

Food related regulations and trade

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Introduction

Trade measures are derived from domestic regulations that aim at protecting public interests and attaining domestic policy objectives. Trade measures associated with domestic regulations are largely a consequence of differences among national regulatory frameworks, including differences in the monitoring and enforcement of compliance. Regulatory heterogeneity adds additional costs to the exporter. An importing country wants to assure safety and compliance of all products sold on the domestic market, and this objective carries enforcement costs.

Some domestic regulations deal with attributes and production processes to achieve objectives that would not be achieved if left to the private sector, such as public health or environmental protection. Regulatory measures do not necessarily embody the economic inefficiencies that are associated with classical trade barriers, unless they discriminate between sources of supply, and may be the least trade restricting policies available.

Although most policy objectives are shared across countries, the ways of achieving these policy objectives often differ. Increased trade flows highlighted the differences in domestic regulations and their impacts on trade. In this chapter we look at the relationship between food-related regulations and trade. Before entering into the debate on food regulations, a short primer on trade is introduced.

1. Trade primer

Countries trade because they find it beneficial. Trade decreases costs and expands the range of goods available (variety). In the case of agricultural and food products, trade also bridges different growing seasons between northern and southern Hemispheres. Often domestic producers, especially when their cost of production is higher than those of imported goods, feel threatened by the imports and demand protection which prevents access to their domestic market. This protection could be granted –often in response to lobbying efforts– in the form of:

- Import bans, tariffs, and other tools.
- Export subsidies to promote exports of goods to international markets

Several rounds of trade negotiations under the auspices of the WTO disciplined many protectionist measures, notably tariffs but also some **Non-Tariff Barriers (NTBs)**.

Hillman in 1974 wrote:

"Nontariff barriers have become one of the key issues in agricultural trade policy and trade negotiations. Laws and regulations of a country, in addition to being directly protective, often give administrators wide leeway for interpretation which results in restrictive trade flows".

Hillman in 1974

Although some progress in the area of non-tariff trade barriers, such as export subsidies, **SPS** (sanitary and phytosanitary) and **TBT** (technical barrier to trade) measures was made notably under the Uruguay Round of the WTO negotiations, Hillman's description remains quite accurate after 35 years.

- **Barriers or measures?**

Non-tariff barriers (NTBs) include all instruments other than tariffs that serve as an obstacle to trade (impede entry of imports, exit of exports, etc.). NTBs are often suspected of being enacted to protect domestic producers. However, it is being increasingly recognized that many of the instruments used support trade and deliver other benefits, although when considering only trade effects, the initial effect of some of them might be trade restrictive. Measures restricting trade incidentally while correcting market inefficiencies and addressing legitimate concerns would not be qualified as NTBs.

**Bibliographical
reference**

(Beghin and Bureau, 2001)

An example would be the positive aspects of standards in reducing transaction costs on the market. Among a variety of non-tariff measures, so-called regulatory NTMs, are the most challenging to deal with, since distinguishing an NTM from a legitimate regulation for protecting consumers can be difficult.

NTMs are often divided into two broad groups:

- **Border measures.** They are interventions applied at a national border to restrict imports (quotas, bans, SPS measures, inspections, etc.).
- **Behind-the-border measures.** They are interventions that are derived from domestic regulations but do not necessarily require a physical or administrative intervention at the border. Examples of those are HACCP standards, testing requirements, and conformity assessment procedures.

To illustrate the broad scope of non-tariff measures, we use the UNCTAD MAST taxonomy:

- **Sanitary and phytosanitary measures** cover:
 - Voluntary standards dealing with, among other things, product standards, and production processes standards.
 - Regulations such as labelling and packaging requirements, traceability requirements, tolerance limits for residues, hygienic requirements, quarantine measures, food and feed storage requirements.
 - Conformity assessment related to SPS such as certification requirements, testing requirements, lack of recognition, inspection and clearance requirements, registration requirements, etc.
- **Technical barriers to trade.**
 - Voluntary standards such as product standards, production standards, management system standards, etc.
 - Technical regulations such as labelling, packaging and traceability requirements, tolerance limits, identity requirements, environmental requirements, etc.
 - Conformity assessment related to TBT cover certification requirements, lack of recognition, registration, etc.
- **Other technical measures:**
 - Pre-shipment inspections.
 - Special customs formalities.
 - Transportation restrictions, etc.
- **Price control measures:**
 - Minimum import prices.
 - Variable levies.
 - Antidumping and countervailing measures.
 - Safeguard duties.

