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A Framework for Evaluating Non-Tariff Barriers to Trade Related to Sanitary and Phytosanitary Regulation

Neal H. Hooker and Julie A. Caswell

Under recent trade agreements, a two part science and policy test is used to evaluate whether a country's sanitary or phytosanitary regulatory regimes constitute illegitimate non-tariff barriers to trade. We present a framework for operationalising this test, focusing on how the SPS regime affects trade flows through differences in compliance costs, which in turn depend on the level of regulatory rapprochement between trading partners.

1. Introduction

The sanitary and phytosanitary (SPS) attributes of agricultural and food products pose unique problems and considerations in trade facilitation and management. They are heavily regulated by governments as a means of correcting market imperfections and failures. However, diverse national-level¹ regulations may impede international trade either intentionally or unintentionally as a means of protecting domestic markets. Trade agreements signed in the 1990s, including the North American Free Trade Agreement (NAFTA) and the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), now managed by the World Trade Organisation (WTO), set criteria to evaluate SPS policy; encourage co-operation among countries in policy development; and provide a mechanism for resolution of disputes. The intention is to prevent SPS regulation from being used as a substitute for more traditional trade intervention tools such as tariffs and quotas.

Many analysts have noted that SPS regulations are unique among tariff and non-tariff barriers to trade (NTBs) in that they often have legitimate motivations, complicating the analysis of their trade flow and welfare impacts. To date surprisingly little formal research exists that addresses this analysis. Our purpose is to outline a framework for evaluating the impacts of SPS regulations within this new trade environment.

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¹ Regulations may also be initiated or implemented on the trading bloc level. Here "national-level" includes trading bloc regulations.

Sanitary and phytosanitary regulations are a subset of the larger class of administrative barriers to trade. These have been usefully defined by Roberts and DeRemer as “internationally divergent regulations and standards governing the sale of products in national markets which have as their prima-facie objective the correction of market inefficiencies stemming from externalities associated with the production, distribution, and consumption of these products” (Roberts and DeRemer, 1997, p. 1). Sanitary and phytosanitary (SPS) regulations are measures intended to protect human, plant, and animal health, while other measures that affect the quality of agricultural and food products are referred to as technical barriers.¹ The Uruguay Round of GATT includes separate SPS and Technical Barriers Agreements.

SPS measures are distinguished by their agricultural and food safety targets. Food safety targets, for example, include foodborne pathogens, pesticide and veterinary residues, food additives, and naturally occurring toxins. In national-level regulation, measures that target safety co-exist and are often co-mingled with measures aimed at other quality targets. For example, for food products a single set of regulations may co-mingle controls over food safety, compositional integrity (purity), and process attributes. The impact of SPS measures depends on the quality targets (attributes); the regulatory regime (e.g., input, process, or product performance standards) chosen to achieve the targets; and the degree of co-operation between countries in setting and communicating policy.

The degree of co-operation between countries in setting policy is an important component in analysing the impact of SPS regulation on trade flows and welfare. This level of cooperation is referred to as the level of regulatory rapprochement. Following Jacobs (1994), the strategies for rapprochement include:

- (i) Harmonisation: standardisation of regulations in identical form.
- (ii) Mutual Recognition: acceptance of regulatory diversity as meeting common goals (sometimes called reciprocity or equivalency).
- (iii) Co-ordination: gradual narrowing of relevant differences between regulatory systems, often based on voluntary international codes of practice (sometimes called alignment).

These rapprochement levels range along a spectrum from weak (no rapprochement or simple co-ordination) to stronger (mutual recognition) to strongest (harmonisation) (Caswell and Hooker, 1996). The GATT SPS Agreement focuses on one avenue to harmonisation in Article 3 where it encourages countries to adopt internationally recognised standards, guidelines and recommendations. Article 4 in turn discusses equivalence suggesting a format for how nations should evaluate non-identical SPS regulatory regimes.

¹ Sanitary and phytosanitary (SPS) regulations (i) protect animal or plant life or health within a territory from risks arising from the entry, establishment or spread of pests, diseases, disease carrying organisms, or disease causing organisms, (ii) protect human or animal life or health within a territory from risks arising from additives, contaminants, toxins, or disease-causing organisms in foods, beverages, or feedstuffs, (iii) protect human life or health within a territory from risks arising from diseases carried by animals, plants, or products thereof, or from entry, establishment or spread of pests, or (iv) prevent or limit other damage within a territory from the entry, establishment, or spread of pests (GATT SPS, 1994, Annex A).

