regulation is likely to have trade effects, as 95% of canned tuna and 99% of canned sardines consumed in France are imported. The analysis distinguishes between concerned consumers (households with women of childbearing age and/or with young children under age 14) and not concerned ones. A laboratory choice experiment provides consumer's valuation of the health attributes.

Following the label's implementation the demand and price for sardine increase, while the demand and price for tuna decrease. The demand-increasing shift for sardines is larger than the demand-decreasing shift for tuna. Foreign producers of tuna are negatively impacted by the label, but their loss is outweighed by the benefit to foreign sardine producers. Concerned consumers, who are now better informed, increase their surplus. Consumers, who are not concerned by the externality, are negatively impacted by the change in market prices, and their surplus decreases.

### **Example: effects of a safety standard**

The trade and welfare impacts of a safety standard eliminating the use of antibiotics in shrimp aquaculture to be adopted by the European Union (EU) are investigated by Beghin et al. (2012). This standard only affects non-European producers, the use of these antibiotics being

already banned inside the EU. The authors use the framework provided by van Tongeren et al. (2009). The value of the per-unit damage associated with foreign shrimps is extracted from a consumer choice experiment conducted in France in 2009. The simulation exercise suggests that domestic consumer surplus increases following the standard's implementation. The output of foreign producers decreases (higher production costs), while the output of domestic producers increases. Foreign producers are negatively impacted by the standard only if consumers are not aware of the antibiotics problem in shrimps before the standard implementation. By contrast if consumers are fully aware of the problem, foreign producers benefit from the standard (the increase in consumer demand induces higher prices and profits also for foreign producers).

### **1-2-2. Ex-post streamlining NTMs**

The toolkit developed by the World Bank and presented in Cadot et al. (2012) offers an analytical method to assess the costs and benefits of existing regulations. The streamlining of NTMs is decomposed into four steps:

- Collection of inputs from representatives of the private sector and the civil society.
- Collection inputs from the agencies in charge of regulations.
- Formal analysis on the regulation effects. If steps 1 and 2 provide sufficient and precise information, the formal analysis can be based on the quantification of all the trade and non-trade related costs and benefits of the regulation.
- Conclusion: keep the regulation unchanged, amend the legal text and/or the enforcement of the regulation, remove the regulation?

Regarding the institutional framework, an appropriate mandate should be established for the administration in charge of the process, all stakeholders concerned should be included, the highest officials responsible for the issuing and administration of the measures should be involved, technical and financial resources should be provided, and a central and independent entity separate from the one responsible for issuing regulation should conduct the review process.

Several approaches can be implemented for the review. Two main categories can be highlighted:

- Fast track tools, such as the Standard Cost Model, the guillotine model and the bulldozer approach;
- Non-fast track tools, e.g. scrap and build, staged repeal or “automatic revocation”, and review and sunset clauses.

### **Streamlining NTMs: successful country experiences**

Some countries have successfully reformed their trade policy over the last decades. The Mexican and Mauritian experiences offer useful insights. Increasing transparency and reduction in unnecessary barriers to trade were the two main drivers of the reforms implemented in these countries. Consequently, the competitiveness of domestic firms – especially of small and medium ones increased, and these countries were able to switch from close to open market-based economies.

The main lessons of these experiences are as follows:

- The trade policy reform should be comprehensive and coherent.
- A central and independent entity should be in charge of the design and implementation of the trade reform. It should coordinate all the agencies involved.
- The trade competitiveness should be the main driver of the business regulatory review. Costs and benefits of upcoming and existing NTMs should be assessed.

### **Example: Mauritian import ban on adult anthurium plants**

In 2006, Mauritius bans the import of adult anthurium plants that could possibly carry the anthurium blight bacterium. This ban addressing a market failure complies with the WTO rules. Industry representatives argue that the ban on adult plants forces domestic producers to import baby plants, which must be nurtured for up to two years before being productive, meaning a sizeable immobilisation of capital and a loss of competitiveness. However, the observed decrease in exports may not only result from the ban but also come from the relatively low competitiveness of Mauritian anthurium production.

In 2012, Mauritian authorities assess the costs and benefits of the ban. Using the World Bank's NTM streamlining toolkit, they compare the losses induced by the ban for the domestic producers and the cost of an outbreak of the bacterium to the industry itself. According to the results, the cost of lifting the ban (USD 19.2 million) would outweigh the present discounted value of the cost of maintaining it (USD 6.7 million). Consequently, even though part of the decline in Mauritius' anthurium exports may result from the ban on imports of adult plants, the removal of the ban is not well-founded.