- Seasonal duties, etc.
- **Quantity control measures:**
 - Various licensing.
 - Quotas.
 - Tariff rate quotas.
 - Prohibitions.
 - Voluntary export restraint arrangements, etc.
- **Para-tariff measures:**
 - Custom surcharges.
 - Various fees and taxes on transport.
 - Storage.
 - Import licenses, etc.
- **Finance measures over:**
 - Advance payment requirements.
 - Deposits.
 - Multiple exchange rates.
 - Foreign exchange fees, etc.
- **Anti-competitive measures:**
 - Single chains for imports.
 - Various national compulsory services, etc.
- **Export-related measures:**
 - Export taxes.
 - Export prohibition.
 - Quotas.
 - Licensing.
 - Certification.
 - State trading enterprises.
 - Dual pricing schemes.
 - Inspections, etc.
- **Trade-related investment measures:**
 - Local content measures.
 - Trade balancing measures, etc.
- **Distribution restrictions.**
- **Restriction on post-sales services.**
- **Subsidies.**
- **Government procurement restrictions.**

- **Intellectual property.**
- **Rules of origin.**

Also important are procedural obstacles, such as inconsistency, inefficiency, lack of transparency, etc. related to the implementation of measures, not the measures themselves.

While measures directly related to the agri-food sector can be found in any of the 16 categories above, we will focus on the first two groups: **SPS and TBT measures.**

2. Addressing interactions in a multilateral and bilateral framework

When countries do not trade (a situation called *autarky*), their domestic regulations and requirements do not interact. Problems do not need to occur even with trade if countries share the same regulations or subscribe to a common standard. However, problems are likely to occur when each country takes on a different standard, and requires all products sold on the domestic market to satisfy domestic regulations. Clearly, at times producers in the exporting country can suspect regulations in the importing country act as an unnecessary barrier to trade and a disguised form of protectionism. Differences between countries can be discussed in multilateral or bilateral forums.

2.1. Multilateral: Link to the WTO law course

The vocabulary used in the WTO can be confusing for a lay reader: the WTO legal texts refer to mandatory standards as technical regulations, while voluntary standards are called standards. The concept of standards and technical regulations can be extended to incorporate any type of domestic regulation that can impact trade.

GATT 1947, although established to deal with skyrocketing tariffs, already contained provisions relevant to technical regulations and standards, including in:

- **Article III** (national treatment),
- **Article XI** (quantitative restrictions) and
- **Article XX** (general exceptions).

In 1979, thirty-two GATT contracting parties signed the **Agreement on Technical Barriers to Trade**. This agreement formed part of the Tokyo Round. In 1995, with the completion of the Uruguay round and the establishment of the World Trade Organisation, came into force:

- A revised **TBT Agreement** and
- A new **Agreement on Sanitary and Phytosanitary measures (SPS Agreement)**.

Unlike the plurilateral TBT agreement of the Tokyo round, the Uruguay round agreements are binding on all WTO Members.

Multilateral disciplines on standards seek to ensure an appropriate balance between WTO commitments to open trading arrangements and other public policy objectives. WTO members have committed themselves to ensure that

Bibliographical reference

WTO (2005). *World Trade Report: Trade, Standards, and the WTO*. Geneva.

technical regulations and standards do not create unnecessary obstacles to trade while also recognizing that governments should not be prevented from using standards to pursue other legitimate policy objectives.

Bibliographical reference

WTO (2005). *World Trade Report: Trade, Standards, and the WTO*. Geneva.

The TBT and SPS Agreements seek to ensure that when governments pursue non-trade-related policy objectives through the use of standards, they do so with the least disruptive effect on trade consistent with the underlying policy objective. The dispute settlement mechanism allows countries to settle disagreements regarding the consistency of specific standards with the requirements of the TBT and SPS Agreements and the obligations of GATT 1994.

Bibliographical reference

WTO (2005). *World Trade Report: Trade, Standards, and the WTO*. Geneva.

An agreement on the application of Sanitary and Phytosanitary (SPS) measures specifies criteria for measures designed to protect animal, plant and human health so that trade obstructing measures are not imposed in the name of protecting human, animal and plant health. The Agreement, however, does not specify the measures themselves. The SPS agreement is built on principles of:

- **Harmonisation**
- **Scientific evidence**
- **Transparency**
- **Precaution**
- **Equivalence**

The Agreement encourages WTO Members to harmonise their measures by basing them on international standards. Three groupings of international reference standards are used:

- Codex Alimentarius for food safety.
- The World Organisation for Animal Health for animal health.
- The International Plant Protection Convention for plant health.