2. Science and Policy Tests for SPS Measures as NTBs

The overall approach for evaluating NTBs arising from SPS regulations is set out by recent trade agreements. This approach is relatively complex because SPS measures, like certain environmental regimes, frequently have positive (welfare enhancing) impacts that may offset any negative (welfare decreasing) impacts resulting from trade restriction. The language of the GATT SPS Agreement is clear on how this analysis should progress, providing an overall structure for evaluating SPS regimes for their scientific merit, welfare, and trade impacts. The SPS language in NAFTA is similar. The GATT SPS Agreement provides a formal 'quasi-judicial' set of binding rules for settlement of disputes (Abbott, 1997). The first element in a detailed framework for evaluating SPS NTBs is a two level analysis of science and policy based on the agreements' language to be used in assessing the trade impacts of national-level regulations and in dispute settlement.

The main tenants of the GATT SPS Agreement highlight the two level process. The intent of GATT, and now the WTO, is to promote the free exchange of goods (and services) where such trade is based upon comparative advantage. National treatment provisions, for example, commit countries to apply the same rules to both imported and domestic products. These rules are intended to prevent the use of industrial policies designed to confer a competitive advantage on domestic goods at the expense of foreign produced goods. However, the SPS Agreement does not affect a nation's basic right to select the level of risk protection it believes is appropriate. Instead, should a country choose a regime stricter than relevant internationally recognized standards, it must, if challenged, defend its regime by presenting a risk analysis that defines the risk and the need for its tighter control.¹

The GATT SPS Agreement is quite clear in stating that the risk analysis, which combines elements of both the science and policy levels, should contain three parts. First is risk assessment which should defend a nation's decision regarding the appropriate level of protection, thus providing a scientific basis for all SPS regimes (Article 5). Second is risk management which is defined as "the process of weighing policy alternatives in the light of results of the risk assessment and, if required, selecting and implementing appropriate control options, including regulatory measures" (Codex, 1996), elements of which are discussed in Articles 3, 5, and 6. Third is risk communication among trading partners which involves both the transparency requirement that other countries be notified about the controls (Article 7 and as elaborated in Annex B of the GATT SPS Agreement) and the more general need for signatory nations to openly exchange research and communicate in international fora. These fora include the Codex Alimentarius Commission (Codex); the International Plant Protection Convention (IPPC) and its regional affiliates (e.g., the North American Plant Protection Organization (NAPPO)); and the International Office of Epizootics (OIE). The latter communication is intended to strengthen rapprochement efforts among countries on the science level.

¹ The GATT SPS Agreement uses an older definition of the term risk assessment, which includes "...the associated potential biological and economic consequences" of a regime (GATT-SPS 1994, Annex A). Codex, for example, has since adopted a 'harmonised' definition of risk analysis (i.e., including risk assessment, management, and communication) which better distinguishes between the science and policy levels.

The GATT also articulates an additional policy test for SPS regulations. It binds Members to consider all “relevant economic factors” in determining their appropriate level of protection (risk). These factors include:

the potential damage in terms of loss of production or sales in the event of the entry, establishment, or spread of a pest or disease; the costs of control or eradication in the territory of the importing Member; and the relative cost effectiveness of alternative approaches to limiting risks (GATT-SPS 1994, Article 5(3)).

