
Agriculture in the WTO

THE ROLE OF PRODUCT ATTRIBUTES IN THE AGRICULTURAL NEGOTIATIONS



Commissioned Paper Number 17

**The International Agricultural Trade
Research Consortium**

May 2001

The Role of Product Attributes in the Agricultural Negotiations

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The International Agricultural Trade Research Consortium (IATRC) is an organization of approximately 160 economists from 15 different countries, interested in research, policy analysis, and current developments in international agricultural trade.

The Role of Product Attributes in the Agricultural Negotiations
St. Paul, Minnesota: University of Minnesota, Department of Applied
Economics, International Agricultural Trade Research Consortium

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International Agricultural Trade Research Consortium's web site:
<http://www.umn.edu/iatrc>

This volume contains information which was presented at an
International Agricultural Trade Research Consortium
Annual Membership Meeting, which was held May 18-20, 2001
In Washington, DC.

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WTO Documents

Numerous WTO documents, including negotiating proposals, dispute settlement reports, and country submissions to various WTO committees, were consulted during the preparation of this commissioned paper. These sources are indicated in the paper by their WTO document number (e.g., G/SPS/W/92). All of these documents can be downloaded from the WTO's document dissemination facility located at <http://www.wto.org>

Acknowledgements

The authors would like to thank David Skully, Praveen Dixit and Tim Josling for their review of earlier drafts of the paper. We also thank our discussants, Alan Swinbank and Sarah Fogarty, for their helpful comments. The assistance provided by Dot Wnorowski in the production of this paper is also gratefully acknowledged.

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Glossary

- ANZFA**—Australia New Zealand Food Authority
- ANZFSC**—Australia New Zealand Food Standards Council
- AoA**—Agreement on Agriculture
- APHIS**—Animal Plant Health Inspection Service
- BSE**—Bovine spongiform encephalopathy
- CODEX**—Codex Alimentarius Commission
- DSB**—Dispute Settlement Body
- EPA**—Environmental Protection Agency
- FAO**—Food and Agricultural Organization
- FDA**—Food and Drug Administration
- FMD**—Foot and mouth disease
- FFDCA**—Federal Food, Drug, and Cosmetic Act
- GATT**—General Agreement on Tariffs and Trade
- GMO**—Genetically Modified Organisms
- IPPC**—International Plant Protection Convention
- MRA**—Mutual Recognition Agreement
- OECD**—Organisation for Economic Cooperation and Development
- OIE**—International Organization of Epizootics
- PDO**—Product with Designation of Origin
- PGI**—Product with Geographical Indications

SIDS—Small Island Developing States

SPS Agreement—Agreement on the Application of Sanitary and Phytosanitary Measures

TBT Agreement—Technical Barrier to Trade Agreement

TRIPS Agreement—Trade-Related Intellectual Property Rights Agreement

UR—Uruguay Round

WHO—World Health Organization

WTO—World Trade Organization

WTO Negotiations on Agriculture: Progress and Challenges on Product Attribute Regulations

Summary

This IATRC commissioned paper reviews WTO rules about product attribute regulations and evaluates the prospects for resolution of some of the current and potential disagreements over attribute-based trade restrictions. Rules for the regulation of agricultural product attributes were presumably settled during the last round of multilateral trade negotiations. A new SPS Agreement established more specific disciplines for the regulation of safety attributes; the GATT and TBT Agreements set out revised rules for the regulation of other quality attributes; and the new TRIPS Agreement included provisions protecting the use of geographical indicators which are frequently used to differentiate agricultural products in the marketplace. However, interest in revisiting the rules for product attribute regulation in the ongoing agriculture negotiations has grown dramatically in recent months as government seek additional latitude, discipline, or clarity about their multilateral commitments in the wake of events which have disrupted the consensus achieved in the Uruguay Round.

The introduction provides an overview of the WTO disciplines, the disputes related to their enforcement, and the negotiating proposals that urge their revision. The second section of the paper reviews the SPS Agreement, examines the impact it has had on the world trading system, and considers whether initiatives set out in the submissions will compromise or improve it. The third section of the paper turns to the effectiveness of the rules set out by the TBT and TRIPS Agreements for the use of standards and labeling in the regulation of other quality attributes including nutritional, sensory, functional, and process characteristics. Issues in the regulation of genetically modified products are discussed in the fourth section of the paper. The fifth section examines the impact of product attribute regulations on developing countries and evaluates the mechanisms set out in the Uruguay Round agreements that were intended to foster the integration of these countries into the world economy. The paper ends with a summary of the analysis, and conclusions about the potential for changes in WTO rules on product attribute regulations that further the objective of increasing welfare-enhancing trade.

Regulation of Safety and Other Quality Attributes

The principles and mechanisms of the SPS Agreement have been more successful in resolving differences over animal and plant health regulations than in resolving disputes over food safety measures, where a tension between consumer protection and consumer gains from trade is evident. While a consensus exists around the fundamental requirement of the SPS agreement that food safety measures be based on scientific risk assessments, there are varying views on other risk management principles—in short, how much latitude is implied by the words “based on?” The EU, Japan, Switzerland, and other countries favor explicit recognition of the legitimacy of the *precautionary principle* and “other legitimate factors” in SPS policies, while countries such as the United States, Canada, Australia and New Zealand favor current WTO rules. One option for conflict resolution would be to allow greater flexibility for countries to set standards—when, for example, consumers place “inconsistent” valuations on risks from different sources, or perceive unknown risks as more important—but only when allowing greater market

access. Such an arrangement could break the perceived link between farm income support and stringent SPS measures, which are both positively correlated with income.

The impact of the TBT Agreement on the regulation of other quality attributes of agricultural products is more difficult to ascertain: no dispute panel reports (related to food or any other products) have been decided on the basis of this agreement. Yet despite current uncertainties about the rules, there is substantial evidence of countries' increased interest in quality standards and labeling to achieve a wide array of objectives. Although some standards primarily address producers' interests (such as compatibility standards that reduce transactions costs in supply chains), most recent regulatory activity appears to be directed at addressing consumer concerns. In particular, the concept of "a consumer's right to know" has recently spurred initiatives in some countries to require labeling of process and production methods for agricultural products. It is anticipated that labeling will be more widely used for a greater range of purposes in coming years, and as a result, the TBT Agreement will have a greater role to play in setting the rules for international trade in food products.

GMO Regulation

An examination of the issues and evidence related to the regulation of GM products since the conclusion of the Uruguay Round provides a prism on the challenges to the multilateral trading system arising from product attribute regulations. In net exporting countries such as the United States and Canada, the doctrine of *substantial equivalence* has in general led to speedier approvals for GM products and the adoption of voluntary labeling schemes. In net importing countries such as the EU and Japan, the *precautionary principle* has been invoked to justify longer (or suspended) approval processes and mandatory labeling regimes. The economic costs of the divergence in GMO policy regimes could be high, especially for developing countries that depend on revenues from exports to developed countries. If positions harden and a rigid bifurcation of regulatory regimes emerges less than ten years after GMO crop production took off in the mid 1990s, it could set back agricultural trade liberalization in much the way that exclusion of agriculture from the GATT postponed reform by nearly half a century. The outcome of any discussions about GM regulation in the current negotiations may have important implications for other systemic issues before the WTO, including the predictability of access to markets for products of novel technologies in the future, and labeling production and processing methods for food products.

Developing Country Perspectives

Several negotiating proposals tabled by developing countries indicated frustration with the increasingly exigent standards faced by their exports, the new obligations to justify their own product attribute regimes, or both. To the extent that regulatory authorities adopt stringent regimes without full consideration of their costs, those costs (but few benefits) may fall hard on developing countries. To the extent that product standards are market-demand driven, the markets will squeeze out inefficient firms, regardless of location. Private resources will be forthcoming to meet the standards when profitable opportunities can be captured, but such investments are often contingent on adequate public quarantine, testing, and/or certification services. The case for increased technical assistance to developing countries is therefore clear. It is doubtful that special and differential treatment, which provides an easy way to postpone

necessary investments in regulatory infrastructure, is in the long term interests of developing countries.

Additional Clarity, Discipline or Latitude in Current Rules?

With all of these issues at play, the current round of agriculture negotiations can be characterized as one in which governments are seeking additional latitude, discipline or clarity with respect to their multilateral commitments regarding product attribute regulations. The case for additional clarity about the existing legal obligations is strong. Simply dismissing as protectionist any initiative to discuss risk management principles, the regulation of production and processing methods, or labeling regimes not only hardens opposition to further trade liberalization among some constituency groups, it also squanders an important opportunity to examine how trade can contribute to providing consumers with desired products in the most cost-effective manner. We argue that the whole attributes/trade debate could constructively be turned to shift the focus from expanded trade as a *threat* to desired product attributes to expanded trade as a resource efficient means to *achieve* those attributes.

Contrary to the case for additional clarity, proposals that seek additional latitude for policy interventions may obfuscate the language of the WTO disciplines on product attribute regulations. To the extent that the negotiations provide more latitude for countries to respond to revealed or perceived domestic demands for product standards with regulatory decision making, the goal of the WTO should be to ensure that this latitude does not limit trade. Some of the calls for additional regulatory latitude appear to be designed with other social goals in mind, and to this extent are disingenuous when cast as questions of regulatory policy related to product attributes.

The most difficult of the three issues to address is whether stronger disciplines on product attribute regulations should be sought in the WTO agreements through the current negotiations. There is a consensus to not formally reopen the SPS and TBT agreements, but language could be included in a new agriculture agreement that would strengthen those aspects of the WTO rules that require scientific risk assessments, limit deviations from international standards, or otherwise tighten the criteria for a legitimate product attribute regulation.

The problems with writing additional disciplines into the WTO rules are at least twofold. First, it is difficult (and usually inadvisable) to try to write general language to try to secure specific outcomes for specific cases. Second, debates over product attribute regulations that affect trade is usually part of a larger contest over all regulation. Within this larger debate, economics recommends the merit of market-based solutions over rigid command and control rules, careful assessments of the costs of regulation, and weighing the costs against the benefits that are derived. Because product attribute regulations in many instances address market failures in order to achieve greater consumer welfare, it is one area where consumers do not gain unambiguously from trade. This creates a different political economy for WTO negotiations: tighter disciplines on product attribute regulation will meet with political resistance from some consumer groups, in addition to protected producers. The integration of domestic and trade policies has been recognized under the WTO Agreement on Agriculture, and the legitimacy of the WTO in setting limits on domestic policy regimes has been established. These principles also

apply to product attribute regulations. But it is unrealistic to expect WTO disciplines alone to resolve the broader debate over if, when, and how governments should regulate.

Acknowledging these limitations about what can be accomplished in the current international negotiations is not to preclude the WTO from serving a useful role in disciplining product attribute regulation multilaterally. The effort to secure global integration of agricultural markets can limit regulatory excesses when those excesses blatantly restrict trade. This will pressure countries to weigh benefits and costs more carefully than they otherwise would—and the WTO provides an institutional setting for market participants likely to bear the costs to be heard. This is exactly analogous with the role of the WTO in traditional trade policy. Odds seem at least even for as much progress in the next decade on limiting product attribute restrictions on trade as for progress reducing other agricultural trade barriers.