### **Example: Mauritian import ban on toxic paint pigments**

A second example focuses on the ban adopted by Mauritius against the import of two toxic paint pigments in 2004. The ban addresses a market failure and therefore complies with the WTO rules. Only pigments are affected by the ban. The imports of paints produced using these pigments are not covered by the regulation. Industry representatives claim that the ban discriminates between domestic paint producers affected by the regulation and importers. Besides, the use of substitutes, which are more expensive, raises the production costs by 2% to 40% depending on the product. Using the World Bank's toolkit, Mauritian authorities assess the costs and benefits of the ban. The conclusion is as follows: the issue at stake is not on the ban per se but its design. The definition of a new ban on the sales of paints using toxic pigments as inputs, which avoids any discrimination, is promoted.

## **1-3. Border inspections**

To be efficient, inspection policies should not be arbitrary or random but based on a risk analysis. Risk should be the main driver of compliance controls of products with regulations. Using the characteristics of the product, of the exporter, and of the importer, as well results of previous inspections, the risk-profile of transactions can be defined. Inspections should be focused on risky transactions.

## **2. International Regulatory Convergence**

## **Gravity estimation**

Based on an analogy with the Newton's law, the gravity equation applied to trade is one of the most robust empirical relationships in economics. In its simplest form, the gravity equation relates bilateral trade flows to the economic size of countries and the geographical distance between them. This distance, used as an approximation of the transaction costs which affect the trade relationship, is usually measured between the main economic centres or the capitals of the countries considered.

Researchers usually augment the gravity variables by extra variables to capture certain specificities of the bilateral relationship, such as the sharing of a land border or a common language, to name the commonest ones. It is among these complementary variables that the indicators (e.g. the level of the NTM itself, a frequency index or a coverage ratio) capturing the effects of NTMs on trade are introduced. Tariff barriers should also be included in the gravity estimation. Otherwise, one cannot distinguish the impact of NTMs on trade from that of tariffs. Several empirical works suffer from such a bias.

The gravity equation can be implemented at the industry or product level. Its general specification is as follows:

$$\ln x_{sijt} = \phi_{sijt} \ln(1 + tar_{sijt}) + \gamma' NTM_{sijt} + \beta' z_{ij} + fe_{si} + fe_{sj} + fe_t + \varepsilon_{sijt}$$

With  $s$ : sector,  $i$ : exporting country,  $j$ : importing country,  $t$ : year.  $x$  represents the bilateral export (or import) flow,  $tar$  measures the bilateral applied protection,  $z$  stands for the bilateral gravity variables (distance, etc.), and  $fe$  are different sets of fixed effects. These fixed effects incorporate size effects, but also the price and number of varieties within a sector for the exporting country and the size of sector demand and the price index of the importing country.

### **2-1. Heterogeneity in regulations across countries: regulatory distance and trade impact**

What is the trade impact of standards heterogeneity across countries? To answer this question, heterogeneity indices aggregating regulations (ordinarily based on MRLs) for different substances can be computed and incorporated in gravity-like trade equation among explanatory variables. This approach has been used in the literature. Note that due to differences in the method used by the authors for the computation of the heterogeneity index, cross-study comparison should be made with caution.

Achterbosch et al. (2009) compute a regulatory heterogeneity index and investigate the impact of differences in MRLs on fresh fruit exports from Chile to the EU15 between 1996 and 2007. According to their results, similarity between MRL regulations in Chile and in the EU would increase the Chilean exports to the EU

### **2-2. Regulatory convergence in trade agreements: mechanisms and trade impact**

A growing number of Preferential Trade Agreements (PTAs) include provisions on NTMs (around 60% of PTAs include such provisions). How do regulations' trade effects interact with the presence of agreements? Few investigations have been conducted but their conclusion is unanimous: IRC provisions tend to increase flows between members, but at the expense of trade flows with third countries (trade diversion effects). Three IRC mechanisms can be implemented by countries to favour regulatory convergence in trade agreements: harmonisation, mutual recognition (or equivalence), transparency.