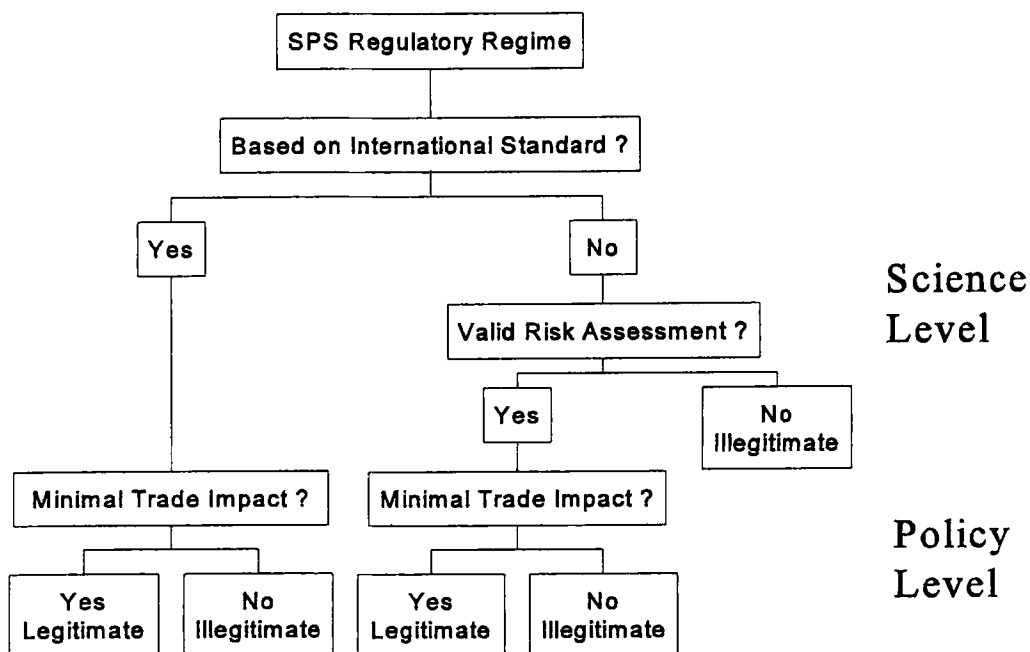
The SPS Agreement also states the goal of “minimising negative trade effects.” This latter idea, often referred to as ‘proportionality’, is restated as “Members shall ensure that such measures are not more trade restrictive than required to achieve their appropriate level of protection, taking into account technical and economic feasibility” (GATT-SPS 1994, Article 5(6)). Footnote 3 states that “a measure is not more trade restrictive than required unless there is another measure, reasonably available taking into account technical and economic feasibility, that achieves the appropriate level of protection and is significantly less restrictive to trade.”

This focus on risk analysis is an effort to both encourage consistency in the choice of the appropriate level of protection provided by a SPS measure and to identify those regimes that differ significantly across nations and may impede trade. In this way, the agreement attempts to evaluate SPS NTBs in a coherent manner. It is important to note that when a country selects a more restrictive standard and is challenged, the burden of proving compliance with the SPS Agreement is on the importing country. In contrast, the burden of proving the equivalency of different countries’ regimes and their adequacy in controlling risks is placed on the exporting country. This distinction is key in disputes, although the format and process is equivalent in either case.

This framework can be characterised in a flow chart (Figure 1, adapted from Phumpiu and Temel 1995) where the sequence of evaluation of a SPS regulatory regime progresses from the science to the policy level tests. Essentially, two main and one follow-up questions are posed. Is the SPS regime based on an internationally accepted standard (and as such has it been implemented in a manner that maintains the spirit of the standard)? Failing this, has the country supplied a valid risk analysis to defend its selection of the regulatory regime? Finally, are the trade impacts of the regime proportional to the objective of the regime (i.e., have alternative methods of implementation and their trade effects been considered)? The ordering of the two levels is important, as a risk assessment (science level) needs to lead any policy discussion and selection among risk management and communication strategies. However, a dispute over an SPS NTB can arise at either level making a holistic analysis of the science and policy components necessary.

Earlier approaches to evaluating SPS regimes as NTBs can be rethought using the basic structure of Figure 1. For example, Phumpiu and Temel, following work by Kinsey (1993), argued for a dual categorisation of NTBs. Adverent Type I barriers arise from quotas, embargoes, anti-dumping duties, and countervailing charges, which act on import quantities and/or the price/cost relationship between domestic and foreign goods (Kinsey, 1993).

Figure 1 A Sequential Analysis of SPS Regulatory Regimes as NTBs



Inadvertent Type II barriers arise from less traditional trade interventions, although they have nearly identical effects. Key among these inadvertent or incidental and less transparent interventions are health, safety, and labelling regulations. This classification groups all nontraditional interventions implying they have identical effects and are innocent attempts to regulate the domestic food supply. However, in evaluating SPS NTBs, the advertent/inadvertent distinction very frequently cannot be operationalised because it is impossible to determine the motivation behind a regulatory regime. More importantly, recent trade agreements do not consider whether barriers caused by a regime are advertent or inadvertent. Rather, the actual effect on trade is what matters.

In this framework, the science test focuses on whether a particular regulatory regime is based on currently available scientific knowledge. The protection goal, standard, and regulatory regime adopted can be compared to current international standards. Recent multilateral agreements establish international standards promulgated by Codex, OIE, and IPPC as the pre-eminent basis of this comparison and evaluation.