Introduction

Since the conclusion of the Uruguay Round, the adequacy of multilateral rules for measures that regulate product attributes has been called into question by new production technologies, new disease outbreaks, and new constituents' demands for agricultural regulations. During the last round, countries negotiated four agreements – the revised GATT and TBT Agreements and the new SPS and TRIPS Agreements – which increased both the scope and the specificity of disciplines on the application of safety and quality regulations. Re-negotiation of these four agreements was not foreseen as part of the built-in agenda for the Agreement on Agriculture negotiations beginning in 2000, nor did any country formally propose reopening them during interim reviews by the relevant WTO committees. Yet interest in revisiting the rules for product attribute regulation in the ongoing agriculture negotiations has grown dramatically in recent months as governments seek additional latitude, discipline, or clarity about their multilateral commitments in the wake of events which have disrupted the consensus achieved in the Uruguay Round.

Several of the events propelling the renewed interest in product attribute regulations are well known. The emergence of genetically modified products in agricultural markets and a series of BSE and FMD disease outbreaks in Europe have led to calls for the agreements to give governments more allowance in regulating risks. Greater accommodation of government efforts to respond to a range of concerns unrelated to safety is also urged by consumer and environmental advocates. These new *demandeurs* have been vocal about the need for the WTO to explicitly recognize the legitimacy of government regulations that either ensure specific attributes or information about such attributes. They advance this approach as an enlightened strategy for the entry of agriculture into the “century of quality, not quantity.”

Net agricultural exporters have pointed out that if such initiatives are pursued, they could diminish previously negotiated gains in market access if advocated measures either bar or hinder entry for certain products. The exporting countries, including a growing coalition of developing countries, instead favor commitments that more explicitly delineate acceptable trade-restricting government responses to (potentially malleable) consumer concerns. Their proposals reflect frustration with the current rules, and with WTO jurisprudence that has interpreted these rules, which in their view have sometimes failed to forestall the unjustified use of measures to stigmatize products or limit market access. Thus, six years after the issues related to product attribute regulation were presumably resolved by the Uruguay Round agreements, the proposals in the current negotiations demonstrate a remarkable divergence of views over appropriate rules to determine how governments regulate safety or differentiate products in international markets.

Product Attribute Commitments

Product attribute measures, when legitimate, correct market failures.¹ Measures of greatest importance to trade in agricultural products include sanitary and phytosanitary (SPS)

¹ This paper only addresses regulatory measures. Fiscal measures that may be used to correct market failures are covered in discussion of the “green box” category in the commissioned paper on domestic support policies.

measures, food standards, and food labeling regulations. Such measures provide public goods (in terms of jointness of consumption), and the economic rationale for some level of government intervention is clear. Quarantine measures can prevent the entry and spread of animal or plant health hazards more efficiently than individual producer efforts, and mandatory shelf-life labels for domestic and imported food can assure consumers of desired levels of freshness without requiring prohibitive search costs. In other cases, standards are club goods which are excludable but not rival (e.g., wine's appellation contrôlée) so that producers can privately appropriate the surplus generated by their application. Product attribute regulations will reflect each country's preferences, endowments, and technological possibilities; it follows that there is no presumption that such measures should be the same among nations. Even countries with similar preferences will have different regulations, and differences in their measures can and do disrupt trade.

The negotiators of the original GATT recognized that the strategic application of technical regulations based on product attributes could be used by countries to the disadvantage of their trading partners, resulting in inefficient market allocations and trade flows. The original GATT, the Tokyo Round TBT Agreement and the Uruguay Round agreements set forth rules for these regulations designed to limit such abuses. The coverage of the four Uruguay Round agreements is summarized in Figure 1.1, and the specific disciplines of each of the current agreements are discussed and analyzed in the subsequent sections of this commissioned paper.

There are three general points of distinction between the policy reforms indicated in these agreements and those of the Agreement on Agriculture. First, the capacity of the product attribute measures to increase welfare is universally recognized: multilateral rules aim to distinguish between legitimate and illegitimate uses of these measures, not to eventually eliminate them. Second, countries were obligated to bring each measure into compliance with the rules from the day they ratified the Uruguay Round agreements; hence, policy reforms were not phased in according to a schedule of negotiated concessions (as they are for tariffs, for example) and there is no provision for delaying compliance for measures related to sensitive sectors.² Third, required reforms under these agreements are more modest than eventually envisioned for production- and trade-distorting measures that fall outside of the Agreement on Agriculture's green box: strict compliance with the agreements that discipline product attribute regulations leaves scope for importing countries to maintain or adopt trade-restrictive measures even when these measures fail to increase domestic welfare (Roberts, 2000).

To see this, we present a diagram (adapted from Snape and Orden, 2001) which illustrates the WTO-legal versus the benefit-cost approaches to policy decisions about trade of products that may entail adverse consequences, such as SPS risks or welfare losses related to the consumption of products deemed somehow "inferior." The horizontal axis of Figure 1.2 measures the dollar value of the risk (weighted by probabilities) or cost of an undesirable attribute resulting from trading of a product. The vertical axis of Figure 1.2 shows the other net benefit from importing a product. These benefits are the traditional gains from trade. For any given product, the expenses of treatment, testing, or certification enter into determining both

² Except for developing countries which were given until 2000 to meet certain requirements (longer for certain aspects of TRIPS).

Figure 1.1. GATT Legal Infrastructure for Product Attribute Measures

Prior to the Uruguay Round

Measures	All Objectives
	Technical regulations
	Standards
	Conformity assessment procedures
	All other measures

Measures covered by the TBT Agreement
 Measures covered by the GATT

After the Uruguay Round

Objectives		
Protection of plant, animal, and human life and health within the territory of the Member	All other objectives	Protection of intellectual property
Measures	Technical regulations (including labeling)	Geographical indicators
	Standards	
	Conformity assessment procedures	
	All other measures	
	All measures	

SPS Agreement GATT 1994
 TBT Agreement TRIPS Agreement

the costs from risk/adverse consequences and the other net benefit.

With both the adverse consequences and the other net benefit shown in dollar terms (and with consistent time discounting), a 45-degree line from the origin indicates the equating of the expected positive and negative effects of trade. Based on economic benefit-cost criteria, under a neutral policy attitude toward risk, all products with coordinates that are located above the 45-degree line (after treatment, testing or certification) would be imported.³ Those products that cannot be raised above the line would not be imported.

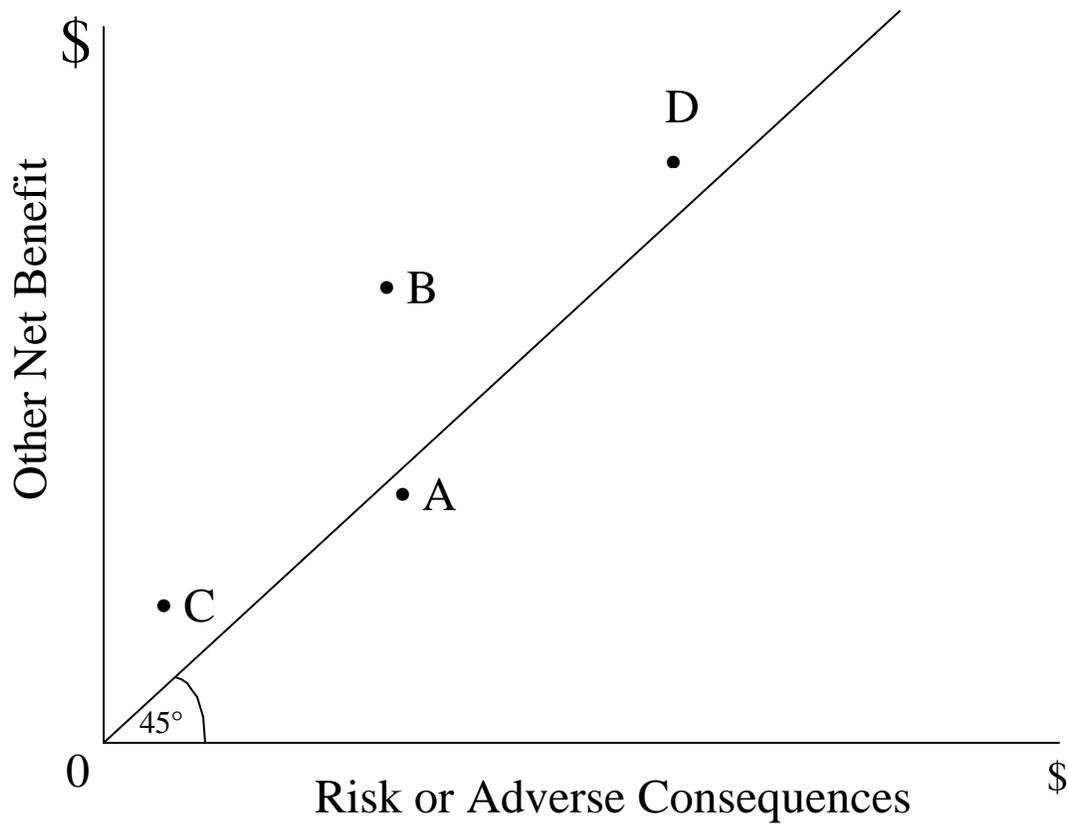
Most of the general rules of the Agreement on Agriculture can be viewed as focusing on the vertical axis of Figure 1.2. For products recognized as posing no risk or meeting commonly recognized standards of the exporter and importer, the coordinates lie on the vertical axis and are above the 45-degree line (at the origin). The objective for these products is to facilitate the reduction of trade and domestic support policies that distort markets. Leaving aside large-country optimal tariff and similar arguments, reduction of these trade barriers and subsidies is in the national economic interest of the individual member country. But for various political economy reasons, countries often fail to remove trade barriers and subsidies unilaterally, with detrimental effects on their trade partners. The Agreement on Agriculture is the institutional response designed to facilitate mutually beneficial trade barrier and subsidy reductions. The underlying aim is to achieve the gains from trade by facilitating the international movement of products that lie on the vertical axis of Figure 1.2.

The WTO provisions that discipline product attribute regulations can be viewed as predominantly concerned with the horizontal rather than vertical axis of the figure. The primary aim is to bind countries' policies away from the origin: if no legitimate objective related to risk or adverse consequences can be substantiated, then product attribute policies are not to be established to limit trade. A classic nonagricultural example of such a case under the Tokyo Round TBT Agreement is provided by the 1986 Japanese ski standards dispute. In this case, American and European exporters successfully argued that evidence did not support a Japanese claim that imported skis could not safely function on the snow in Japan, and the case was settled in formal consultations before reaching a panel. However, if the regulation under consideration is judged to fulfill a legitimate objective with respect to risk or adverse consequences, then the WTO agreements allow restrictions on trade. Even if the negative consequences are very small (but non-zero) each country retains the sovereign right to set its own regulatory standards, subject to WTO rules on national treatment and nondiscrimination.

