Research Paper

The Impact of the WTO Agreement of Sanitary and Phytosanitary Measures on Exports of Developing Countries

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Introduction

The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) serves to enhance the rules set out in the General Agreement on Tariffs and Trade (GATT) and the Agreement on Technical Barriers to Trade (TBT Agreement). The SPS Agreement outlines rules for WTO member states regarding policies related to food safety, and animal and plant health. It strives to balance countries' rights to enact technical regulations with the mitigation of negative international trade impacts. It has been argued that regulations enacted under the SPS Agreement have had a negative impact on developing countries' exports. The research hypothesis, alternative and methodology are outlined as follows:

Research Hypothesis: The implementation of the SPS Agreement has hindered developing countries from accessing the markets of developed countries and, consequently, has reduced their exports to these countries.

Counter Thesis: The implementation of the SPS Agreement has not hindered developing countries from market access and has had a positive impact on exports.

Methodology:

1. Survey the literature for relevant scholarly articles.
2. Prepare a literature review to summarize the major findings.
3. Articulate the author's position and perspective.

Literature Review

Overview

According to the World Trade Organization (n.d.), "*Sanitary and phytosanitary measures deal with food safety and animal and plant health.*" The main objectives are to ensure the safety of food consumed through conformance to acceptable standards and to prevent the undue protection of domestic producers through misuse of these technical regulations.

The WTO body that executes this mandate is the SPS Committee which oversees how countries apply the SPS Agreement (World Trade Organization, 1995). The functions of the SPS Committee include:

1. Acting as a central hub through which WTO members can notify all other members of new or amended import requirements. This function facilitates information exchange and gives members the opportunity to comment or seek clarification on technical regulations.
2. Developing guidelines to ensure harmonization of technical requirements and to interact with relevant international organizations to this effect.
3. Maintaining a list of international standards, guidelines or recommendations concerning SPS measures that may have significant trade impacts.

To maintain objectivity and to facilitate dispute resolution, the SPS agreement (1995) asserts that technical regulations are risk-based and driven by scientific evidence or international standards. Nonetheless, while the WTO and food producers recognize the importance of SPS measures, both share concerns that SPS measures may prevent market access of these producers, especially from developing countries, and may be used to protect domestic players in richer nations.

Cross-country studies

Disdier et al. (2000) examined how the SPS and TBT agreements affect agricultural trade by asking whether they significantly altered trade flows and whether the impact was consistent across countries. This study used data regarding NTMs compiled and processed by the UNCTAD. These data are used empirically in this study as representative of measures notified under the WTO for food and agricultural products. Trade data from the year 2004 and NTM data year-to-date (up to 2004) from 154 importing countries, 183 exporting countries, covering 690 products were used.

The authors performed econometric analyses with the dependent variable being ad valorem equivalents (AVEs) and the independent variable being the number of TBT notifications (assigned by dummy variables). The AVEs represent the proportional differences between import and domestic prices and had been determined in a previous study. They noted that technical barriers can facilitate trade by instilling confidence in products and limit trade when exporting countries cannot demonstrate compliance with the regulations, demonstrating that trade effects can be ambiguous.

Among the limitations are: (1) The AVEs used did not consider quality differences between imported and domestic goods; and (2) the notification database was found to be incomplete or outdated.

The study found that, generally, SPS and TBT measures were negatively correlated with trade in agricultural products. Regarding exports to the EU market, this negative relationship is pronounced as the study found that even though the EU notifies less, the measures actually impeded trade more. Exports by developing and least developed countries were negatively

affected and exports by OECD countries were unaffected.

Henson and Loader (2001) examined how SPS measures affect the capacity of developing countries to access markets of developed countries, specifically the EU, for goods in agriculture and food. This paper explored how SPS measures impact the development status of these countries and challenges with compliance. The authors noted that NTMs can act in effect like tariffs and can prohibit trade, divert trade or reduce trade levels.

The authors conducted "…*a series of 10 country in-depth cases studies*…" (Henson and Loader, 2001, p. 91) which involved interviews with government personnel, exporters, and NGOs. The case studies identified the main impediments that developing countries face in complying with EU SPS regulatory requirements. The issues identified were compiled in surveys, which were subsequently sent to the WTO delegations of selected low- and middle-income countries, and which were asked to rank the significance of each on a Likert scale.