The role of the policy level analysis is then to determine if the regime is legitimate or illegitimate based on its relative trade impacts. It is at this level that the role of economics emerges, with the policy test being suggestive of evaluating the welfare effects of an SPS regime. The evaluation of the nature and extent of the potential NTB requires analysis of the trade flow impact. According to the agreement, a regime should be chosen to have the lowest trade impact practicable (proportionality). Unlike the science level test, the agreement gives relatively little guidance for the policy test, particularly regarding how to evaluate alternative risk management strategies. Given the expense of disputes and

their associated risk assessments, the policy test is likely to only be applied to SPS regimes with major trade impacts. Thus economic and trade significance are key in determining which SPS regimes are scrutinised and attacked as illegitimate NTBs. Similarly, only regulatory regimes with significant economic impacts are likely to be the focus of regulatory rapprochement efforts between countries.

The policy test is intended to distinguish between legitimate and illegitimate NTBs. A particular SPS regime may affect trade but not be an illegitimate NTB. For example, a new food safety regulation may lead to a decline in or end to trade from one or more countries. An inspection of the trade data could suggest cause for concern. However, the existence of trade impacts is not conclusive evidence of an illegitimate NTB under recent agreements. It would be so only if it failed the science or policy tests. Further, the classification of an SPS regulation as an illegitimate NTB may not indicate the existence of a trade dispute. A dispute may not be forthcoming because the trade affected is economically unimportant; from countries with insufficient resources to bring disputes; or from parties that do not want to risk possible retaliation. Recent cases such as the beef hormone dispute between the European Union and the United States and Canada illustrate the application of the science and policy tests (Hooker, 1998; Roberts, 1998).

3. A Further Examination of the Policy Test

Economic factors play a major role in the functioning of the policy test for evaluating SPS regimes as NTBs. Prior to the new SPS agreements, governments considering adoption of SPS regimes could focus almost exclusively on domestic benefits and costs. Potential trade impacts were important only if the product was a significant source of export revenue or imports were relied upon to supply a domestic shortfall. The new trade environment requires more advanced international analysis. Countries now know their choice of regulatory regimes will be scrutinised as to whether they address legitimate risk reduction or control goals with a minimised trade impact.

How the policy test should be carried out is not clearly operationalised in the SPS agreements. One approach is to focus on the incidence of costs and benefits within and outside the country instituting the regulation. Caswell and Kleinschmit (1997) applied this approach to analyse federal-state regulatory disputes within the United States. Their work suggests when federal pre-emption of state-level regulations is appropriate based on measures of a regulatory regime's spillover. This approach could be adapted for evaluation of the international trade impacts of SPS NTBs for the nation imposing the regime and its trading partners. The criteria for minimum trade impact could focus on the maximum absolute spillover allowed; allowing no negative spillover; allowing no disproportionate spillover; or a ceiling on the permissible share of spillover.

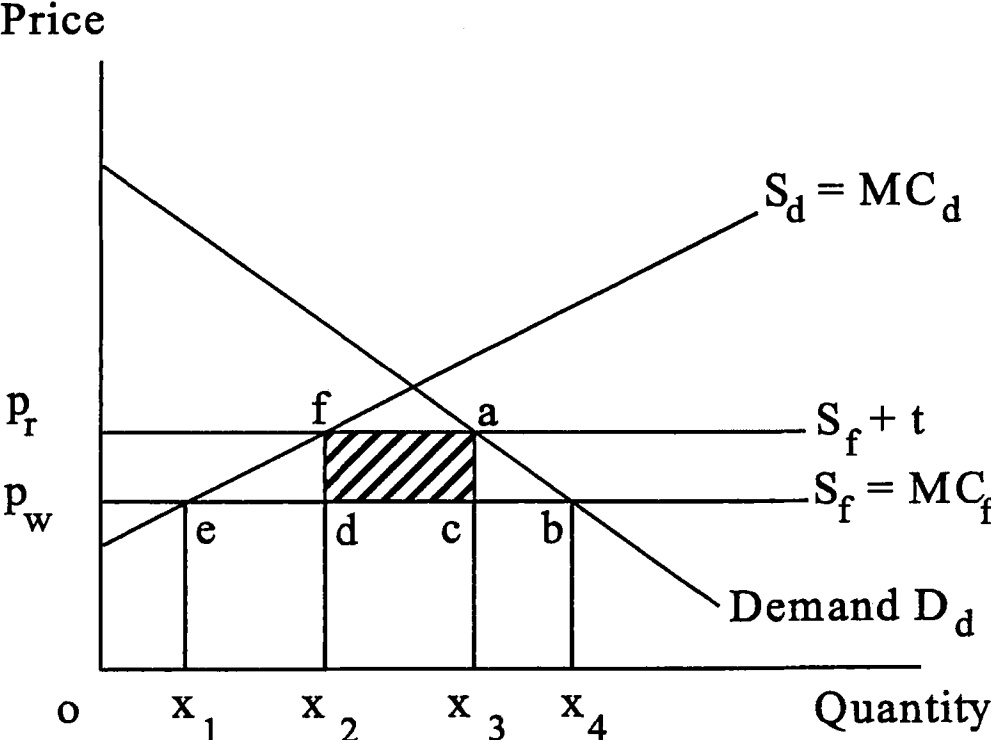
An international spillover technique is an advanced form of policy analysis. Consider a policy with a potentially large trade impact such as the requirement by the Food Safety and Inspection Service of the U.S. Department of Agriculture that Hazard Analysis and Critical Control Points (HACCP) programmes be implemented in the meat and poultry industry (USDA, 1996). The rule making process allowed for some discussion of the international incidence of compliance costs but said nothing about the benefits accruing