## **Harmonization versus mutual recognition**

In case of harmonization, both trading partners adopt a common NTM, while mutual recognition is limited to the reciprocal acceptance of the NTMs applied in both countries. By allowing some scale economies and a more efficient resource allocation, both harmonization and mutual recognition are assumed to be trade-enhancing (Chen and Mattoo, 2008). However, harmonization is expected to boost trade more than mutual recognition. Indeed, a common NTM increases the homogeneity and substitutability between products, lowers information costs, and increases trust in imported products' quality. Nevertheless, harmonization, by reducing the number of varieties available on the market and by generating compliance costs that vary across countries may impede exports of some countries. At least, harmonization's gains are not equally distributed among trading countries. Such negative effects are avoided with mutual recognition, which does not induce adaptation costs and which provides an equal distribution of gains from removing/reducing NTMs among countries.

### **Potential impact on third countries**

These provisions usually deal with the harmonization or mutual recognition of NTMs between PTAs' member countries. However, they also impact non-member countries. Harmonized NTMs allow entry into the whole PTA market not only to PTA members but also to third countries. By contrast, mutual recognition may not provide access to third countries; in particular, PTAs involving mutual recognition and strict rules of origin are likely to have trade-diverting effects for third countries.

### **Empirical evidence (1)**

Chen and Mattoo (2008) investigate this issue by estimating a gravity equation for 42 countries (28 OECD countries and 14 non-OECD ones) at the 3-digit level of manufacturing industries from 1986 to 2001. Their sample includes 8 MRAs and 24 harmonisation directives.

Their results suggest that NTM harmonization raises the probability and the volume of trade between PTA member countries, but decreases the probability and volume of imports from non-member countries. The impact of mutual recognition agreements depends on whether they include rule of origin. Mutual recognition agreements without rules of origin enhance the probability and volume of trade between member countries and the probability and volume of imports from non-member countries. By contrast, mutual recognition agreements with rules of origin increase the probability and volume of trade between member countries but at the expense of imports from third countries. The authors also show that third countries with a higher GDP per capita (or research and development expenditures) are less affected by mutual recognition agreements including rules of origin, while mutual recognition agreements without rules of origin boost more exports of third countries with lower GDP per capita because they impose less stringent requirements.

### **Empirical evidence (2)**

Disdier, Fontagné and Cadot (2015) focus on the trade effects of TBT provisions included in North-South PTAs. The adoption by developing countries of stringent international or domestic TBTs imposed on Northern markets can raise the quality of their products but at a cost. The effect of TBT harmonization on Southern exports to their Northern PTA partners is therefore ambiguous. If developing producers are able to adapt their production, this harmonization fosters their exports to Northern PTA partners. Otherwise, exports may be

reduced. Furthermore, TBT harmonization within North-South PTAs may also impact trade flows between Southern countries. A higher product quality can raise the demand and exports of Southern PTA members to other Southern markets. However, this higher quality also increases the products' price and exporters may therefore be excluded from other Southern markets.

Disdier, Fontagné and Cadot (2015) estimate a gravity equation using a sample including 43 North-South PTAs over the 1989–2006 period. Descriptive statistics show an expansion of North-South EIAs over the 1990–2006 period. The number of EIAs expanded from four in 1990 to 43 in 2006. The share of Northern imports from the South covered by an EIA reached 19.5% in 2006. Furthermore, an increasing number of EIAs include TBT provisions involving the harmonization of technical regulations (21 North-South EIAs in 2006). A few EIAs promote the use of regional standards only (eight in 2006), and the trade coverage of these EIAs is approximately 4.4%. Finally, one may note that the trade coverage of EIAs promoting the use of international standards (alone or in addition to regional standards) decreased between 1999 and 2006.

Disdier, Fontagné and Cadot (2015)'s results show that TBT harmonization increases Southern exports to Northern PTA markets, but only if the PTA promotes the use of international TBTs. When the harmonization is done on the basis of Northern domestic (restrictive) standards, then its effects on Southern exports to Northern PTA partners is negative. Besides, the North-South TBT harmonization has a negative impact on South-South export flows. Indeed, TBT harmonization is costly and raises the price of products, possibly pricing them out of other Southern countries. All in all, North-South TBT harmonization has a negative impact on the trade integration of Southern countries into the world economy and favours the emergence of a hub-and-spoke trade structure, which may be harmful for these countries.

### **Empirical evidence (3): price effects quantification**

Do IRC mechanisms dampen the price-raising effect of NTMs? Cadot and Gourdon (2016) investigate the impact of standard harmonization within PTAs on NTMs' AVEs. They combine data on trade unit values, NTMs and PTAs. Their analysis is performed at the HS6-digit level and includes 70 PTAs. Cadot and Gourdon (2016) consider that the prices of some goods in some countries are "treated" (i.e. affected) by NTMs (SPS and/or TBTs), and some countries participate to PTAs involving NTM harmonization clauses. They investigate how the unit value of each product treated bilaterally is affected by the NTMs imposed by the importing country (direct price effect) and whether deep integration (through PTAs and NTM coordination) dampens NTMs' price-raising effect. Their estimations control for importer characteristics (factor endowments, income), tariffs and other bilateral trade determinants (distance, common language, etc.). They run product-by-product estimations.