The study found that the most significant factor indicated by respondents was SPS measures associated with inadequacies of compliance, technical, information and financial resources. The paper suggests that to increase participation from developing countries in the SPS Agreement, WTO and international standardization should be more inclusive, developed countries need to be more aware of the problems faced, and that there needs to be institutional reform of compliance structures in developing countries.

Olayinka (2016) contended that technical standards under SPS measures were restrictive and that inequality in goods traded after removal of tariffs may be due to quality, market size, development and protectionism. This paper investigated empirically if EU standards obstruct African product exports for agricultural food products, namely fish and vegetables using a

modified gravity model. Data on product standards and EU import refusals for 52 African nations from 1995 to 2012 were used to model the impeding effect of technical measures at the intensive and extensive margins.

The findings of this study were as follows:

1. At the extensive margin, the effect of regulations for fish was trade enhancing while that of vegetables was trade inhibiting.
2. At the intensive margin, trade in both products impeded trade due to regulations.
3. There was evidence of increased compliance with regulations for fish while the opposite was true for vegetables.
4. The author concludes that the impact of standards on trade cannot be generalized and is product specific.

Boza and Munoz (2017) attempted to determine the factors that influence the development of SPS regulations which include agricultural production value, agricultural imports weight, health concerns, agricultural import tariffs, and scientific and legal capacities.

The authors use data from 1995-2012 regarding the number of SPS notifications per country and different proxies for the factors listed above. Data from the World Bank and UNESCO were used. A negative binomial regression model was used to determine the correlations.

The paper considered a number of different factors and how they affect SPS regulatory activity instead of trade levels. The study concluded that the major determinant of SPS regulations is scientific resources and capabilities. In contrast, countries with a higher proportion of agricultural exports had fewer SPS regulations. An important finding was the positive relationship between the number of SPS measures and the level of technical capability of the

member state. This implies that issuance of an SPS measure is a function of technical capability, and lack thereof limits the number and extent of SPS measures, particularly for poorer countries.

Specific examples: Evidence from Egypt, Mauritius, India and Chile

Egypt

El-Enbaby et al (2016) explained how trade liberalization has affected manufacturing and agricultural products tariffs disproportionately by highlighting the considerable difference between the simple average Most Favoured Nation (MFN) tariffs of 8 % and 15 % respectively; the number of SPS notifications and the number of concerns raised by these notifications had also increased substantially since 1995.

The study by El-Enbaby et al. (2016) investigated how SPS measures affect the probability to export and the value of exports in Egypt. Consistent with trade liberalization, the number of SPS measures to Egypt increased dramatically from 18 in 2006 to 888 in 2012. Specifically, the EU, whose market accepts close to 50 % of Egypt's exports, imposed the highest number of SPS measures. The researchers determined that the average value of exports, not affected by SPS measures, was three times those that were affected.

Using firm level from 2006 to 2010, the study identified a decline in the number of new entrants and firms and a reduction in the number of producers exporting with an increase of exports overall. This implies that free trade elicits the survival of globally competitive firms at the expense of smaller less competitive firms.

The authors performed an econometric analysis using the gravity model to determine how the imposition of SPS measures, both by Egypt and its trading partners, affected the value of trade of

specific products from specific Egyptian firms. The main findings were that SPS measures levied on Egyptian exporters negatively affected the probability of exporting a new product to new market while the intensive margin was not significantly impacted and the impact was more pronounced on small- and medium-sized exporters.

Mauritius

Neeliah and Goburdhun (2010) emphasized that, as a small island developing state and a net food importing country, conformance to the SPS Agreement is critical to Mauritius. The authors analyzed the domestic SPS infrastructure and examined the implementation of the SPS Agreement within the context of establishing regulations and institutions, and identification of operational challenges. They conducted literature reviews and developed an inventory of measures using questionnaires completed by local stakeholders who included governmental bodies and industry groups. The questionnaire was based on "…*a seven-point Likert scale to measure attitudes of stakeholders towards their participation in the work of international standards organizations, problems associated with the manner in which the SPS Agreement operates and factors influencing the ability of Mauritius to participate effectively…"* (Neeliah and Goburdhun, 2010, p. 903).