Revisions of existing international standards as well as the development of new ones are guided by evolving scientific knowledge and public consultations.

International recommendations on standards on food safety, plant and animal health exist, and WTO Members are encouraged to use international recommendations on standards on food safety, plant and animal health. Under the SPS and TBT agreements, however, member states have the right to adapt and deviate from these international standards as long as it is in the interest of human, plant and animal health and based on scientific principles.

A deviation from these international standards is possible if strong scientific evidence is available, an acceptable level of risk is established and the least trade-distorting measure is chosen to achieve the desired protection level.

When there is not enough scientific evidence to evaluate a risk, countries can impose a temporary measure while the country actively seeks the missing scientific evidence. As risk attitudes differ across countries, the implementation of a precautionary principle is often contested. In the WTO, the SPS measures are discussed in the SPS Committee and WTO Members are required to submit changes in the SPS measures to the SPS Committee to give other Members the opportunity to comment.

TBT measures do not include explicit bans on imports from specific countries, as is often the case under SPS measures.

In addition to the SPS and TBT Agreements, topics covered in other WTO agreements, such as government procurement, trade facilitation, etc. also have a potential to create trade frictions; but we will not discuss them in the course.

WTO Agreements allow for special and differential treatment for developing countries, such as longer implementation periods. However, criticism is also heard that special and differential treatment could slow down structural adjustment in many countries. Many technical capacity building programmes are also offered. However, some developing countries might lack the potential to fully reap the benefits of harmonization. Often, the delegations of many developing countries in Geneva (seat of the WTO and other Secretariats) are overstretched in covering multiple meetings. Developing countries often also lack the capacity to participate in the standard setting processes described earlier.

2.2. Bilateral ways

The Doha Development Round of the trade negotiations covers NTMs only marginally, and that is one of the reasons that NTMs are increasingly being negotiated in the framework of (bilateral) free trade agreements. In addition, the public choice theory teaches us that an agreement on any issue is more likely to occur when a number of participants is relatively small and rather homogenous.

Bilateral trade agreements also contain provisions for developing countries.

3. Conceptual relationship between food related regulations and international trade

As discussed earlier, the WTO does not dictate which measures countries should use to attain their domestic policy objectives. However, measures taken should not act as barriers to trade. In the area of agri-food, differences in so-called *regulatory* measures are the most frequent. Regulations, including standards, have a far reaching impact on economic activity, including trade. In this part we look at the conceptual relationships between some food-related regulations and international trade.

The interaction of food related regulations and trade lacks novelty: the German *Reinheitgebot law for beer from 1516* set purity laws regarding production of beer for human production. Preceding the German unification of 1871, Bavaria insisted that the purity law would be accepted nationally. Beer had to be produced from barley, hops and water. It remained in practice until the creation of the EU common market. While, in the name of food safety, it also restricted the access of German consumers to other types of beer, it is also possible the purity law was enacted to prevent diversion of wheat from bread to beer production.

International standards –or international recommendations for standards– were created to facilitate the protection of the health of consumers and to facilitate safe international trade of food products. However, international standards do not exist for all products. The WTO Report (2005) states that a stable and mutually supportive relationship between standards regimes and international trade rules is central to the effective functioning of the trading system.

Concerns about the most adverse effects on trade are the largest in the area of government-mandated product (and process) standards, because of the power of the state behind the standard. Different standards and regulations do not necessarily have to be obstacles to trade if countries recognize that their (mostly) shared objectives can be achieved using different means.

For example, countries can share an objective of ensuring food safety and minimizing the risk of foodborne illness. Some countries could try to achieve this objective by having a standard for pathogens in the final product while others could focus on putting in place regulations aimed at process, such as the HACCP.

Problems can occur even when an importing country requires the same regulation for imported products as it requires for domestically produced products.

While product standards are relatively simple to verify at the point of entry, processing standards are usually not so easy. Checking for production methods outside the domestic jurisdiction is best to be left to the country of production. As such, certification is frequent, as is presence of on-site inspectors for example in abattoirs.

Finally, even if a product satisfies all requirements, labelling requirements can differ across countries. In addition to *formalities*, such as language, differences in labelling can dwell on more serious distinctions.

For example, in the case of GMOs in the EU, the process labelling prevails while in the US product labelling prevails (meaning a product is labelled only when substantially different).