On average, PTAs reduce AVEs of SPS measures by 0.6 percentage points (from 2.8% to 2.2%) and those of TBTs by 1.5 percentage points (from 5.6% to 4.1%). Three potential explanations are suggested by the authors. First, NTM convergence within PTAs induces a reduction in compliance costs. Second, PTAs tend to reduce the home bias among member countries and provide better information to consumers. This translates into an increase in the demand for PTA products and lowers the price impact of NTMs. Finally, PTAs reduce protectionist-motivated distortions in the design of NTMs.



In the second part of their empirical analysis, Cadot and Gourdon (2016) examine whether the decrease in AVEs observed within PTAs is mainly due to the harmonization versus mutual recognition of regulations, the harmonization versus mutual recognition of conformity assessment procedures, or the transparency requirements. They highlight that mutual recognition of conformity assessment – which is the easiest step toward the coordination of NTMs – has a stronger cost-reducing effect than harmonization.

### **2-3. Harmonisation to international standards: mechanisms and trade impact**

It is usually assumed that international standards are less trade-inhibiting than domestic or regional ones. International standards have a smaller negative trade impact and even, in some cases, a positive one. This last result is however not confirmed by all studies. However, the domestic use of international standards may be a challenge for some countries: Domestic regulators may not know which and how to use the international standards. They may also modify them. These inconsistencies may reduce transparency and may not help the reduction of trade costs.

#### **Empirical evidence (1): Codex alimentarius standard**

Otsuki, Wilson and Sewadeh (2001) investigate the potential gap in terms of trade impact of domestic versus international NTMs. In 1998, the European Union proposed a new and restrictive harmonized aflatoxin standard on African exports. Aflatoxins are toxic compounds which contaminate certain foods. They can produce liver cancer in the human body. Otsuki, Wilson and Sewadeh (2001) compare the trade effects of this regional standard with the ones induced by the international standard defined by the Codex Alimentarius. Their sample covers 15 importing countries from the European Union and nine African exporting countries (Chad, Egypt, Gambia, Mali, Nigeria, Senegal, South Africa, Sudan, and Zimbabwe) between 1989 and 1998. Their simulations suggest that moving from the Codex Alimentarius standard to a more stringent uniform European standard will decrease African exports of cereals, dried fruits, and nuts to Europe by 64% (670 million dollars), while the gains in terms of health risk reduction will be very limited (approximately 1.4 deaths per billion a year). However, the authors do not control for applied tariffs and this omission may bias their estimates.

Otsuki et al. (2001)'s results are not confirmed by Xiong and Beghin (2012). Making use of the most recent advances in gravity equation estimation (inclusion of zero trade flows, control for MRLs' endogeneity and tariffs) and relying on the same sample of importing and exporting countries for the period 1989-2006, the authors provide an ex-post estimation of the trade effects of the regulation. They find no evidence of the EU MRL having a significant negative trade impact on African groundnut exports. In fact, African groundnut exporters are more constrained by domestic supply conditions (e.g. farming and storage practices) than by the EU regulation.

#### **Empirical evidence (2): ISO certification**

ISO standards may have two opposite trade effects. First, they may increase trade by reducing information asymmetries between firms. Second, they can decrease trade by generating market-entry barriers. Using a sample of 52 OECD and non-OECD countries over the 1995-2002 period Clougherty and Grajek (2008) show that the adoption of ISO standards by

developing countries enhances their exports to developed countries. On the other hand, the adoption of ISO standards by developed countries has no significant effect on their exports to developing countries or to other developed countries. Their results are however mitigated by Clougherty and Grajek (2014). Focusing on trade flows between 91 countries between 1995 and 2005, the authors suggest that ISO standards reduce exports from developing/transition countries to developed ones. The main explanation is as follows: if the costs related to ISO certification outweigh trade promoting effects, ISO standards may have a trade hindering effect.

### **Empirical evidence (3): firm exports**

Focusing on Pakistan, Masakure et al. (2009) investigate the effects of ISO certification on export sales and share of exports (relative to total sales) for firms in textile, leather, and the agri-food sectors between 2000 and 2004. The authors use a propensity score matching method to account for firms' self-selection into the ISO certification. According to their findings, export performance is positively correlated with ISO certification. Besides, new exporters gain more from certification than incumbents.