The paper acknowledges the limitations of its infrastructure regarding national institutions and research facilities, describing "…*a dearth of professional organizations in Mauritius*…" (Neeliah and Goburdhun, 2010, p. 904) within a framework of regulation and conformity assessment capability.

However, the authors highlight the following positive developments:

1. Increased participation in international standards setting organizations such as the CAA, IPPC

and OIE.

2. Incorporation of international standards into national regulations like the Food and Drugs Act (1940) and the Plants Act (1976).

3. Establishment of a national accreditation body, an SPS enquiry point and a National Notification Authority to support conformity assessment.

They also described an example of how the SPS Agreement had been applied successfully in the interest of food safety where Mauritius banned imports from Belgium and Europe because of dioxin contamination.

The challenges faced by Mauritius in implementing the SPS Agreement (Neeliah and Goburdhun, 2010) provide a comprehensive representation of similar challenges faced by developing countries with respect to institutions, infrastructure, finances and capability. While some degree of inadequacy still exists, the paper concluded that many of these challenges had been overcome with reasonable success.

India

Das (2008) argued that the SPS Agreement has left considerable space with regard to application by WTO members and interpretation by WTO's Dispute Settlement System allowing its use in protectionism. The author described the implementation challenges faced by India and how, even though regulations are based on international standards, WTO members are allowed to enforce even stricter SPS measures if scientifically upheld. This article described specific sectoral examples of how the interpretation of the SPS Agreement can lead to NTBs.

Among the traded goods affected, the article articulated how the EU banned fisheries exports

from India resulting in significant investment in infrastructure and equipment. The Seafood Exporters Association of India estimated facilities upgrades at 25 million USD with additional costs for training. Another example described involved buffalo exports to the EU being banned based on the prevalence of foot and mouth disease in Indian cattle. However, the article argued, that while these measures were more stringent than required by international standards and the OIE, the EU had insisted that the measures were in compliance with scientific advice from the European Food Safety Authority, and was allowed by the WTO. Other affected products included fish, mango, rice, milk products, tea and flowers.

The interpretation space, Das (2008) argued, allows SPS measures to create NTBs, with regards to the application of the term "risk assessment" under relevant paragraphs of the agreement. The article further explained that the WTO does not dictate that risk assessments establish *quantitative* threshold levels of contamination but only establish the *potential* for adverse effects, and not necessarily a *likely* event. Scientific evidence, in this case, has broad scope. A number of specific cases are described in the article.

Anecdotally, Das (2008) stated that India has periodically had its exports restricted due to the imposition of SPS measures, in particular from developed countries. Among the challenges were substantial costs to upgrade SPS infrastructure (physical and human) with no guarantee from importing markets of increased access. Interestingly, like Egypt, the author explained that smaller Indian exporters, who are likely to be deficient technically and financially, are most adversely affected by SPS measures. Conversely, it is acknowledged that India's domestic players had been protectionist themselves in advocating certain SPS measures and requirements in international standards.

With some similarities to Mauritius, Das (2008) recommended the following mitigation actions:

1. Increasing awareness among the Indian exporting community.
2. Improving communication among domestic stakeholders like government agencies, research institutions, standardization bodies and other industry players to streamline conformity efforts.
3. Enhancing transparency by improving the operations of National Notification Authority and National Enquiry Point through human capital development.
4. Becoming more vocal at the WTO regarding SPS issues and resolutions, and increasing participation in international standardization.
5. Entering into bilateral equivalence agreements with mutual recognition of requirements.
6. Requesting more technical assistance from developed countries and prioritizing SPS infrastructure improvements for its effective utilization.

Chile

A paper by Melo et al. (2012) looked at the impact of SPS measures on the exports of fruits from Chile to 16 different markets including developed countries like the US, Canada, the UK and the Netherlands. The authors constructed an index of regulatory stringency from questionnaires sent to exporters to prioritize the most critical regulation types. A modified gravity model was then used to assess the relationship between the index and the volume of fruits exported.

The study found that more robust regulations negatively impacted the volume of fruits exported to these markets with the effects being disproportionate among different products. Regulations were also observed to have increased over time with the main types of trade barriers being quality standards, and packaging and labeling.

Theoretical framework of the SPS Agreement

Rigod (2012) sought to defend the SPS Agreement against criticisms that (1) there is no sound economic rationale, (2) it disturbs domestic affairs and facilitates protectionism, and (3) that it threatens democratic decision making processes. To make his case, the author examined the historical evolution and motivation of the SPS and the economic theory behind it.