The second general criteria for regulatory measures set out in the WTO agreements is that they ought to be the least trade-restrictive means for achieving a legitimate objective. This implies that a dispute panel can recommend an alternative to an existing regulation if the alternative is "significantly less trade-distorting" and "technically and economically feasible." For example, suppose trade of a product is prohibited because imports under certain regulations

³ For a neutral policy attitude to risk, this line shows the boundary of positive trade-off of the benefits and risks of imports of particular products. A risk-averse attitude would be shown by a steeper curve; risk-loving policy by a flatter one.

Figure 1.2. Risk-benefit Trade-offs of Different Regulatory Regimes



Adapted from Snape and Orden, 2001

would have coordinates A in Figure 1.2, and the level of risk or adverse consequences at A is judged by the importing country to be too high. An exporting country could argue that an alternative regulatory regime reduces the dollar value of adverse consequences of trade to a level the importer could accept while allowing some importation to occur (resulting in movement from A to C). Conversely, if some trade is allowed because the level of risk at A is judged acceptable under certain regulations, a panel could recommend an alternative regime that increases the level of trade and its net benefits while maintaining the same level of protection from risk or adverse consequences (resulting in a move from A to B). But a WTO panel would not recommend adoption of a regulatory option producing higher other net benefits from trade, but involving greater risks (resulting in D) if a country deems the level of risk at D higher than it is willing to accept. Some countries may unilaterally choose regulations resulting in effects shown by D, but decisions involving such trade-offs of benefits versus risk or adverse consequences are reserved to governments by the national sovereignty principle reiterated throughout the WTO agreements.

Agricultural Product Attribute Dispute Cases

The eighteen disputes related to regulations affecting attributes of agricultural products that have been raised in the WTO during 1995-2000 are shown in Table 1.1. These cases suggest that the early WTO rulings, and the demonstration effects of these rulings, have made a contribution to the integrity of the world trading system, despite the limited trade-opening mandate of the agreements on product attributes. The first three agricultural cases to reach the Appellate Body under these agreements involved SPS disputes over products whose coordinates were found to lie exactly on the vertical axis of Figure 1.2; that is, they were found to have no rationale in terms of risk aversion. The measures of concern in each of these cases were imposed by developed countries: the EU in the Hormones case, Australia in the Salmon case, and Japan in the Varietal Testing case. Hence, the dispute cases have shown that the measures of countries with advanced scientific establishments are not immune to challenge. Another 15 product attribute cases and negotiated settlements under the agreements have also been reported. The outcomes of these 18 cases have dispelled any doubt that the WTO agreements create substantial disincentives for the adoption of illegitimate product attribute regulations. Accomplishments under the specific product attribute agreements are reviewed in more detail in the sections of this paper that follow. But a preliminary evaluation of the agreements ought to first recognize that an avalanche of undisciplined regulations *hasn't* occurred since the end of the last round; the intended deterrence effect of the Uruguay Round rules must be judged a success.

Table 1.1. Disputes on Regulations Affecting Attributes of Agricultural Products, 1995 - 2000

Case Number (s)	Issue	Agreement(s) Referenced in Dispute Proceedings ¹	Complainant(s) (<i>Co-complainants</i>)	Status
DS 3/41	Korea—produce inspection	GATT, SPS, TBT, AoA	United States	Pending
DS 5	Korea—shelf-life requirements	GATT, SPS, TBT, AoA	United States	Settled
DS7/12/14	EC—trade description of scallops	GATT, TBT	Canada, Peru, Chile	Settled
DS 18/21	Australia—ban on salmon imports	SPS	Canada (<i>EC, India, Norway, US</i>)	Panel and Appellate Body ruled against Australia
DS 20	Korea—bottled water	GATT, SPS, TBT	Canada	Settled
DS 26/49	EC—ban on use of hormones	SPS	United States and Canada (<i>Australia, New Zealand, Norway</i>)	Panel and Appellate Body ruled against EC
DS 58/61	US—import prohibition on certain shrimp and shrimp products	GATT, TBT	India, Malaysia, Pakistan, Thailand, Philippines (<i>Australia, Colombia, the EC, Philippines, Singapore, Hong Kong, India, Guatemala, Mexico, Japan, Nigeria and Sri Lanka</i>)	Pending ²
DS 72	EC—measures on butter products	GATT, TBT, Import Licensing	New Zealand (<i>US</i>)	Settled
DS 76	Japan—varietal testing requirements	SPS	United States (<i>Brazil, EC, Hungary</i>)	Panel and Appellate Body ruled against Japan
DS 96/1	India—quantitative restrictions in imports of agricultural, textile, and industrial products	GATT, AoA, SPS	EC	Settled
DS 100	US—poultry requirements	GATT, SPS, TBT	EC	Pending
DS 133	Slovakia—dairy product imports and transit of cattle (BSE restrictions)	GATT, SPS, Import Licensing	Switzerland	Pending
DS 134	EC-- restrictions on rice	GATT, Customs Valuation, Import Licensing, TBT, SPS, AoA	India	Pending

Table 1.1. Disputes on Regulations Affecting Attributes of Agricultural Products, 1995 – 2000, continued

Case Number (s)	Issue	Agreement(s) Referenced in Dispute Proceedings ¹	Complainant(s)	Status
DS 137	EC—measures on pine wood nematodes in conifer wood	GATT, SPS, TBT	Canada	Pending
DS 144	US—state restrictions on Canadian trucks	SPS, TBT, AoA, GATT	Canada	Pending
DS 174	EC—protection of trademarks and geographical indications for agricultural products and foodstuffs	TRIPS	United States	Pending
DS 203	Mexico—measures affecting trade in live swine	SPS, AoA, TBT, GATT	United States	Pending
DS 205	Egypt—import prohibition on canned tuna with GM soyoil	GATT, SPS	Thailand	Pending

¹ The listed agreements are those indicated in the request for formal consultations, except in the three cases which have been heard by WTO Panels and the Appellate Body. In these cases only the agreements used by the WTO to judge the disputed measure are cited.

² The Panel and Appellate Body ruled against the United States in November, 1998; the United States notified its regulatory changes to the WTO Dispute Settlement Body (DSB) in January 2000. Malaysia did not view the changes as bringing U.S. measures into compliance with the DSB's recommendations and rulings. In October 2000, the DSB referred the matter back to the original panel at Malaysia's request. Australia, Canada, the EC, Ecuador, India, Japan, Mexico, Pakistan, Thailand and Hong Kong, China reserved their third-party rights to participate in the Panel's proceedings.

Source: WTO (<http://www.wto.org/wto/dispute/bulletin>).

Despite the accomplishments in disciplining product attribute regulations under the WTO agreements, there remain substantial complaints related to the slow pace of policy reform and the regulatory regimes that are being adopted by some countries. In particular, exporters continue to be concerned about the number of regimes that block trade even if the level of risk/adverse consequences is almost nil.⁴ Developing countries often lack the resources to persuade their trading partners to consider imports of products perceived to fit into this category and therefore have been sceptical about the benefits provided by the agreements.

Proposals in the Agriculture Negotiations

Nineteen negotiating proposals sponsored by seventy-four countries have addressed issues related to multilateral rules for product attribute regulation in the first phase of the agriculture negotiations that ended on March 27, 2001. These proposals are summarized in Table 1.2. The proposed modifications have generally been introduced under “non-trade concerns” or “market access” which are both referenced in Article 20 (Continuation of the Reform Process) of the Agreement on Agriculture.

Member countries have recommended taking up four broad issues in their proposals: (1) accommodation of consumer concerns related to food safety, animal welfare, culture, ethics, and the environment; (2) geographical indicators and product labeling; (3) regulation of GMOs; and (4) developing countries’ rights and obligations under the WTO agreements. Thirty-six comments on these proposals round out the WTO debate in the agriculture negotiations to date. The proposals and comments set out positions on both modalities and substance. This leaves scope for countries to agree on one but not the other, as when countries with the same position on geographic indicators disagree over whether the issue should be taken up in the Agreement on Agriculture or the TRIPS Council, or when countries with different views on GMO labeling agree that the subject should be taken up in the agriculture talks.

⁴ To cite but one recent example, one country decided to maintain a ban on imports of bone-in poultry cuts from the United States based on an assessment that shipments posed a risk of three disease introductions in backyard flocks per 100 importation years. Such decisions may be scientifically justifiable, but likely are not economically justifiable.

Table 1.2. Proposals Related to Product Attribute Regulation in the Agricultural Negotiations

Country	Proposals, notes, and discussion papers	Comments
Mexico W/138	SPS measures should only be addressed under the SPS Agreement	
Kenya W/136	All exported products must comply with international standards or with the national requirements of the exporting country to prevent dumping of substandard product in countries without national standards; arbitrary imposition of SPS measures by developed countries have hampered market access opportunities for Kenya	
Democratic Republic of Congo W/136	Developing countries should receive technical and financial assistance for standardization of products	
Nigeria W/130	Members should apply a unified set of international measures that are reflective of the specific constraints of developing countries to eliminate the misuse of SPS measures for protective purposes	
Turkey W/106	Developed countries should consider ways to modify current uses of SPS and TBT which continue to hamper market access for developing countries	
India W/102	Developed countries should not be allowed to use SPS measures for protectionist purposes by prescribing overly stringent trade restrictive SPS measures for denying market access to developing countries	
Norway W/101	WTO policy reform must be undertaken in ways consistent with other relevant multilateral commitments, such as the Convention on Biological Diversity, and accommodate non-trade concerns such as the environment and food safety which vary by country	
CARICOM W/100	The negotiations must deal with non-tariff measures so that unjustified use of technical barriers and SPS measures do not hinder market access	
Korea W/98	GMOs must be addressed because of increasing consumer concerns over food safety, health, environment, and biotechnology. The need for precautionary measures to protect human health and the environment as well as consumers' increasing demand for informed choice should be dealt with in the negotiation	
Small Island Developing States ¹ W/97 Mauritius W/96	Developing countries should: have access to appropriate technology to meet increasingly stringent SPS requirements; receive assistance so they can participate in standard setting bodies; and should be exempt from requirements for a detailed risk assessment when refusing entry of products which threaten biodiversity. Geographical indications should also be extended to a wider range of agricultural products	Hungary states that, even if the issue of GIs is not directly addressed in the current negotiations on agriculture, developments in GI negotiations occurring elsewhere will affect the outcome of the next agreement on agriculture (W/132); Sri Lanka supports the proposal by Mauritius to extend the coverage of GIs to other agricultural products (W124)

¹ SIDS includes Dominica, Jamaica, Mauritius, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, and Trinidad and Tobago.