### **Empirical evidence (4): A counterexample**

Jensen and Keyser (2012) suggest that standards harmonisation can hamper trade flows. Examining the adoption by the East African Community of dairy standards based on the international Codex Alimentarius, the authors show that the harmonisation leads to strong requirements and regional trade in dairy products is likely to be largely stifled. In these countries, the dairy sector is dominated by small producers which are not able to comply with new and stringent regulations even if a long time period of adjustment is provided. Their analysis is based on desk research and fieldwork (including interviews with stakeholders) conducted in Rwanda, Uganda and Kenya in 2009.

## **3. Multilateral disciplines**

### **Framework**

International organisations may play a key role in the IRC. They may: i) facilitate the dialogue between their members and thus the development of an adequate framework for regulations, ii) provide technical assistance to their members.

International organisations are very active in the upstream regulatory activities (information exchange, data collection, establishment of regulations), less in the downstream activities (enforcement, inspections, dispute settlement). Their rule-making is mainly based on non-legally binding tools. Some organisations try to associate stakeholders to their IRC activities, but this engagement is challenging (selection of stakeholders, quality of the consultation process). Few organisations assess (ex-ante or ex-post) the costs and benefits of their IRC mechanisms. Finally, some overlap and competition may happen between international organisations' regulatory policies and the development of joint instruments remains limited.

### **Example: UNECE Recommendation L**

"Recommendation L" of the UNECE recommendation promotes the cooperation and harmonisation of technical regulations across countries. The main element of this approach is

the concept of common regulatory objectives (CROs), which involves a set of principles and procedures available for countries aiming to harmonise technical regulations among themselves in a given sector. CROs are defined with reference to international standards and also include references on conformity assessment, and control and enforcement mechanisms.

Arvius and Jachia (2015) examine the UNECE Sectoral Initiative on Equipment for Explosive Environments (mines, offshore platforms, and chemical and energy plants) launched in 2006. Before this initiative, regulations in force in different countries were strongly divergent. In 2010, CROs were drafted and approved in 2010. These CROs included requirements for producers of equipment used in high-risks environments and for owners and operators of plants in which this equipment is used. A reference to international standards was also mentioned. In 2011, the CROs were enshrined by policymakers from Australia, Brazil, the EU, the Russian Federation, and the US.

### **Example: OECD Environment, Health & Safety (EHS) programme**

Launched in 1978, the OECD EHS programme aims to reduce trade barriers and optimize the use of resources. Countries should cooperate to test and evaluate chemicals, pesticides and biotechnology and nanotechnology products. The programme also promotes harmonisation, burden sharing, technical and policy information exchange. A cost-benefit analysis of the programme was performed in 2010.

Results are as follows:

- OECD governments and participating industries' expenditures for the programme: euros (EUR) 15.23 million per year
- Benefits are decomposed:
  - i) Reducing repeat testing for new substances (EUR 162.22 million per year)
  - ii) Harmonising industry dossiers for pesticides registration (EUR 1.55 million per year)
  - iii) Harmonising country review reports for pesticide registration (EUR 2.41 million per year)
  - iv) Sharing the burden of high production volume chemicals testing and reviews (EUR 2.06 million per year).

Thus, the net cost savings to governments and industry is estimated at around EUR 153 million per year.

### **OECD Seeds Schemes**

A third example relates to the OECD Seeds Schemes. These schemes aim to facilitate seed trade by reducing technical barriers, improving transparency and lowering transactions costs. They also offer an international framework for seed certification. The IRC mechanisms at play are the harmonisation of certification and the mutual recognition of certified seeds. Looking specifically at the Grass and Legume Scheme and the Maize and Sorghum Scheme, OECD (2016c) quantifies their trade effects. The sample includes 215 countries (57 of them are members of at least one OECD seed scheme) and 29 products over the 1995-2014 period. A gravity-like trade equation is estimated. Results show a positive and significant trade effect. Following their access to the seed scheme, exporters increase their exports in value (+12%) and in volume (+8%) and charge higher prices (due to the higher quality of their seeds). If

both the exporter and the importer are members of the same scheme, the trade effect in both value and volume is even bigger (above 30%). However, the results also highlight some trade diversion effects: A country joining a seed scheme imports less from non-members (-6%) and exports less to non-members (-14% in value, -19% in volume).