3.1. Solutions

In this part, we discuss the potential steps governments can take to avoid –or minimize– trade frictions arising from different standards. Several approaches are possible:

- **Full harmonization**
- **Harmonization of essential parts**
- **Equivalence**
- **Mutual recognition**

Which approach will deliver the most benefits depends on the situation. For example, earlier we mentioned compatibility standards. In case of large network externalities, countries have an incentive to fully harmonize standards or to make them compatible; and in these situations there is more trade.

Sometimes producers are interested in setting different standards across geographic regions to prevent arbitrage and maintain shares on different markets, although this is less of the case for food.

Harmonization:

- Can increase price competition among suppliers delivering a standardized product and increase market efficiency as more suppliers of a standardized product emerge.
- Engages rent seeking when groups (or countries) try to lobby for their standards to prevail.
- Is also influenced by existing regulations and patents in use.
- Decreases the number of varieties available on the market.

Bibliographical reference

WTO (2005). *World Trade Report: Trade, Standards, and the WTO*. Geneva.

- Might be more challenging to achieve with more players to coordinate compared to a national harmonization.
- Implies (in case it is Full harmonization) that both policy objectives and detailed technical provisions required to achieve the objective are commonly defined.

For the purposes of trade, harmonization, although beneficial, might not be prerequisite. However, properly functioning single markets require single requirements, regulations and standards, as it is the case in the EU and US. In the EU, the single market was always one of the most important objectives that served as a precondition of harmonization. The EU represents an interesting case study of harmonization. First attempts included harmonization of national law by EU directives. Given the heterogeneity of the EU Members and different conditions across Member states, harmonization of national technical requirements proved overwhelming and unrealistic.

Mutual recognition implies that countries accept each other's standards.

It is likely to occur only with countries sharing similar policy objectives. Mutual recognition implies equivalency: WTO members must accept each others' standards as equivalent (even when they are different) if the exporting country can prove that its measures guarantee the same level of protection as that of the importing country.

The *Cassis de Dijon case* (1979) established that if a good satisfies marketing requirements in one Member state, it is suitable to be marketed in other Member States as well. German legislation prohibited selling liquors with a minimum alcohol content below 25%. The European Court of Justice ruled that German regulations were restricting trade.

Consequently, the new approach in the EU involved setting up minimum requirements and mutual recognition. Also used is a concept of *equivalence* which implies unilateral recognition.

Finally, even if countries do not require full harmonization and consider mutual recognition, they can still ask for certification and *conformity assessment* to show that the standards imposed by an exporting country satisfy the requirements of an importing country. Conformity assessment:

- Refers to testing, inspection and certification as well as supplier's declaration of conformity.
- Increases transaction costs and has implications for competitiveness and market access.
- Can be reduced by many agreements.

Bibliographical reference

WTO (2005). *World Trade Report: Trade, Standards, and the WTO*. Geneva.

Bibliographical reference

WTO (2005). *World Trade Report: Trade, Standards, and the WTO*. Geneva.

- Should be carried out only once and be recognized on all markets. International and regional systems exist with the objective of establishing networks of conformity assessment bodies.

3.2. Potential (and existing) issues

Despite the efforts and pledges of countries not to implement regulations that act as barriers to trade, conflicts emerge as food related regulations tend to remain part of national jurisdiction, despite international recommendations to the contrary. Some conflicts can emerge from the rules themselves (e.g., level of standards), or from the procedures accompanying them.

Often, problems emerge from alternative systems to address a given regulatory problem shared across countries. Regulations in the food sector are often associated with mitigating risks (such as reducing the risk of foodborne disease), although measures addressing non-risk attributes, such as nutritional values and production protocols, are gaining importance.

Standards and food safety regulations present a problem mostly for higher-value and value added exports. Bulk commodities could be affected by some of the regulations, such as the level of pesticide regulations, traceability requirements, etc; but the number of regulations to satisfy increases with value-added components.

Both domestic and foreign producers usually welcome standardization because it:

- enforces the economies of scale
- delivers information to consumers
- lowers transactions costs
- ensures upstream and downstream compatibility

Standardization also works the best for relatively homogenous products where the loss of variety is relatively small. However, the cost of compliance with the standard might be different across countries.

Particularly thorny are issues that involve some sort of ethical considerations: animal welfare, protection of global commons, etc. Often, an agreement on what the appropriate standard or a regulation would be is hard to reach nationally, yet alone in an international setting.