externally. Similarly “the portion of the increased costs that are expected to be passed on to US consumers by foreign processors (FDA, 1995, p. 65191)” were included in the analysis of the US Food and Drug Administration’s seafood HACCP rule. However, no overall spillover-based analysis of trade impacts was done in either case. In practice, such tests are too ambitious to be implemented in the international trade context.

We propose an alternative policy test that focuses on differences in compliance costs experienced by domestic and foreign suppliers as the result of the SPS regulatory regime. Any additional costs incurred by foreign suppliers to be in compliance with more restrictive national-level SPS regulations are an important economic indicator of the regime’s trade impacts. These compliance costs are a major component of trade transaction costs for SPS regimes (Ndayisenga and Kinsey, 1994). Further, as developed below, an asymmetric cost increase for foreign suppliers can be a necessary condition for a domestic welfare loss due to an NTB arising from SPS regulation (Hillman, 1991).

Analysis of asymmetric compliance costs benefits from use of the classic comparison between the welfare impacts of tariffs versus quotas. The two policy alternatives are illustrated in Figure 2 for a standard, perfectly competitive, partial equilibrium model with infinitely elastic foreign (and, in this 2-country model, world) supply at price P_w ($S_f = MC_f$). The resultant supply curve is the combination of S_f for quantities greater than x_1 and the domestic supply function (S_d) for quantities less than x_1 . Without intervention, the equilibrium price is P_w , the intersection of the supply and domestic

Figure 2 Welfare Costs of SPS NTB with Perfectly Competitive Markets



demand (D_d) functions. Total demand is x_4 of which x_1x_4 is imported and ox_1 is domestically produced. Now consider the effect of a tariff that increases foreign costs asymmetrically and causes a resultant price of $p_r = (1 + t)p_w$. Total demand falls to x_3 with a decline in imports to x_2x_3 and a rise in domestic production to ox_2 . The loss in (domestic) consumer surplus is the area P_rabp_w of which P_wefp_r is captured by domestic firms as producer surplus. Further the shaded area $acdf$ is raised as tariff revenue. The overall welfare loss is the combined triangular areas $abc+def$ (Hillman, 1991).

Conversely, consider the effect of a quota that leads to the same level of imports x_2x_3 , increasing domestic output to ox_2 and reducing total demand to x_3 as the price rises to p_r . Now the area $acdf$ represents a rent for foreign producers if they receive a premium above their marginal cost. However, given a perfectly competitive auction of the quota rights, the domestic government can capture these rents making the welfare effect of the quota identical to that of the tariff. Thus the result that the two policy tools are equivalent for an equally restricted quantity and no quality change.

Once nontraditional forms of intervention such as SPS regulations are considered the analysis shifts. If the SPS regulation asymmetrically increases the compliance and trade transaction costs of foreign companies, it will have a tariffification effect (t) but no tariff revenues are collected by government.¹ A reduction in imports due to the cost effect occurs with a resultant reduction in consumer surplus by the same area as with a tariff of p_rabp_w and an increase in producer surplus of p_wefp_r . However the overall welfare loss of the tariff effect barrier is now the larger area $abef$, which is greater than the tariff loss by the uncollected tariff revenue area $acdf$.