Table 1.2. Proposals Related to Product Attribute Regulation in the Agricultural Negotiations, continued

Country	Proposals, notes, and discussion papers	Comments
<p>Switzerland W/94</p>	<p>Negotiation on the “three pillars” must occur after agreement has been reached on appropriate instruments to accommodate consumers’ interests which are currently under debate in other WTO bodies (e.g., the TRIPS Council) and other international organizations (e.g., the Convention on Biological Diversity). These issues include: extension of geographical indications to products other than wine and spirits; labeling as a means of informing consumers, <i>inter alia</i>, about production methods (including GMOs), food safety (including the precautionary principle), and measures to promote animal welfare</p>	<p>Bulgaria supports extending the protection of GIs to other products (W/111); Hungary tentatively supports examination of modalities governing the application of the precautionary principle, and seeks a pragmatic approach to the <i>de facto</i> link between the market access negotiations and the issue of geographical indications. (W/132); Mauritius endorses the importance of GI negotiations in the TRIP Council (W/119); Slovenia states that progress in other WTO bodies on the issues identified by Switzerland is a precondition for the agriculture negotiations (W/123) India supports Bulgaria and Switzerland’s position that GIs must be extended to agricultural products beyond wine and spirits (W/33)</p>
<p>Japan W/91</p>	<p>A review should be conducted to examine whether the existing agreements are sufficient to respond to new issues that have emerged since the UR agreements, including GMOs; improving food safety should be examined; labeling of all foods so as to protect consumers should be undertaken, including the labeling of GMOs; appropriate international rules for the labeling of GMOs should be established by Codex</p>	<p>Indonesia states that GMO labeling should not be restricted by WTO rules (W/115); Thailand states that food safety and consumer concerns should be discussed under the SPS and TBT agreements rather than under the AoA (W/126)</p>

Table 1.2. Proposals Related to Product Attribute Regulation in the Agricultural Negotiations, continued

Country	Proposals, notes, and discussion papers	Comments
<p>European Union W/90</p>	<p>The negotiations should: clarify the application of the precautionary principles; ensure that labeling schemes are appropriately covered by the WTO; and ensure that trade liberalization does not undermine efforts to improve the protection of the welfare of animals</p>	<p>Hungary, Albania, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kyrgyz Republic, Latvia, Lithuania, Romania, Slovakia and Slovenia state that the EU's ideas on non-trade concerns should be seriously considered (W/131); Australia does not accept the linkage of these issues to the outcome in the agriculture negotiations (W/109); India states that other fora are more appropriate for discussion of the precautionary principle and some other issues identified by the EU, and that such issues should not dilute the focus on the core issues of the agriculture negotiations (W/114); Malaysia states that market access negotiations should not be clouded by the issues of GIs and labeling (W/118); Mauritius, as a net food-importing country, believe that states that issues related to food safety, including the precautionary principle and participation in international standards setting bodies, are important (W119) Poland strongly supports inclusion of food safety, consumers' concerns and animal welfare in the negotiations (W/128) Thailand states that GIs, labeling, and food safety are not within the scope of the AoA (W/126) Sri Lanka supports the EU's proposal on GIs (W/124)</p>
<p>Cuba, Dominican Republic, El Salvador, Honduras, Kenya, India, Nigeria, Pakistan, Sri Lanka, Uganda, Zimbabwe, and Haiti (W37)</p>	<p>SPS measures continue to block market access; failure to recognize equivalence of measures is a major problem</p>	

Table 1.2. Proposals Related to Product Attribute Regulation in the Agricultural Negotiations, continued

Country	Proposals, notes, and discussion papers	Comments
Barbados, Burundi, Cyprus, Czech Republic, Dominica, Estonia, EC, Fiji, Iceland, Israel, Japan, Korea, Latvia, Liechtenstein, Madagascar, Malta, Mauritania, Mauritius, Mongolia, Norway, Poland, Romania, Saint Lucia, Slovak Republic, Slovenia, Switzerland and Trinidad and Tobago (W/36)	WTO policy reform must account for consumer concerns, thereby linking food production to cultural and/or ethical issues including food safety and quality	
European Union W/19	To ensure that trade does not undermine efforts to improve the protection of animal welfare	Argentina questions the inconsistencies in the EU's proposed animal welfare provisions; rejects any efforts to include support for animal welfare in the blue box; and proposes that this issue be taken up in other international fora (W39) Paraguay states that the agricultural negotiations are not the appropriate forum for the EU's proposal (W47)
European Union W/18	To safeguard food specificity and fair competition, the EU seeks: to prevent the usurpation of names of food and beverages; to ensure that producers are not prevented from the rightful use of denominations; and to establish labeling rules which protect consumers against deception	Argentina notes that consumers' interests would best be promoted by immediate elimination of export subsidies, price subsidies, and tariffs (W/39) Australia states that the EU proposal for additional rules to safeguard "food specificity" overlook existing WTO rules and create the risk of limiting legitimate competition and freedom of choice (W/41) Colombia states that it regards the EU's proposal as protectionist and that animal welfare issues fall outside the scope of the agriculture negotiations (W19) Hungary states that issues related to food quality such as GIs must be addressed to ensure a fair and equitable outcome of the agricultural negotiations (W51) Mauritius states that recognition of GIs is essential (W52)
USA² W/15	Disciplines should be focused to ensure the processes covering trade in products developed through new technologies are transparent, predictable, and timely	

² Comments from the United States which support or oppose the proposals by other members have not been submitted in writing to the WTO Secretariat.

Source: WTO documents in the G/AG/NG/ series.

The proposals that have drawn the most comment are those by the EU, Switzerland, Norway, Japan, and a coalition of twenty-seven countries. These proposals advocate measures that extend beyond labeling to address food safety and other consumer concerns. The EU's proposals advance the most specific policy objectives: to seek clarification of the application of the precautionary principle and to ensure that trade liberalization does not undermine efforts to improve animal welfare. The other proposals demand that WTO policy must account for consumers' interests, including cultural, ethical, environmental, and non-safety concerns in more general terms. These proposals have been tentatively endorsed by Hungary and fully supported by Mauritius, Slovenia, Poland, and a coalition of fourteen Eastern European and FSU countries. Four developing countries (India, Thailand, Malaysia, and Paraguay) oppose these initiatives, stating that discussions related to these issues are not appropriate for the agriculture negotiations. Three other countries expressed their opposition in stronger language: Australia states that it does not accept the linkage of these issues to the outcome of the agriculture negotiations; Colombia states that it regards the EU's proposal as protectionist, and Argentina states that it firmly rejects these proposals, adding that consumers' interests would be best promoted by immediate elimination of export subsidies, price subsidies, and tariffs.

Geographical indicators and labels that signal other attributes are primarily of interest to European countries, but have received support from developing countries as well. Advocacy of the extension of geographical indicators to products other than wine and spirits by the European Union and Switzerland has long been anticipated. Five countries (Mauritius, Sri Lanka, Bulgaria, India, and Hungary) support the objectives of these proposals, but have varying ideas about how to achieve them. Recognition of the legitimacy of mandatory labeling for credence attributes related to animal welfare, the environment, and other consumers concerns was also advanced as an objective of the negotiations by the EU, Switzerland, and Japan.

Four proposals (by the United States, Japan, Korea, and Switzerland) have suggested following up on pre-Seattle initiatives by the United States and Canada to discuss different dimensions of GMO regulation. The U.S. proposal avoids explicit reference to GMOs, but the statement that "[d]isciplines should be focused to ensure the processes covering trade in products developed through new technologies are transparent, predictable and timely" is widely interpreted to include GMOs as one of the "new technologies" of interest. Switzerland's interests in GMOs extend only to labeling: it proposes that negotiations on the "three pillars" of the Agreement on Agriculture occur only *after* the legitimacy of mandatory GMO labeling as well as other consumer issues are agreed. Japan and Korea (with Indonesia's concurrence) urge broader discussion of issues related to GMO regulation, but also endorse rules that allow governments to require labeling of GMOs.

More proposals have been submitted on the issue of developing countries and the SPS Agreement than any other product attribute topic. These proposals have been submitted by the developing countries themselves, including Mexico, Kenya, Democratic Republic of Congo, Nigeria, Turkey, India, Mauritius, twelve CARICOM countries, twelve developing countries from Africa, Central America and the Caribbean, and seven Small Island Developing States (SIDS). Mexico is alone in proposing that SPS measures be addressed solely under the SPS Agreement; all other submissions propose to take up issues related to developing countries' rights and obligations under the SPS Agreement within the current negotiations. Many proposals

urge facilitation of developing countries' access to developed country markets by various means, such as the adoption of international standards that reflect the constraints of developing countries (India) or mandatory technical assistance (Mauritius). Other proposals request assistance with import regulations: the SIDS propose flexibility on the obligation to base import measures on scientific risk assessments, the Democratic Republic of Congo asks for technical and financial assistance, and Kenya suggests provisions to prevent “dumping” of inferior goods into markets where no standards currently exist. Similar demands are being tabled in ongoing negotiations in the WTO General Council over “Implementation-Related Issues and Concerns.”⁵

Organization of the Paper

The organization of this paper is suggested by the Uruguay Round legal infrastructure and the content of the proposals that have been tabled in the ongoing agriculture negotiations. During the Uruguay Round, technical measures that regulated certain enumerated risks related to agricultural products were carved out of the TBT Agreement and disciplines to govern their use were developed in the SPS Agreement. The second section of this paper reviews the principles and mechanisms in this new agreement, weighs the impact it has had on the world trading system, and examines whether initiatives set out in submissions will compromise or improve its effectiveness. The analysis indicates that although there is a consensus around the fundamental requirement of the agreement that SPS measures be based on scientific risk assessments, there are varying views on other risk management principles—in short, about how much latitude is implied by the words “based on?” Differences over the appropriate role for the precautionary principle and “other legitimate factors” in regulatory decision making are at the root of prominent disagreements between powerful trading partners, and progress in reconciling these differences is likely to condition progress in other areas of the negotiations. The proposal is made that the whole attributes/trade debate could constructively be turned to focus expanded trade as a resource efficient means to achieve desired product attributes. At a minimum, countries establishing product standards that their trade partners might challenge could expand market access for imported products that meet those standards.

The third section of the paper turns to the TBT and TRIPS Agreements which set forth rules for measures that regulate other quality attributes, including regulations for the use of labeling (TBT) and geographical indicators (TRIPS). For food products, measures in this area may be based on diverse objectives, including facilitating marketing by lowering transaction costs, preventing deception, or supporting consumers' “right to know” about a product and how it was produced. From a trade and economic perspective, the issue is identifying policies that achieve legitimate objectives in a manner that is least trade restrictive. Finding solutions can be complicated by the fact that producers and consumers can simultaneously benefit from standards and labeling. Controversies arise most often when much of the benefit is judged to accrue to producers in one country at the expense of producers in the other. This section reviews the balancing consumer and producer interests in the home and foreign countries in WTO disputes to

⁵ The WTO initiated implementation negotiations to address the needs of developing countries in May 2000 after the Seattle Ministerial failed to launch a new round of trade negotiations. Developing countries have made several demands related to the SPS, TBT, and TRIPS Agreements during the course of these ongoing negotiations. Some issues have been resolved, but a number are outstanding (“General Council -- Implementation-Related Issues and Concerns – Decision of 15 December, 2000,” WT/L/384).

date. Obstacles to and options for resolving the issues raised in various country proposals within the current negotiations are identified.