The author gave a brief history of the SPS Agreement, describing how the WTO identified the need for dealing separately with technical regulations for plant and animal goods as trade barriers. SPS measures were not covered specifically under the GATT or TBT Agreement. The economic theory, he argued, indicated that technical barriers increase transaction costs which in turn could reduce trade; however, positive benefits could come from the improved quality of goods and safety standards, and through the reduction of information asymmetries. Like Disdier et al. (2000), Rigod posits that trade impacts can be ambiguous.

The paper argued that the focus on risk assessment and scientific evidence to support an SPS measure, without being motivated by economic considerations, demonstrates a positive impact. In this case, while market access is legitimately restricted, democratic processes may be contravened because the technical rationale takes precedent.

However, no empirical data is used to support his arguments. Nonetheless, the author's historical and theoretical framework demonstrates that, in principle, the SPS Agreement is actually intended to detect protectionism, allow technical regulation design to be scientifically-driven, allow market forces to regulate trade and is based on widely-accepted neoliberal economics.

Discussion

Summary

Based on the survey of scholarly articles and the subsequent literature review, due to the plethora of global markets and food and agricultural products, there are a limited number of research studies which analyze the relationship between export levels and SPS measures using a quantitative or econometric methodology. Incidentally, there is significant anecdotal evidence and considerable information regarding the challenges associated with implementation of the SPS Agreement. This section summarizes the main findings of the literature review and presents this author's perspective of the literature and his personal experience as a Standards Officer at the *Trinidad and Tobago Bureau of Standards*.

The findings of the literature can be summarized under the following stylized facts:

1. The *immediate* impacts of implementation of the SPS Agreement include the following:
    a. A reduction in the level of exports from developing countries to developing countries. Evidence is presented in the papers by Das (2008), Disdier et al. (2000), El-Enbaby et al. (2016), Melo et al. (2012) and Olayinka (2016).
    b. A decrease in the ability of food and agricultural producers from developing countries to access markets of developed countries. Evidence is provided by Das (2008), El-Enbaby et al. (2016), and Henson and Loader (2001).
2. There are considerable challenges faced by developing countries in implementing the SPS agreement which has resulted in altered or reduced trade flows. Evidence is provided by Boza and Munoz (2017), Das (2008), Henson and Loader (2001), Neeliah and Goburdhun (2010), and Olayinka (2016). These challenges involve financial and technical constraints, inadequate

participation in international standardization, lack of conformity assessment infrastructure, asymmetric information, and underdeveloped agencies, institutions and research capabilities.

3. The adverse impact on trade is more pronounced with small to medium firms. This implies that the reduction of trade is at the extensive margin i.e. the decline in exports is due to a reduction of exporters and not necessarily a reduction in the exports of single firms. Evidence is described by Das (2008), El-Enbaby et al. (2016), and Olayinka (2016). This effect is consistent with the idea that smaller firms cannot afford to invest in conformity assessment measures as compared to larger firms who are able absorb the additional associated costs.
4. Countries with the highest number of SPS measures and those that have the largest impact tend to be developed countries and not necessarily countries whose main traded goods are food and agriculture. Evidence is provided by Boza and Munoz (2017), and Disdier et al. (2000). This can be explained by the fact that countries that rely more heavily on food and agricultural exports are typically least developed or developing countries as opposed to developed countries who rely more primarily on manufacturing and services. The former will tend to have less SPS notifications due to the constraints mentioned previously in point 2.

The author of this paper recognizes the limits of research that rigorously quantifies the specific effect of the SPS agreement on levels of exports in different developing countries. Strong evidence *does* exist that enactment of the SPS Agreement can lead to a reduction of exports of developing countries, especially to developed country markets but this author prefers not to generalize this effect; ***trade impacts are product and market specific***. What is very clear is that developing countries do struggle to apply and comply with SPS requirements which can reduce exports.

Rigod (2012) presents a strong argument that, in principle, the SPS agreement achieves what it was intended to do which includes (1) harmonization of SPS requirements among WTO members using international standardization and a risk-based, scientific approach, (2) providing a forum for dispute resolution and (3) ensuring that protectionist measures are identified and addressed. Conversely, Das (2008) counters this position by describing how ambiguity in the interpretation of the SPS Agreement allows developed countries, in particular, to enact protectionist measures which simultaneously comply with the agreement but negatively impact poorer countries' exports.