Similarly, consider a quota-effect barrier resulting from SPS regulation that restricts the quantity of imports, again constructed to result in the same level of imports of a constant quality. An example is an unnecessarily intrusive examination of each import shipment to see if it meets the domestic standard, which results in a significant backlog of imports and a decrease in their quantity. If the testing does not increase foreign costs, successful importers can gain positive profits from the supply restriction. In this case, there is no sale of import quotas by government and the welfare losses are again greater than in the non-SPS quota case. The two classes of SPS NTB are still equivalent when one considers only their quantity effect.

The SPS case has an unambiguously lower domestic welfare by the area $acdf$ than the classic tariff/quota case. This difference represents the additional cost incurred by the foreign producers to comply with the SPS regulation (Hillman, 1991) or the effects of a quota like barrier to foreign products. Thus, an asymmetric cost increase for foreign exporters is evidence of an additional domestic welfare loss from an NTB arising from SPS regulation. Welfare analysis of SPS NTB requires a comparative analysis that focuses on the actual effects of the regime.²

Rodriguez (1979) and Baldwin (1984) discuss a further consideration in distinguishing the results of tariff-effect barriers based on whether the cost increase acts more like an

¹ Other transaction costs such as monitoring, surveillance, information gathering, and administration costs can also be raised or lowered by an SPS regime (Ndayisenga and Kinsey, 1994).

² Similar suggestions are made by Sumner and Lee (1997) who present an equilibrium displacement model adapted to consider SPS NTBs.

ad valorem tariff, a specific tariff, or a composite of the two. An ad valorem tariff based on the final price of the good does not discriminate between quality levels because it is an equal mark-up for goods of all forms. Conversely, a specific tariff (or composite with a significant specific component) is more like a quota-effect barrier, with a bias toward higher quality imports. Other SPS regulations can have an effect more like a quantitative restriction or quota. With a quota effect barrier, increases above the minimum standards may occur in some or all of the quality attributes (e.g., safety), while the quantity traded remains at the quota-effect level. Therefore analysis of SPS regulation must examine both quantity and quality changes.

The equivalence of tariffs and quotas, or their more complex SPS regime counterparts, has been shown not to hold in several circumstances. These include: when there is an imperfectly competitive market structure for either the foreign or domestic firms; certain general equilibrium conditions exist relating to the elasticity of the foreign trade offer curve apply; the allocation process for the quotas (or queuing system for the quota-effect regime) is not perfectly competitive; quality is modelled in the form of product attributes contributing to the total services supplied by the goods; some form of market uncertainty exists; or trading partners retaliate in response to the imposition of tariffs or quotas in differing manners (e.g., if other countries cannot distinguish the trade effect of national-level quality regulation quickly enough). Each of these conditions occur to some degree in most international markets for SPS attributes. A policy level test that focuses on relative compliance costs offers a road map for attacking this complexity.

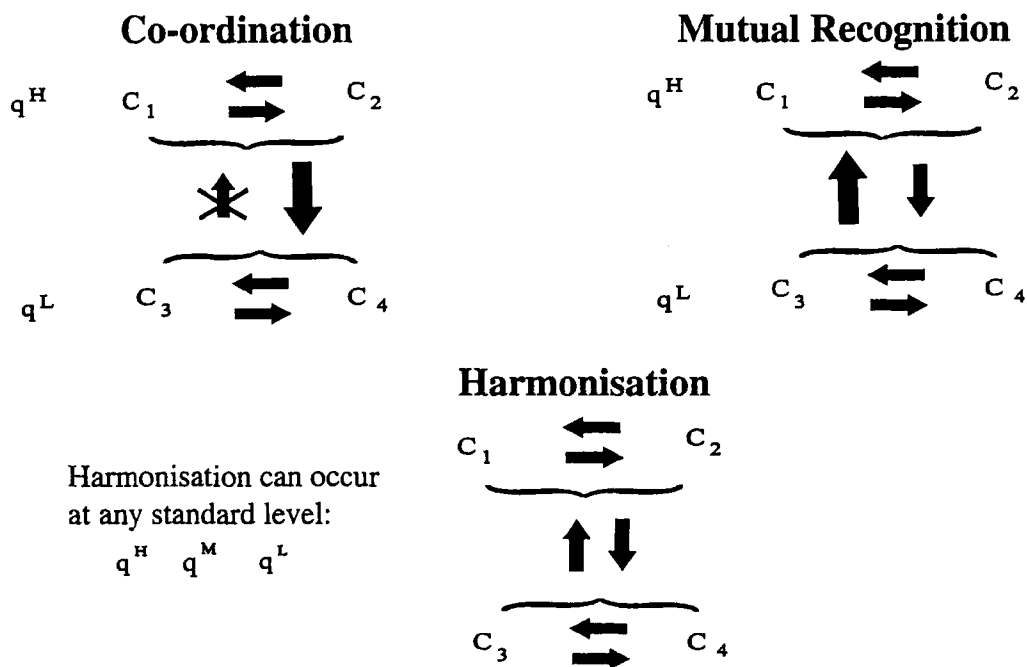
4. Incorporating Rapprochement Levels into the Analysis of SPS NTBs