Issues in the regulation of genetically modified products, a watershed event in agricultural production technology, are discussed in the fourth section of the paper. The heterogeneous approaches to regulating GM foods provide a prism on the challenges to the multilateral trading system faced under the Uruguay Round agreements. For example, the precautionary principle has been invoked to justify lengthier time periods for regulatory approvals of GM imports, and consumer concerns have spawned mandatory labeling regimes for GM foods, prompting some manufacturers to seek out conventional commodities in international markets. The resulting disagreements over these policy regimes between developed countries in the new and old world have received the most attention, but tensions are also evident between traditional trade allies, regional trading partners, and even developing countries (the first formal complaint to reach the WTO over GM foods was lodged by an Asian exporter against an African importer). The outcome of negotiations over issues related to GM regulation may not only have implications for the predictability and stability in access to markets for future products of novel technologies, but may also have more immediate impact on other systemic issues before the WTO, such as labeling production and processing methods for food products.

The number of proposals and statements by developing countries that identify quarantine measures and product attribute regulations as significant impediments to market access opportunities is especially important in light of the fact that the WTO has placed high priority on the integration of these members into the world economy. The fifth section of this paper reviews the evidence regarding the incidence and impact of product attribute trade barriers, and evaluates the effects of the new disciplines specified in the Uruguay Round agreements, as well as the traditional GATT mechanisms of special and differential treatment and technical assistance. Beyond the question of whether the WTO agreements have provided effective solutions is the charge that the agreements are part of the problem. It has been argued that the new obligations under the agreements (related to requirements for risk assessments, for example) have diverted scarce resources from investments needed to capitalize on the trade opportunities created by the agreements. This section evaluates available policy options to address these concerns.

The paper ends with a summary of the above analysis, and conclusions about the potential for changes in WTO rules on product attribute regulations that further the objective of increased welfare-enhancing trade.

Regulation of Safety Attributes: The SPS Agreement

The SPS Agreement was concluded in 1994 at the end of the Uruguay Round, and has been in force since January 1995. It addresses the application of regulations that protect human, animal, and plant health.⁶ The principles in the SPS Agreement are designed to ensure that such regulations do not unnecessarily hinder or distort trade. This agreement has been extensively analyzed elsewhere (e.g. WTOa; Roberts 1998).

Under the SPS Agreement, WTO members support the following principles:

- **Transparency:** Member nations are required to publish their regulations and provide a mechanism for answering questions from trading partners.
- **Equivalence:** Member nations must accept that SPS measures of another country are equivalent if they result in the same level of public-health protection, even if the measures themselves differ. The same level of health protection should apply to both domestic and imported products.
- **Science-based measures:** SPS measures must be based upon risk assessment and must be chosen so as to minimize distortions to trade. Countries may adopt a provisional measure to avoid risk, but must seek information and carry out a risk assessment to justify permanent use of a trade-reducing measure.
- **Regionalization:** The concept of pest- or disease-free areas within an exporting country is recognized. Exports can be allowed from such areas, even if other areas of an exporting country still have the disease or pest.
- **Harmonization:** Member nations recognize the desirability of common SPS measures. Three international organizations are recognized as sources of internationally agreed-upon standards: the Codex Alimentarius Commission (Codex), the International Office of Epizootics (OIE), and the International Plant Protection Convention (IPPC).
- **National sovereignty:** Countries may choose a risk standard that differs from the international standard. This recognizes that individual nations are unwilling to subscribe to uniform international standards for all hazards.

In addition to the above principles, the SPS Agreement establishes enforcement mechanisms. These mechanisms include notification procedures for informing other WTO members of changes in SPS standards; the establishment of an SPS committee to discuss these issues on a continuing basis; and the use of WTO dispute resolution mechanisms for resolving conflicts between countries in a timely manner.

⁶ Sanitary refers to human and animal health measures; phytosanitary refers only to plant health.

Motivation for the SPS Agreement

SPS measures are adopted to address market failures that result in less than optimal levels of human, animal, and plant health. It is important to distinguish two kinds of market failure. The first arises in production, when control of an animal or plant health hazard cannot be accomplished by individual producer efforts. For example, destroying a diseased animal in one herd has positive externalities for other herds that will not be captured without public intervention to encourage eradication. Therefore, public monitoring and control may be required to capture the public good of improved production capacity resulting from reduced hazards to animal and plant health. This kind of control should reduce producer costs in the country adopting such measures, and is frequently supported by domestic agricultural producers. Recently, such control measures have also been used for environmental goals (e.g. prevention of invasive species that will alter a local ecosystem).

The second kind of market failure arises in food safety, when imperfect information prevents consumers from paying for desired levels of safety and/or producers from supplying improved safety. Public intervention is justified when a food safety standard or regulation improves consumer welfare more than it increases industry costs. Food safety measures are frequently supported by domestic consumers in an importing country. Thus, both the economic welfare analysis and the political economy associated with these two kinds of market failure differ.

SPS measures by their nature either increase the costs of trade or prevent trade entirely. They increase production costs for exporters if they must meet a different or higher SPS standard in international markets; they increase costs of monitoring at the border for importing countries; and they can increase the transactions costs of international trade when standards differ among countries.

The negotiations leading up to the SPS Agreement were motivated by exporter concerns about the arbitrary use of SPS measures by importers (G/SPS/GEN/209). There is also substantial evidence that SPS disputes are becoming more important over time due to several trends. Reduction in traditional trade barriers, growth in trade of fresh and minimally processed foods, growth in trade of livestock products, and increased consumer awareness and demand for safety have all contributed to increased disputes over SPS measures and allegations that they pose barriers to trade (Unnevehr 2000; Henson and Loader 1999; Buzby and Roberts 1997; Dyck and Nelson 2000).

Thus, the SPS Agreement must balance two potentially competing goals. The first is to recognize the legitimate economic and social need for countries to adopt SPS measures. The second is to set a framework in place to reduce the trade distorting aspects of SPS regulations. Reduction of trade distortions have the potential to increase welfare from trade in the usual ways, but might also improve human, animal, and plant health by allowing greater specialization in the production of “safety.” In other words, trade might make possible food production with particular safety and health attributes in countries and regions where such attributes are comparatively easy to produce. Trade may also make it easier to meet differing demands for safety and health attributes among consumers within the same country. Thus, the SPS Agreement

can be evaluated both for whether it has reduced distortions due to SPS measures and for whether it has enhanced the ability of trade to meet consumer demand for safety and health.

SPS Measures and Their Consequences

Three general kinds of policy instruments are used to achieve SPS protection: import bans, technical specifications, and information remedies (Roberts et al 1999). Import bans may be either total or partial (e.g. no imports of certain meat cuts from a particular species). These are most likely to be used to protect animal and plant health by preventing the introduction of diseases or pests. A well-known example is the ban on beef imports into the U.S. from countries that have foot and mouth disease (FMD) endemic in cattle. The economic issue in evaluating such bans is weighing the cost of the ban versus the benefits of trade and the cost of managing a disease or pest if established. The literature shows that this varies on a case-by-case basis. There are examples of import bans that reduce total welfare, because the cost of disease establishment is easily outweighed by the benefits from imports (Glauber and Narrod 2000; James and Anderson 1998; Orden and Romano 1996). On the other hand, there are cases where the import ban is less costly than disease establishment, because the domestic industry can provide supply at lower cost with the ban than imports could without the ban or because the country would lose potential export markets (Jetter, Sumner, and Civeraolo 2000; Ekboir 1999; Fuller et al 1997). Thus, while this might be the most harmful measure to international trade, it is not necessarily welfare-reducing for the importing country.⁷

The second category of SPS measures, technical specifications, includes process and product standards. These are applied in animal and plant health as standards that must be met to ensure that diseases are not introduced (e.g. specified fumigation procedures for plant imports). These kinds of standards are also the most often used in meeting the objective of food safety. Examples include requirements regarding somatic cell counts in fresh milk, use of refrigeration and other process controls in seafood processing, or standards for pesticide residues in foods. Of the 74 “specific trade concerns” brought to the attention of the SPS committee by WTO members during the first six years of the agreement, most address process standards, and they are about equally divided between animal/plant health and food safety measures (G/SPS/GEN/204).

In evaluating food safety interventions, domestic regulators evaluate product and process standards by weighing the value of presumed health benefits to consumers (reduced costs of illness, reduced risk of illness) against the costs to producers of meeting the standard. Unlike animal and plant health measures, this kind of analysis compares non-market benefits with market costs. A further complication is the role of risk perception in determining consumer benefits. Unnatural, involuntary, unfamiliar risks are more alarming to consumers than natural, voluntary, and familiar risks (Kunreuther and Slovic 1996). Thus, the political process may result

⁷ Sometimes the welfare gains are a regional issue involving several countries. For example, regional animal disease control is necessary where animals move freely across borders (e.g. southern Africa). An interesting area for future research is examination of whether global control of pests and diseases would raise global welfare, and the distribution of the gains (and losses). Such research might lead to the design of trade and welfare-enhancing controls (and compensations) that might be more economically rational than national-level controls.

in standards that are more protective for certain kinds of risks (e.g. pesticide residues) than for others (e.g. microbial pathogens).⁸

Differences in risk perceptions, available market information, the incidence of risks in production, and traditional methods of food processing and preparation all lead to differences in food safety outcomes among countries. Thus, a food safety standard may improve welfare in one country, but not necessarily elsewhere; this explains frequently observed differences in standards among countries.

Determining equivalence of risk outcomes between different standards is also difficult. Economic theory favors product over process standards, as the former allow firms to meet a standard in the least cost manner. However, in practice, process standards are frequently specified due to the difficulties of measuring outcomes, particularly for microbial pathogens (Unnevehr and Jensen 2000). Determining equivalence in risk outcomes can be challenging in such cases. At a minimum, it may raise monitoring costs to determine that complex process standards are followed in the exporting country (e.g. FSIS inspection of individual meat processing plants in exporting countries). Further difficulties will arise when production practices and the incidence of risks vary widely across countries, making it difficult to determine if a process standard will lead to an equivalent risk outcome (Hathaway 1995). Thus, food safety standards, especially process standards, are likely to be contentious and difficult to harmonize in international trade.

The third type of policy instrument is the use of information remedies to address market failure directly, particularly for food safety. These include required labeling regarding potential risks or controls on voluntary health claims. Information remedies can enhance welfare by addressing a market failure directly and allowing market forces to determine the appropriate level of safety to be supplied. These approaches are particularly favored when a small subpopulation faces considerable risk (e.g. allergies) and imposition of a market-wide standard would reduce welfare for the average consumer. Where risks occur for all consumers, information approaches may be used along with standards. This affords consumers both protection and greater choice (e.g. reduced pathogens in hamburger plus safe handling labels). The impact of information policies on international trade is discussed more fully in the TBT section of this commissioned paper.