### **3-1. WTO SPS and TBT Committees**

WTO promotes IRC mechanisms. First, the SPS and TBT Committees offer guidance in the regulatory decision making by countries. They prompt the participation of WTO members (in particular developing countries) in the definition of international regulations and conformity assessment procedures. They also prompt the mutual recognition of regulations. Finally, they encourage the notifications of regulations.

The WTO also offers a forum to discuss specific trade concerns (STCs) and address NTMs causing trade frictions between countries.

### **WTO SPS & TBT notifications (1995-2010)**

Statistics on yearly SPS and TBT notifications to the WTO, as well as the number of notifying countries suggest an increasing trend over time in both the number of NTMs and the number of notifying countries and for both types of measures. However, the mechanism underlying these increases (increasing number of measures or increased compliance with WTO obligations) cannot be clearly identified.

### **SPS and TBT trade concerns**

Between 1995 and 2014, 382 SPS STCs<sup>1</sup>, and 445 TBT STCs have been raised at WTO. In terms of share in total WTO disputes, SPS represent 9% and TBTs account for 10%.

The figure available in the slides reports the number of concerns raised between 1995 and 2010 as reported in WTO (2012). For SPS concerns, it also provides the cumulative number of concerns as well as the yearly number of resolved concerns. New concerns may signal an increasingly adverse effect of measures or an increasing participation of countries in the specific trade concerns mechanism; resolved concerns (and rate of resolution) offer some information on the effectiveness of the resolution mechanism. For SPS measures, the number of new concerns being larger than the number of resolved ones (except in 2004), the cumulative number of concerns increases over time. 30% of SPS concerns were reported as resolved by WTO Members to the SPS Committee (and 6% as partially resolved). For the remaining SPS trade concerns, no solutions were reported (but some of them may have been resolved without the SPS Committee being made aware). For TBT trade concerns, we also observe an upward trend (but with reductions for some years). Information on TBT concerns' resolution is not available.

### **FAO/WHO Codex Alimentarius Programme**

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<sup>1</sup> Information on these trade concerns is available in the WTO I-TIP database (<https://i-tip.wto.org/goods/>).

The FAO/WHO Codex Alimentarius programme aims to develop objective and science-based food standards. The WTO SPS Agreement recognizes the Codex Alimentarius Commission as a relevant standard-setting organisation. Based on an evaluation of the programme conducted in 2012, it appears that Codex standards are widely used by countries, which see them as trade facilitators. The majority of countries have adopted more than 60% of all types of Codex standards (except those relating to methods of analysis). Codex standards are perceived as most useful for low and middle-income countries whose domestic regulations are not yet as developed. Furthermore for 77% (91.4%) of countries (low-income countries), Codex standards are very important to facilitate food exports. For 82.3% of countries, Codex standards are also very important for ensuring the safety of food imports.

### **3-2. Aid for Trade Programmes**

The current Aid for Trade programmes are not totally adapted to regulatory coordination. Currently, support for trade policy and regulation represents only 3% of total Aid for Trade. To help developing countries to participate to global value chains, Aid for Trade should move from trade to “trade and competitiveness” (Cattaneo, 2015). In particular, it should include more cooperation with the private sector. Aid for Trade should also be better targeted and assist firms in developing countries to assess the conformity of their products with the regulations.

Currently, few programmes provide relevant assistance. For example, the Global Food Safety Initiative (GFSI) programme targets small and/or less developed businesses all over the world and provides certifications. Once certified, the products are recognized everywhere. In 2013, more than 85,000 certificates were issued for GFSI-recognized schemes in 162 countries. In 2012, the World Bank launched the first public-private partnership on food safety by creating a multi-donor trust fund for a Global Food Safety Partnership for the Asia-Pacific Economic Cooperation. Another illustration of this approach is the UTZ Certified programme, initiated by the private sector in order to raise the standards and sustainability of farming, and funded by public (Netherlands and Ireland) and private (Ford Foundation) donors.

### **Conclusion**

Based on previous findings, some conclusions could be derived:

- The use of IRC mechanisms by countries and international organisations should be promoted.
- The trade effects of regulations and IRC mechanisms should be systematically investigated. A relevant framework for this assessment should be defined (ex-ante versus ex-post, etc.). A robust quantitative analysis should be conducted.
- Regarding IRC mechanisms, the appropriate level of their implementation should be defined (national, supra-national, international level).
- Transparency should be promoted.
- Effects of regulations and IRC mechanisms on third countries should be accounted for.
- Assistance should be provided to developing and emerging countries.
- The role of international organisations should be promoted.

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