The author's perspective

As a Standards Officer, the author of this paper has valuable experience with standardization at the local, regional and international levels. Part of his job comprised the development of standards through stakeholder consultation, consensus building and harmonization with international standards. When developing a national standard, say, for a physical tradable product, the best practice is the adoption of an international standard. In order to establish compliance with any standard, conformity assessment must be applied. This requires that the party adopting the standard ensures that the capability exists to perform conformity assessment. Imports must be tested or certified to ensure safety of the product and that of the local environment and industry. Exports must be tested to ensure compliance with the requirements of the destination market. There are numerous considerations which include procurement of equipment, training of personnel, laboratory accreditation, and an assessment of the cost and benefits. If one considers the number and type of products and services traded globally, it is easy to understand how the required infrastructure to support this effort can become prohibitive for a poor country.

For smaller economies, this effect is even more pronounced. If compliance with the SPS agreement is detrimental to smaller firms, the effect on smaller economies, who similarly cannot afford the associated costs, is analogous. Although not food related, the author recalls developing a standard for gasoline using international benchmarks which mandated no fewer than 12 distinct tests. The only accredited facility in the country was only able to perform five of the tests with the remainder needing to be conducted abroad at significant cost.

The way forward

While there is considerable evidence that that the SPS Agreement reduces exports from developing to developed countries, generalization is not certain as the effect is specific to products and markets and has, in some cases, increased exports. The findings, from the literature review, highlight different measures that can be applied by developing countries to improve compliance with the SPS Agreement, increase participation in international activities and consequently expand access to global markets. These proposals encompass financial and technical support from industrialized nations and development of the domestic institutional and human capital infrastructure. Countries are at different levels of economic development and, as such, each must chart its own course with varying degrees of success and in their own time. It can be argued that developing countries will achieve compliance with the SPS Agreement when their technical capabilities converge in future with those of industrialized nations. The immediate adverse effects may not persist in the long term. Conversely, this may be more difficult to argue for small states. It is important that the WTO and industrialized nations recognize the challenges that poorer and smaller countries face and provide adequate assistance.

Conclusion

Overall, the liberalization of trade, which the WTO facilitates, is a positive step towards economic growth. The SPS Agreement was developed to support the provisions of the GATT and the TBT Agreement by establishing a framework for harmonization of requirements for food safety, and animal and plant health and providing a forum for information exchange and dispute resolution. One of the ultimate objectives is improved market access for all countries.

However, the intricacies of international trade have distinct consequences on how the economies of developing countries are able to access the markets of developed countries and, thus, achieve economic growth. Significant challenges for developing countries persist and can only be overcome with support of industrialized nations, facilitation through the WTO and through improvement of local conformity assessment infrastructure.

Deficiencies in capacity to apply the SPS Agreement have been shown to reduce the volume of exports from poorer to richer countries as well as to diminish the ability of firms from developing countries, especially smaller ones, to access developed country markets. However, due to the limitations of quantitative studies, there is no unequivocal acceptance of the research hypothesis that the SPS Agreement caused a decline of exports from developing countries although strong evidence is prevalent. The counter thesis that exports from developing countries increased also cannot be substantiated indisputably.

While the principle of the SPS Agreement is supported by theoretical and historical examination, the actual effects are more ambiguous due to the open space left for interpretation. The author acknowledges that more quantitative, cross-country and country specific studies are needed to confirm or reject the research hypothesis.

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Appendix: Terms and definitions

CAC: Codex Alimentarius Commission

Codex Alimentarius, or "Food Code": a collection of standards, guidelines and codes of practice adopted by the CAC

Extensive margin: the probability of exporting to a new destination market

Gravity model: a trade model that seeks to explain trade flows using the size of markets and the distance between the two.

Intensive margin: the value exports for a specific firm

IPPC: International Plant Protection Convention

MFN: Most Favored Nation (related to the WTO principle that no country shall give preferential treatment to any other country)

NTB: non-tariff barrier

NTM: not-tariff measure

OIE: World Organization for Animal Health (formerly Office International des Epizooties)