To sum up, market failures lead governments to use SPS policy instruments. Because the nature of these market failures varies widely, individual countries can experience enhanced economic welfare from the imposition of measures to address SPS hazards, even when such measures severely hinder trade. Furthermore, an unconstrained choice of standards would be unlikely to lead to harmonization of standards among countries. The economic welfare implications of animal and plant health measures are largely measured in terms of conventional consumer and producer surplus, so that evaluation of the trade-offs between trade and reduced risk is relatively straightforward. These kinds of disputes are more likely to be resolved at the technical level. However, food safety measures raise tradeoffs of human health risk against potential changes in conventional consumer and producer surplus. Problems of valuing life,

⁸ More protective may mean either the application of a higher risk standard (fewer lives or illnesses permitted by the standard); or it may mean that a lower benefit/cost ratio brings about government intervention.

health, and attendant risks make economic analysis of food safety standards and comparisons among countries more difficult. In light of these potential barriers to international trade, the progress achieved under the SPS Agreement is impressive.

Enhancement of Trade Under the SPS Agreement

There is evidence that the SPS Agreement has improved transparency, encouraged greater use of risk assessment as a basis for regulation, and encouraged animal disease control measures. In the area of transparency, the majority of WTO member countries have established enquiry points for SPS matters. There has been extensive use made of the notification system for informing trading partners about new measures and for countries to respond with questions about new measures (Roberts et al in press). The latter includes “cross-notification,” to air a grievance over a specific measure, and “co-complaints” by other exporters to support a grievance. Roberts et al report that these exchanges have provided a forum for airing disagreements and have promoted symmetry of information among WTO members. In one case, a proposed change in natural toxin residue levels, the EU was persuaded by protests from developing countries to reconsider the regulation for aflatoxin in peanuts. There is also limited evidence that greater use is being made of risk assessment to provide a scientific basis for reviewing and revising SPS measures. Roberts et al cite changes in Japanese and U.S. regulations, including lifting the 83-year-old US ban on imports of Mexican avocados.

The regionalization provision of the SPS Agreement has enhanced trade. It may have spurred efforts to eradicate FMD in the southern cones countries of South America (Marshall et al 2000). By ensuring that partial eradication would lead to trade gains, the SPS Agreement provided the motivation for greater investment in control measures. Regional responses to pest outbreaks reduce the impact of quarantines, such as that imposed against poultry from California (rather than the entire US) following an outbreak of Newcastle disease (Orden et al 2000).

There has been less progress under the SPS Agreement in the areas of equivalence and harmonization. For the reasons discussed above, it is difficult for countries to determine equivalence. One exception is the veterinary agreement of 1999 between the EU and the US, which provides mutual recognition of sanitary measures for meat, fish, dairy, and poultry products (Roberts et al in press). Harmonization is fostered through the establishment of internationally recognized standards under three international organizations: the Codex, IPPC, and OIE. Participation in these three organizations has expanded since the SPS Agreement came into effect, and they also provide a forum for sharing information. However, for many specific measures there are no international standards or countries choose to use a stricter standard. The IPPC and the OIE often describe only guidelines or approaches for setting standards, recognizing the differences in animal and plant health risks among countries.

The Uruguay Round agreements have provided a framework for dispute settlement. Formal complaints related to the SPS Agreement have been brought to the WTO in 14 cases (see Table 1.1). So far, only three disputes have reached a panel ruling and the Appellate Body; others are in negotiation or resolved. In the first dispute (which predated the SPS Agreement), the US and Canada challenged the science basis for the EU ban on growth hormones in beef production. In the second case, the US challenged Japanese testing requirements regarding

treatment effectiveness for new varieties of selected horticultural products. In the third case, Canada challenged Australia's ban on salmon imports to prevent the spread of fish diseases. In all three cases, the panel and Appellate Body ruled for the complainants (exporters) on at least some grounds. All three cases provide lessons regarding the use of science as a basis for SPS measures. In particular, the dispute rulings show how different articles of the SPS Agreement can be used to evaluate the science basis for a measure, as summarized in Table 2.1.

In the salmon disease case, the scientific basis of the ban (Articles 2.2 and 5.1) and inconsistency in use of science (Articles 2.3 and 5.5) were the principle issues examined. The WTO panel (and subsequently the Appellate Body) concluded that Australia's scientific report used to justify the measures at issue was not a risk assessment because it did not evaluate the likelihood that disease would enter or spread, or the potential consequences of the diseases. The WTO also concurred with Canada that the salmon import ban provided a level of environmental protection arbitrarily higher than that provided by other Australian sanitary measures, because Australia allows imports of other fish that are potentially vectors for the same or even more virulent diseases (G/SPS/GEN/209).

The ruling against Japan's data requirement was based on a lack of science, unfair application of measures, and non-transparency. The requirement of new data for each new plant variety is not supported by science, since there is no evidence that the effect of fumigation measures varies with plant variety. Japan's argument that the measure was provisional was not accepted since it had been in place for 48 years (G/SPS/GEN/209). Even if the measure had been accepted as provisional, the Japanese requirement for data from an exporter was found not to fulfill the obligation under article 5.7 to seek additional information to complete a risk assessment. Finally, the WTO found that the measure was not transparent, in violation of Article 7, as it failed to meet the conditions for publication set out in an annex of the agreement.

In the EU beef hormone case, the Appellate Body ruling affirmed the right of WTO members to establish a level of consumer protection higher than the level set by international health standards. The ban on hormone treated beef was nonetheless judged to be in violation of the SPS Agreement as it was not backed by an objective risk assessment (Article 5.1). The Appellate Body concurred with the panel that inconsistent EU policies regarding the use of growth promoting substances in animals were "arbitrary and unjustifiable" (the EU allowed the use of carbadox, a potentially cancer causing substance, in the more competitive pork sector). But the appellate judges overturned the panel's ruling that the EU's ban was "a disguised restriction on trade," perhaps in deference to the fact that the ban arose from consumer concerns. This indicates the difficulty of dealing with consumer concerns within the current SPS framework.

Table 2.1. Decisions in the Three SPS Cases Heard by WTO Panels

	EC – Hormones		Japan – Varietal Testing		Australia – Salmon	
SPS Provision Violated	As judged by					
	Panel	Appellate Body	Panel	Appellate Body	Panel ¹	Appellate Body
<i>Article 2.2:</i> Measures must be based on scientific principles and must not be maintained without sufficient scientific evidence			X	X	X	X
<i>Article 2.3:</i> Members must ensure that SPS measures do not arbitrarily or unjustifiably discriminate between Members where identical or similar conditions prevail					X	X
<i>Article 3.1:</i> Measures must conform to international standards; but countries can adopt measures with a higher level of SPS protection than international standards if there is a scientific justification (<i>Article 3.3</i>)	X					
<i>Article 5.1:</i> Measures must be based on a risk assessment	X	X		X	X	X
<i>Article 5.5:</i> Members shall avoid distinctions in levels of SPS protection if such distinctions result in discrimination or a disguised restriction on trade	X					X
<i>Article 5.6:</i> Measures must be not more trade restrictive than required			X		X	
<i>Article 5.7:</i> Members can adopt measures on a provisional basis when scientific evidence is insufficient, but must seek additional information to conduct a risk assessment			X	X		
<i>Article 7 and Annex B:</i> Measures must be transparent			X	X		

¹ The original panel, at the request of Canada, reviewed the revised measures adopted by Australia after the Appellate Body’s ruling. The panel judged that the revised measures were not in compliance with Australia’s obligations under Articles 2.2, 5.1, and 5.6 of the SPS Agreement. It also ruled that Tasmania’s continuing ban on Canadian salmon imports was in violation of Articles 2.2 and 5.1. Australia has since revised its measures to Canada’s satisfaction; the Tasmanian ban is still in place.

To date, only the salmon case has been successfully concluded with changes in the importing country's measures. Japan and the United States are close to settling the varietal testing case, but the parties have not yet formally notified the WTO of a mutually acceptable solution to the dispute. In the hormones case, the EU has yet to bring its measures into compliance with the SPS Agreement. The parties to the dispute could not agree on a product labeling regime (which was recommended by the panel), nor could they agree on a compensation deal that would leave the EU ban in place but provide trade concessions on other products. The WTO General Council therefore authorized retaliation by the complainants (in the form of increased tariffs) against \$128.1 million of European products.

These dispute rulings set important precedents regarding the consistent application of risk standards and measures, the burden of carrying out data collection and risk assessment, the limits on adoption of measures on a provisional basis, and transparency. The outcome of the hormones dispute also raise some questions about other means of resolving disputes, as will be discussed below. The problem that remains for the long run is whether the application of the SPS Agreement will bring about new kinds of opposition to trade, if consumer interest groups become convinced that differences in consumer valuations of risk among countries are not adequately recognized.

Issues, Positions, and Conflicts in the Agriculture Negotiations

There are four issues that condition any discussion of the SPS Agreement among WTO members. These are:

- The role of science and cost-benefit analysis in determining measures
- The relationship of SPS measures to the “multifunctionality” of agriculture
- The role of the precautionary principle in allowing measures when science is uncertain
- The tension between consumer protection and consumer gains from trade

Two of the most important issues, the disputes over GMOs and the impacts of the SPS Agreement on developing countries and, are covered in other sections of this commissioned paper.

Although risk assessment is receiving increased support in pronouncements of government food safety agencies, the developed countries differ in their application of this methodology to SPS measures. The US, Australia, New Zealand, and Canada, are most committed to application of risk assessment and cost-benefit analysis. The EU and Japan, on the other hand, want “other legitimate factors” to be taken into account in setting international standards. These might include the special circumstances of small farmers, traditional production methods (e.g. soft cheeses), or consumer preferences. Thus, the degree of commitment to science as the final arbiter of SPS disputes is far from complete among WTO members.

Related to other legitimate factors is the relationship of SPS issues to the multifunctionality of agriculture. The EU Agriculture Commissioner has recently stated the BSE (mad cow) crisis demonstrates that agriculture is more than just an industry. As Commissioner Fischler put it “European agriculture is also about the environment, consumers and food safety. This is why we will stand firm to defend these non-trade concerns in WTO talks.” (quoted in *SCI Policy Report*, Feb 6, 2001) Support (through trade protection) and regulation of agriculture to accomplish non-trade goals are seen as complementary policies in the EU. This linkage is not recognized in the SPS Agreement, and the US and Cairns group would argue that non-trade goals can be addressed more effectively through measures that do not distort trade.

Another dimension of the debate about the role of science is the disagreement over use of the precautionary principle. This principle has a long history in European policy (G/SPS/GEN/168), particularly with respect to environmental risks. This principle recognizes that when science is uncertain and potential harm may be great, it is legitimate to exercise precaution. The precautionary principle is recognized implicitly in article 5.7 of the SPS Agreement, which allows countries to put in place provisional measures where “relevant scientific evidence is insufficient.” Both the EU and Japan invoked the precautionary principle in the beef hormone and plant protection disputes before WTO panels, but this principle was rejected as a basis for the disputed measures in the rulings. The EU has invoked the precautionary principle in policies regarding GMOs (e.g. the ban on approval of new GMOs in early 2000) on the basis that many risks are unknown. There are clearly differences in philosophy between the EU and the US. The US is more willing to accept the risks of action rather than the risks of inaction (see the subsequent section on GMO regulation). The difficulty is that the application of the precautionary principle must always entail some judgment about acceptable risks. Any new technology will have unknown risks that cannot be completely ruled out by science. Countries will necessarily differ in their judgments, and this can lead to SPS disputes that are difficult to resolve.