Potential conflicts can also emerge when domestic producers are subsidized to satisfy a certain standard or regulation.

Consider, for example, payments to farmers to compensate them for the increased cost of animal housing that satisfies stricter requirements of animal welfare and at the same time requiring all products –both domestic and imported– sold on the domestic market to satisfy higher animal welfare requirements. Producers in the exporting country find themselves disadvantaged: they have to comply with high animal welfare requirements and compete with products that are *de facto* partially subsidized.

Certification is also covered by SPS and TBT agreements. Just like with other policies, mandatory certification should not be more trade restrictive than absolutely necessary and imported products should have access to certification procedures in no less favourable terms than those accorded to domestic products. To implement traceability and certification, infrastructure and capital are needed, which, in turn, is what might be missing in countries with the lowest labour costs and, thus, a comparative advantage to produce products with high labour requirements.

Internationally, the most contentious issue is the question of extraterritorial application of domestic measures in the case of production processes that are not incorporated into the product. A famous WTO Tuna–Dolphin case between Mexico and the United States highlights the issue. In the eastern part of the Pacific Ocean schools of yellowfin tuna often swim beneath schools of dolphin. When purse seine nets are used to fish tuna, dolphins can get trapped. The United States has dolphin protection regulations for the US fishing fleet embodied in the US Marine Mammal Protection Act. It also bans all tuna exports to the US from the countries that are unable to prove that they satisfy the US dolphin protection standard.

The case was settled *outside the court* so it had not carry a legal interpretation of GATT law.

However, it highlighted two important issues:

- Product vs. process: the US could apply its regulations based on the quality or content of tuna, but not on the way it was produced (process).
- Extraterritorial application of domestic regulations even if the domestic regulations aim to protect animal health or exhaustible natural resources.

From the world welfare point of view, extraterritorial application of domestic regulations might not be efficient since the domestic process standard might not be efficient from a global point of view given different conditions across countries. The suitability of extraterritorial application of a domestic measure also depends on whether the externality is localized and not transboundary. If the externality is local, the best approach is to apply mandatory standards to domestic producers while applying voluntary standards (accompanied by labelling) to foreign producers although this approach raises concerns of a raise to a bottom.

Bibliographical reference

WTO (2005). *World Trade Report: Trade, Standards, and the WTO*. Geneva.

Although the tuna-dolphin case dealt with environmental standards, the reasoning applies for other process standards as well.

Geographical indications (previously discussed on agricultural quality) are also a potential source of conflict, especially related to products that in some countries might be considered to be generic, such as parmesan or feta cheese.

4. Harmonise between countries or not?

Although we already discussed benefits and drawbacks of standardisation in the part on domestic policies, in this part we summarise the discussion and draw implications on harmonization. In the following part, we look at standards from a trade perspective with a special focus on developing countries as we explore the role of standards as barriers or catalysts of trade.

From the production and consumption point of view, harmonization reduces the unit cost of production via economies of scale, but reduces consumer choice. Harmonization carries along the loss of variability. Standards also ease upstream and downstream processing and reduce the transaction cost. A uniform standard guarantees a product will be accepted on several markets that subscribe to the same standard.

International recommendations do not exist for all standards and, as we stressed several times, countries are free to choose standards and regulations they deem appropriate to protect human, animal, and plant health as long as they do not act as barriers to trade.

However, differentiating between a legitimate standard and an *illegitimate* one is complex. Standards could be employed as a disguised form of protectionism when a government claims to have introduced a standard in order to correct for market imperfections, but in reality, the standard has been designed to create an artificial advantage for domestic producers.

Harmonization will be beneficial in the case of network effects. However, a *rush* for a country standard to become the *de facto* international standard can bring inefficiencies of its own if the prevailing standard is not deemed to be the best. Industries in specific countries might lobby the government to endorse their standards. Examples include different network standards across regions.

Standards and their harmonization can also influence the industry structure. In industries where high fixed costs are needed to satisfy standards and regulations, industries are often very concentrated, such as meat packing in the United States. If compliance with a standard requires high fixed costs, these are usually sunk as an additional investment and not translated to consumer prices. On the other hand, if compliance enters into variable costs (for example per unit inspection costs), these are often translated into higher consumer prices.

5. Standards as barriers or catalysts to developing country exports?

Standards and food related regulations are often suspected of hindering the access of small farmers in developing countries to the international markets. As such, with their excessive and costly requirements they are said to be hampering their move out of subsistence farming to high value added production and their move out of poverty.