Recall that under current trade agreements the level of regulatory rapprochement reached by trading partners or world standards bodies has an important impact on whether an SPS regime will be considered to be an illegitimate NTB and on how disputes will be managed. Under the GATT SPS Agreement, for example, for the science level test the Codex, IPPC, and OIE are recognised as the premier standard setting bodies to be referred to in judging a country's SPS regime. For the policy level test, rapprochement, or lack thereof, has very direct impacts on trade flows and relative compliance costs. Under weaker forms of rapprochement, trade flows are in imperfectly substitutable goods. At the coordination level of rapprochement, trade may be one way or intra-industry trade (IIT) depending upon relative SPS standards. In comparison, stronger forms of rapprochement such as mutual recognition and harmonization usually facilitate IIT.

First, consider the coordination level of rapprochement. A four country (C_1 - C_4) example is shown in Figure 3 to highlight likely trade flows. One-way trade is feasible from the high standard (q^H) countries (C_1 and C_2) to the low standard (q^L) countries (C_3 and C_4). An SPS NTB is likely to block trade in the reverse direction. IIT can occur between countries with similar standards, for example between C_1 and C_2 or C_3 and C_4 .

Co-ordination rapprochement efforts often attempt gradually to reduce the differences between national-level standards. An example would be movement toward adoption and implementation of a similar Codex-based food safety standard. How this occurs has important effects on changes in food quality. For example, differences between

Figure 3 The Impacts of Rapprochement Efforts on Trade Flows and Standards



The arrows suggest the trade flows with the larger arrows indicating the dominant direction of trade.

countries, such as C_1 and C_4 could be narrowed by the countries adopting new SPS standards of $q^{H'} < q^H$ and $q^{L'} > q^L$. While this is likely to affect costs and possibly trade volumes, the pattern is likely to be maintained with product only moving from the high to low standard country. Indeed this trade may be facilitated by a reduction in compliance costs for C_1 due to $q^{H'} < q^H$. Why would a low standard country engage in this standard increasing activity if it has no export benefit? It may wish to increase the SPS standard for its direct domestic (e.g., public health) benefits and to better satisfy domestic consumer demand for product variety. In addition, a longer-run dynamic of sequential strengthening of rapprochement efforts may be at work. Low standard countries may demonstrate their intent to strengthen food controls as a first step that would eventually allow them to sell in high standard countries.

In contrast, mutual recognition, for example as applied within the EU for certain product attributes, promotes trade regardless of the quality standards in the source country. The predominant direction of this trade (the larger arrows in Figure 3) based on production costs is from countries with low standards to those with high standards. A change in SPS standards may affect the volume of imports and exports. However, compared to co-ordination, mutual recognition offers more opportunity for IIT.

Harmonisation efforts are more difficult to characterise. Three scenarios address the range of likely cases when countries move from weaker forms of rapprochement to

harmonisation.¹ One case has an escalation of standards to the highest level observed before harmonisation (q^H), while another has a reduction in standards to the lowest common denominator (q^L), possibly as a result of competitive deregulation. Each of these scenarios facilitates IIT compared to the pre-harmonisation scenario. It is also possible to consider a generalised case where a medium level of the SPS standard (e.g., $q^H > q^M > q^L$) is chosen, also with an increased potential for IIT. However this requires all countries to change their standards. In practice, with multiple countries there are likely to be a range of standards from low to high greatly increasing the number of potential rapprochement strategies.