Consumer advocacy groups are among those that often support more, rather than less, precaution. Their recent appearance in trade debates highlights the potential conflict between enacting SPS measures that protect human health and reduction of trade barriers to increase consumer welfare. The tension between consumer protection and consumer gains from trade make the political economy of these trade barriers different from other barriers to trade. Consumers International, a coalition of consumer groups in 120 countries, states that “Sound science is necessary for making safety decisions, but they must also take into account non-scientific factors such as economic concerns, ethical issues, environmental impact, and the benefits for the consumer to be obtained from the process or product” (Consumers International 2000). The consumer advocates often perceive the WTO and the Codex as potentially “captured” by industry interests, and would like to ensure representation of consumer protection interests. As with other groups lobbying to open up WTO processes, these additional interests may ensure more acceptable solutions to trade disputes in the future, but more complex negotiations in the short run.

No country has advanced a proposal to reopen the SPS Agreement in the upcoming round of agricultural trade negotiations (WTOB). Proposals related to the SPS Agreement were summarized in the introduction. They include the EU’s proposal to clarify the application of the

precautionary principle; proposals by a group of Eastern Europe and FSU countries that consumers interests be accounted for in the WTO reform process; and several proposals from less developed countries regarding international SPS standards and technical assistance. These proposals show the variety of interests at stake and the way in which the SPS Agreement connects with other issues in agricultural trade.

An Option for Conflict Resolution

Although the SPS Agreement may not be formally reopened in this round of negotiations, the potential problem with the SPS Agreement's long run viability is the difficulty of dealing with scientific uncertainty about risk combined with differences in consumer risk perceptions and valuations among countries. One potential way to address this concern might be to give greater flexibility for countries to set standards but only when allowing greater market access. Higher SPS standards tend to correlate with greater protection for agriculture (as both are linked to higher incomes). Where consumers place "inconsistent" valuations on risks from different sources or perceive unknown risks as more important, countries could retain standards reflecting those valuations but only if they agree to give greater market access to exporters who meet the standard. An example is the expanded market access for US beef exports to the EU, but on the condition that these are certified to be free from administered growth hormones. By expanding market access but also providing consumer assurances, such compromises would enhance the welfare gains from trade. Such arrangements could also break the perceived link between farm income support and stringent SPS measures, which does not contribute to meeting health and safety goals in the most economically efficient manner. While the SPS Agreement is still needed to define the boundaries of appropriate standards, introducing flexibility for risk perceptions and valuations when combined with greater market access would at least advance the goal of expanding agricultural trade and reducing overall trade barriers.

Regulation of Other Quality Issues: The TBT and TRIPS Agreements

The previous section discussed the treatment of safety-related regulation of food under the SPS Agreement. This section turns to the WTO's approach to regulation of non-safety related attributes or what we refer to as "other quality attributes." This language reflects the fact that quality is made up of numerous dimensions, with safety being the quality attribute that is normally given first importance. Among the other quality attributes are nutrition (e.g. calories, fiber, vitamins), sensory characteristics (e.g. color, taste, aroma), value or function characteristics (e.g. compositional integrity, size), and process characteristics related to how a product was produced (e.g. animal welfare, environmental impact).

Regulation of other quality attributes, being non-safety related, falls outside the purview of the SPS Agreement. The TBT Agreement is the main WTO discipline on this type of regulation. In addition, the TRIPS Agreement also is relevant because it has a section dealing with geographical indications as a form of intellectual property. These indications are frequently used for food products. As elsewhere noted, individual regulations may have multiple purposes and can simultaneously fall under more than one of the agreements that affect the regulation of food quality.

The WTO's treatment of quality regulation for food differs from its treatment of other products because the safety concerns are placed under the SPS Agreement. For other products, the TBT Agreement covers all forms of quality regulation, including safety. The TBT Agreement is concerned with technical regulations (mandatory requirements), standards (voluntary guidelines), and conformity assessment systems (e.g. certification) for products. Technical regulations and conformity assessment systems related to them are of key importance because of their mandatory nature.

As noted, the TRIPS Agreement comes into play for regulation of some food products because of its provisions protecting geographical indications. These geographical indications are defined within the agreement as "indications that identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin." Additional protection for geographical indications is afforded to wines and spirits. The Agreement is, however, less encompassing than the provisions of the European Communities for protection of products with a designation of origin (PDO) or a geographical indication (PGI). Geographical indications and many technical regulations of other quality attributes are ultimately expressed as information that appears on the product label making labeling a key factor in this area of regulation.

More generally, issues related to other quality attributes also arise under the Agreement on Agriculture and the main provisions of the GATT. For example, determining whether a food product is part of a quota may require examination of technical regulations that define and

distinguish similar products.⁹ More fundamentally, many countries wish to ensure that the Agreement on Agriculture does not unduly limit their ability to encourage production practices that ultimately affect non-safety quality attributes. These production practices may impact food safety at the same time. Examples include animal welfare provisions, organic production, and other food quality provisions related to region of production or artisanal production practices.

Motivations for Regulation of Other Quality Attributes

There are several major motivations for governments to regulate other quality (non-safety) attributes, either directly or through labeling or other forms of information provision (Golan et al 2000; Caswell 1998; Caswell and Mojdzuska 1996). These motivations are based on possible information imperfections and public goods in the supply chain and at the consumer level. The first motivation is to facilitate production and trade, and lower transaction costs, particularly when trading partners are at a distance, through product standards (e.g. a technical standard for compatibility) and related information. Information on quality may be lacking or efficiencies may be gained from common standards that no individual sellers and buyers would see worth their while to establish. Government regulation of this type is frequently in demand by industry participants. These policies and related standards may be more a means of excluding competition than of attaining marketing efficiencies in some cases, as the scallops case discussed below illustrates.

Second, regulation may assure that minimum quality standards are met providing protection from fraudulent products to buyers, particularly consumers. Government may also regulate in order to assure the truthfulness of information provided in advertising or labeling and to facilitate consumer choice by requiring that particular types of information be provided. This form of regulation can protect consumers from deception and allow them to more easily find products that better meet their needs. Finally, regulation of other quality attributes can serve to protect trade names and identifiers so that their owners' rights are not violated. Whether regulations motivated by these arguments enhance welfare depends on the degree of inefficiency or deception that would have occurred in their absence, the degree to which the regulation corrects the problem, and the extent to which the standards limit the variety of products offered in the market (Pick and Zago, in press).

Regulation of other quality attributes involves standards and certification. Labeling plays a key role in the operation of many food related technical regulations, standards, and geographical indications. Labeling policies themselves have two fundamental characteristics. First, as discussed above, they address situations where information is thought to be absent or inadequate. For example, nutrition labeling was mandated in the United States because it was believed that voluntary labeling was delivering inadequate information to consumers. Second, while these policies are often focused on consumer choice, they tend to have effects on the entire supply chain. For example, organic certification and labeling standards affect production, processing, and distribution practices as they attempt to deliver uniform product quality and

⁹ For example, New Zealand asked for consultation with the European Communities and a dispute panel was established over measures that excluded butter manufactured under certain processes from the definition of butter eligible for New Zealand's country-specific tariff quota (WT/DS72/1). The mutually agreed solution involved the EC reclassifying the excluded butter so that it fell within the butter quota.

information at the consumer end of the supply chain. Thus labeling programs are themselves technical regulations but they also require an entire system of standards and certification, which gives rise to further technical regulations. Even standards in the form of voluntary labeling schemes frequently require governmental oversight through labeling guidelines that may in effect be technical regulations.

Defining the legitimate scope of consumer protection activity by governments remains an unresolved and contentious issue in international trade negotiations. The prevention of deception is clearly viewed as a legitimate objective of regulation. More recently, the concept of the consumer's right to know has come to the forefront. Although not fully defined, this concept is broader in its application than the prevention of deception, although it may be difficult in practice to separate the two concepts. The prevention of deception is a negative concept; the consumer is protected from receiving false information about the product's attributes. The consumer's right to know is a positive concept; the consumer is provided with truthful information that may be important to his/her purchase decision. For example, a country might prevent deception by establishing regulations that require that any product claiming to have been produced in a way that enhances animal welfare meet certain standards. Alternatively, the country could require that the method of production, and its degree of animal friendliness, be declared on the label. The latter policy would support the consumer's right to know about production practices used for particular products. Proponents of the consumer's right to know view it as fundamental objective of regulatory efforts, while opponents view it as a potential vehicle for protectionist measures.

Since any regulation of other quality attributes is likely to have multiple motivations and impacts, evaluation of the welfare effects of these technical measures is often difficult. The increased use of labeling in markets for food products especially requires a careful evaluation of its benefits and costs, and its trade impacts. The TBT and TRIPS Agreements attempt to establish at least a rough sort between those regulations that are likely to be welfare enhancing and those that are very likely not to be. The success of the agreements in achieving this distinction is the main criterion for judging their effectiveness.

Disciplines in the TBT Agreement

The TBT Agreement articulates a balancing of goals typical of the product attribute agreements of the WTO. It recognizes the important contribution that international standards and conformity assessment systems can make to improving efficiency in production and facilitating trade, and encourages the development and use of such standards. It also seeks to ensure that regulations and standards do not create unnecessary barriers to trade; while recognizing a country's right to take measures necessary to ensure the quality of its exports, to protect human, animal, or plant life or health and the environment, or to prevent deceptive practices. The overall idea is to increase welfare by inhibiting regulations that simply act as a protectionist barrier to trade, while allowing those that provide benefits in the absence of significant costs or benefits that are greater than the possible costs of the regulation and exclusion of products. The regulation of other quality attributes has a significant impact on food products trade. For example, the American Frozen Food Institute recently complained about tariffs and quotas that affect exports but also about trade-limiting technical regulations such as percentage ingredient labeling (*Food Chemical News* 26/02/01).

Technical regulations and standards for non-safety attributes can take any of the forms available to safety regulations. These include bans; process, product, or packaging standards; and information remedies (e.g. labeling requirements or control of voluntary claims). This is indicated by the TBT Agreement's definition of a technical regulation:

a document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking or labeling requirements as they apply to a product, process or production method.

The agreement explicitly states a preference for technical regulations specified based on product requirements in terms of performance rather than design or descriptive characteristics, wherever appropriate. In other words, it expresses a preference for product standards over standards for process and production methods.