The *standards as catalysts* view argues that compliance with new standards may provide incentives for countries to modernize their export-oriented sectors, as well as to strengthen the levels of food and health standards at the national level.

Two problems can be, at least, identified:

- **Participation of developing countries in the standards setting mechanisms.** Many developing countries lack the scientific and institutional capacity to fully participate in the standard setting process. Consequently, some NGOs and developing countries claim that standards developed by rich countries –albeit in an international setting– are being pushed on them. Consequently, they also lack the same capacities in the WTO dispute settlement mechanism should a problem arise.
- **Compliance of developing country producers with standards.** There is a lot of talk on standards being a protectionist tool protecting domestic farmers in developed countries. There is some merit in saying that many small farmers in developing countries face challenges in complying with standards imposed by potential importers, with private standards and accompanying certification receiving the most attention.

Standards (and regulations) have a potential to act as barriers to trade, because of the costs of compliance and certification. Developed countries which share the same objectives, although the means of achieving these objectives can differ across countries, and whose national standards are based on the same international reference levels, face less of a difficulty although occasionally frictions occur.

Different processes used to achieve the same goal –such as washing poultry with bleach in the United States.

However, developing countries with margins for improvement in the areas of infrastructure, institutional and scientific capacity and whose national standards are very different (or non-existent) from international recommendations face challenges. Many capacity building programmes are in place to assist developing countries with development, implementation and compliance with standards.

Some studies estimated, however, that the costs of compliance with standards are only a small fraction (less than 5%) of total production costs and conclude that the compliance cost is much lower than is generally assumed.

However, the cost of certification and cost of compliance with the certification requirements can be a prohibitive amount for small farmers.

Anders and Caswell studied the impact of HACCP implementation on US seafood imports.

Bibliographical reference

Anders, S. M.; J. A. Caswell (2009). "Standards as Barriers versus Standards as Catalysts: Assessing the Impact of HACCP Implementation on US Seafood Imports." *American Journal of Agricultural Economics* (Vol. 2, no. 91, pp. 310-321).

Their analysis suggested that HACCP introduction had positive effects for developed countries and negative effects for developing countries, supporting the view of *standards as barriers* versus *standards as catalysts*.

On the other hand, standards help to reduce transaction costs. By laying down specific requirements they also help to communicate to producers what the consumers demand and thereby avoid uncertainty. Standards, as we already discussed, can carry an element of technology transfer. There is also evidence against the *standards as a barrier* argument that some developing countries which successfully complied with standards upgraded their export sectors, mainly in the area of horticulture. The evidence has shown that the adoption of some quality and safety standards by producers has placed them in a better position on the marketplace.

Expansion to horticulture, however, carries its own risks. In many developing countries, local diets do not include items that are being produced for exports, such as green beans in Kenya and other vegetables. The non-traditionality of production coupled with the perishability makes finding alternative market outlets impossible in case products are refused in their destination markets. Nevertheless, even in case of success stories, there are winners and losers among the farmers.

- Larger holdings with economies of scales in certification and a larger turnover are usually more successful.

Bibliographical reference

Maertens, M.; Swinnen, J. F. M. (2006). "Standards and Barriers and Catalysts to Trade, Growth and Poverty Reduction". *Journal of International Agricultural Trade and Development* (Vol. 1, no. 4, pp. 47-61).

Bibliographical reference

WTO (2005). *World Trade Report: Trade, Standards, and the WTO*. Geneva.

- Small farmers, on the other hand, are less likely to succeed and would probably move to (or stay in) market segments that produce for domestic markets –although domestic markets are usually less lucrative– or eventually move out of agriculture to speed up structural adjustment. This is also confirmed in Anders and Caswell, where regardless of the development status, leading seafood exporters generally experienced a positive HACCP effect, while most other smaller trading partners faced a negative effect.

Bibliographical reference

Anders, S. M.; J. A. Caswell (2009). "Standards as Barriers versus Standards as Catalysts: Assessing the Impact of HACCP Implementation on US Seafood Imports." *American Journal of Agricultural Economics* (Vol. 2, no. 91, pp. 310-321).

Although small-holders can find themselves excluded from active participation in the value chain, an important argument in the welfare analyses of high-standards trade is that poor households may benefit through the employment effects in new employment opportunities in the processing and handling of produce, etc. having a positive effect on increasing rural incomes and reducing poverty rates.