A clear characterisation of the level of rapprochement between trading partners is essential to the policy level analysis of SPS regimes as NTBs because of its impacts on costs. Because firms are concerned with all aspects of a product's quality, a strong level of rapprochement for a limited range of quality attributes may not facilitate trade if it does not address key differences in national-level regulations and enforcement. The actual level of rapprochement may be defined as the minimum of all the regulatory rapprochement efforts applied to each of the attribute subsets for a product. Given the historically weaker levels of regulatory and enforcement rapprochement accomplished for SPS attributes, the overall rapprochement environment will most often be constrained by the level attained in the SPS component of a trade agreement or relationship.

The operationalisation and measurement of rapprochement levels in empirical research is in its infancy. Studies of factors influencing trade patterns tend to include the rapprochement level as a dummy variable representing membership in a trading bloc or 'similarity' between countries (Hooker and Caswell, 1996, see chapters in Henneberry, 1997). This approach is too rudimentary for use in analysing SPS regimes as NTBs. As a first step in this analysis, the rapprochement level can be operationalised as a continuous scale from 0 to 1, with 0 representing no rapprochement and 1 representing full harmonisation. Compliance cost differentials between domestic and foreign firms under SPS regimes can then be used to measure the degree of regulatory rapprochement. Recall that the tariffication or cost effect associated with an SPS NTB is proportional to the domestic welfare loss. The compliance cost (CC) differential therefore links the conceptual notion of a tariffication effect to the institutional structure of rapprochement efforts.

All else equal, cost differentials are theoretically zero for harmonisation, the strongest level of rapprochement. Policy level analysis of SPS regimes would be unnecessary because disputes would not arise. For other SPS regimes, a simple proxy measure of the level of rapprochement is the ratio of compliance costs between foreign and domestic suppliers:

$$CCR + \frac{CC^D}{CC^F} \quad (1)$$

¹ Other scenarios are possible with the resulting standards below q^L to promote trade via cost reductions or above q^H to use rapprochement to stimulate increases in the SPS standard.

where CCR is the compliance cost ratio, CC^D is the compliance cost for domestic suppliers, and CC^F is the compliance cost for foreign suppliers. In the policy test of SPS as NTBs, the analysis would normally involve cases where $CC^F \geq CC^D$. The smaller the CCR the larger the differential in compliance costs between domestic and foreign suppliers. The CCR is a direct first tool to be used in the policy test to determine if an SPS regime is an illegitimate NTB. The smaller the CCR the more likely the SPS regime is illegitimate. How large a differential is necessary to generate a trade dispute depends on the trade flow. Small differentials in larger markets generate more disputes than large differentials in smaller markets.

The existence of a CC differential is a tool to be used in a policy level test of SPS regimes as illegitimate NTBs. However, even where SPS regimes do not discriminate against foreign suppliers, compliance costs may not be identical across countries because factors such as economies of scale, capital investment, labour costs, and location specific costs differ. The CCR measure should be used net of such differences. Interestingly, this measure focuses on cases where $CC_D < CC_F$ due to protection afforded by an SPS NTB. This is the opposite of the analysis for dumping or countervailing duties where measures analogous to $CC_D > CC_F$ are evidence of subsidies or other forms of preferential treatment given to producers by their government for foreign sales.

5. Conclusion

Under recent trade agreements, a two part test is used to evaluate whether an SPS regulatory regime is an illegitimate non-tariff barrier to trade. The science part of the test is more clear cut in that an SPS standard will pass the test if it conforms to international standards or the country can provide an acceptable risk assessment to support it. If the science test is passed, the analysis moves on to the less clear cut policy test. This test focuses on the choice of regulatory regimes that achieve the SPS goal while having the smallest impact on international trade.

We argue that operationalising the policy test requires analysis of how the SPS regime affects trade flows through differences in compliance costs, which in turn depend on the level of regulatory rapprochement between trading partners. This type of policy test is useful in two areas of trade facilitation and management. First, a country's initial selection among alternative risk management strategies to meet SPS goals should incorporate consideration of the potential compliance cost differentials it may generate. Under current agreements, nations are responsible for jointly considering the domestic and foreign impacts of SPS measures but have little guidance on how to coordinate the science and policy tests of their regulatory choices. Second, where disputes arise over the legitimacy of an SPS regime a clear measure of differential compliance costs plays an important role in evaluating whether the regime is an illegitimate non-tariff barrier to trade.

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