Technical regulations are likely to play an increasing role in international trade in food products. Many quality attributes that countries may wish to regulate directly or indirectly through regulating how labels communicate about these characteristics are non-safety related or have only a secondary safety relationship. Examples include regulation of animal husbandry practices (animal welfare), organic production, local or regional production systems aimed at rural revitalization, and labeling of GMOs. Labeling is an attractive alternative because governments want to encourage or discourage certain practices and they face difficulty justifying direct regulation of those practices for imports because of limitations on the scope of purposes allowed under the TBT Agreement. Labeling is attractive because when a country is not able to impose process standards for imported products, its only alternative may be a labeling regime that it hopes will encourage products made using the desired practices. How well the TBT and TRIPS Agreements will deal with this expanding domain of technical regulations in order to allow their application but limit their effect as trade barriers remains to be seen.

The TBT Agreement strongly encourages use of international standards where possible. As under the SPS Agreement, when a country prepares, adopts, or applies a technical regulation for one of the legitimate objectives the agreement recognizes, and it is in accordance with relevant international standards, it is rebuttably presumed not to create an unnecessary obstacle to international trade. In general, international standards, mostly developed under the auspices of the Codex Alimentarius Commission, form the basis for the harmonization of technical regulations for food products. Product standards and their related conformity assessment systems are easier to harmonize than standards for process and production methods. To the extent that newer technical regulations focus on process and production standards, harmonization and equivalence agreements will be harder to attain.

Dispute Settlement Under the Agreements

Several requests for consultations, disputes, and mutually agreed solutions have focused on alleged violations of the TBT Agreement in regard to regulation of the quality attributes of food products. One request for consultation has involved geographical indications under the TRIPS Agreement. We will look first at experience under the TBT Agreement.

The TBT Agreement sets down several principles for judging the legitimacy of a technical regulation. Members must ensure national treatment of like products of domestic and international origin; that technical regulations are not more trade-restrictive than necessary to fulfill a legitimate objective, taking account of the risks non-fulfillment would create; and that international standards when they exist are used as a basis for regulation except when they would be an ineffective or inappropriate means of fulfillment of the legitimate objectives pursued. Legitimate objectives are, *inter alia*, national security requirements; the prevention of deceptive practices; and protection of human health or safety, animal or plant life or health or the environment. In assessing such risks, the country must consider, *inter alia*, available scientific and technical information, related processing technology or intended end-uses of products.

In general, for food products the TBT Agreement may be characterized as establishing less stringent standards for the legitimacy of regulatory actions by countries than does the SPS Agreement. First, compared to the SPS Agreement, the list of legitimate objectives is broader and less clearly defined. The TBT Agreement's legitimate objectives include, among other things, national security, the prevention of deceptive practices, and any safety issues not within the purview of the SPS Agreement related to humans, plants, animals, and the environment. Thus the list, while not unlimited, is more inclusive than under the SPS Agreement. In addition, particular elements of the list may have fairly broad latitude. For example, prevention of deception is a legitimate objective that could lead to extensive technical regulations and labeling regimes.

Second, the approach to assessing risks is more broadly defined than in the SPS Agreement, or at least when compared to the interpretation of the SPS Agreement in dispute decisions to date. It is not clear, for example, what would constitute an acceptable risk analysis for the probability of deception and its costs and benefits for mislabeled organic products. Similarly to the SPS Agreement, the judgment of whether a technical regulation is least trade restrictive will generally be made by comparison to other regulatory approaches that could have been chosen but were not. Thus it might be easier for a technical regulation to pass muster under the TBT Agreement than a safety regulation to pass under the SPS Agreement.

For food products, several consultations and/or panels on technical regulations have resulted in the notification of mutually agreed solutions among the parties to the WTO. A key example has involved France's proposed regulation of the labeling of scallops. France had adopted a regulation that would restrict the use of the label terms "coquille Saint-Jacques" and "noix de coquille Saint-Jacques" to a specified number of species of the genus *pectinidae*. Under the regulation, species sold by Canada, Peru, and Chile, among others, would be excluded from using these labeling terms. The affected exporting countries argued that the alternative trade name that would be allowed would link their scallops to a product of lower quality and price in the French market, thereby causing economic injury. They further argued that the regulation was contrary to traditional trade practice and that the consumer makes no distinction between their scallops and scallops that could use the two restricted names because there is no difference in terms of size, texture, appearance, or use.

A dispute panel was established but before it issued a report the European Communities notified the WTO Dispute Settlement Body of a mutually agreed solution to this disagreement. France agreed to drop the restriction on the use of the terms but added further labeling requirements that:

1. Scallops must be marketed in France under the name “Saint Jacques” or “noix de coquille Saint Jacques” or “noix de Saint Jacques” or any other combination of the term Saint Jacques consistent with the nature of the product, followed by the scientific name of the species.
2. The country of origin must be indicated in clearly visible lettering on the same side of the label as the name, but not necessarily immediately adjacent thereto.

Two principles of the TBT Agreement are most relevant to this case. First is the requirement that imported product be accorded treatment no less favorable than that accorded to like products of national origin. If the products were like, then the French regulation as first adopted would have violated the requirement of national treatment. Second is the requirement that technical regulations not be more trade-restrictive than necessary to fulfill a legitimate objective, taking account of the risks non-fulfillment would create. If France’s objective was to inform companies and consumers about the species and sources of their scallops, then a less trade restrictive approach was available in the form of a regulation requiring that the species and country of origin be specified on the label, as finally agreed. The overall message from this consultation is that countries will face successful challenges to technical regulations that discriminate between like products and that are not least trade restrictive.

No dispute panel reports have involved the application of the TBT Agreement to food products. More generally, no dispute panel reports have been decided on the basis of the TBT Agreement. The only case to go through the Appellate Body based primarily on the TBT Agreement involved Canada’s objection to French measures affecting asbestos and asbestos-containing products (WT/DS135/AB/R). This case throws only a little light on the interpretation of the TBT Agreement for food products because of the separate existence of the SPS Agreement covering safety issues for food. The asbestos decision provides guidance for interpretation of what are like products, what it means to not be more trade-restrictive than necessary to fulfill a legitimate objective, and the extent to which countries must consider or adopt international standards in their rule making. The complaint against the United States by India, Malaysia, Pakistan, and Thailand regarding its import prohibition of certain shrimp and shrimp products is of interest here too. Because this dispute (WT/DS/58) was over a quantitative restriction aimed at an environmental objective, it was examined by the panel and Appellate Body under the terms of GATT Article XX (General Exceptions).¹⁰ Technical regulations can be and are used to accomplish comparable objectives.

There are several pending consultations that cite TBT issues for food products. Only one cites the TBT Agreement but not the SPS Agreement. It involves a request by the Philippines,

¹⁰ Whether a ban is a technical regulation was recently questioned in the asbestos case. The Appellate Body decided that a ban was a technical regulation in this particular case but that the matter has to be determined on a case-by-case basis.

Australia, and Japan regarding the US import prohibition of certain shrimp and shrimp products (WT/DS61/1, WT/DS61/2, WT/DS61/3) which is related to the case referenced in the preceding paragraph. Other requests also cite the SPS Agreement, and TBT issues will likely be secondary. These include requests by the US involving Korean testing and inspection of agricultural products (WT/DS3/1, WT/DS41/1); by the European Communities regarding US measures affecting imports of poultry products (WT/DS100/1); and by Canada regarding US measures affecting the import of cattle, swine, and grain (WT/DS144/1). In regard to TBTs, most of these consultations involve Article 2 of the Agreement, addressing preparation, adoption and application of technical regulations, and Articles 5, 6, or 7, which have to do with procedures for conformity assessment.

Overall, experience with the application of the TBT Agreement to food products is relatively limited. However, the consultations and panels that have resulted in mutually agreed solutions indicate that the definition of like products and the assessment of whether measures are least trade restrictive are likely to be of key importance. Although not in evidence yet, a case may emerge that require further articulation of the criteria for whether a technical regulation for a non-safety food attribute pursues a legitimate objective. For example, the labeling of a process attribute based on the consumer's right to know for a controversial attribute (e.g., animal welfare, GMOs) may provide such a test in the future.

There has been even less activity to date regarding the application of the TRIPS Agreement to geographical indications. In 1999, the US requested consultation with the European Communities regarding protection of trademarks and geographical indications for agricultural products and foodstuffs (WT/DS174/1). The US argued that the EC had not ensured national treatment in this area, nor to ensure that protection for geographical indications avoid undermining legal protection for pre-existing trademarks. No other activity has occurred regarding food products under the TRIPS Agreement.

The Key Role of Labeling for Other Quality Attributes

The use of labeling has a prominent role in the regulation of other quality attributes. In part this is because labeling may be a government's preferred response to information problems perceived in a market. Labeling allows products with different quality levels to be offered while protecting consumers from deception or supporting the consumer's right to know about product attributes. In other cases, labeling may be a second-choice response that is used when direct regulation of the quality attribute for both domestic and imported products is not a viable option under international trade rules. In either case, labeling programs are an integral part of many countries' approaches to regulation of other quality attributes. Thus, labeling is a central issue in WTO negotiations on trade in food products, as summarized in Table 1.2.

In the current agricultural negotiations and elsewhere, several countries are emphasizing their desire and right to base policy on a range of factors important to their societies. Japan, for example, states it pursues five major points in its policy, the first of which is "consideration of the multifunctionality of agriculture" (G/AG/NG/W/91). It further states that "trade rules that enable only a particular type of agriculture which focuses on efficiency to thrive, would naturally be rejected not only by Japan but also by other countries." Japan also lists as one of its five major

points “consideration for the concerns of consumers and civil society” and defines this in part as the promotion of consumers’ confidence when making choices about food. It is clear that the support of multifunctionality will frequently involve the use of labels to communicate diverse sources of value to consumers.

Some countries view the promotion of animal welfare as an important policy goal. The EC has stated its objective as “ensuring that trade does not undermine our efforts in improving the protection of the welfare of animals,” while avoiding trade protectionism (G/AG/NG/W/19). It proposes an approach concerning animal welfare that urges consideration of a range of standards, compensation payments, and labeling to accommodate consumers’ interest in higher animal welfare and their right to make informed choice between products, including products produced to different welfare standards.

In September 2000, the EC notified its intention to the Committee on Technical Barriers to Trade to amend its regulation on marketing standards for eggs to require the labeling of eggs and their packs by type of farming of hens (G/TBT/Notif.00/428). The stated objective of this regulation is to prevent consumers from being misled and to allow consumers to make informed choices on the basis of farming methods. This proposal raised concerns among several trading partners and the EC is further considering its proposed rule.

There are many additional examples of countries’ interest in the labeling of other quality attributes, particularly process and production methods. Prominent among these are various forms of ecolabeling that communicate the environmental impact of products to consumers. These programs are frequently voluntary and may be administered by an array of private certification agencies. Colombia has argued that voluntary labeling schemes can act as a barrier to trade and it is essential that the Code of Good Practice for the Preparation, Adoption, and Application of Standards included in the TBT Agreement (Annex 3) be applied to these schemes. A notification by Japan that it would require that all foods and beverages sold to consumers carry country of origin labeling has raised controversy as well (G/TBT/Notif.99/668). The Japanese government stated the objective of this regulation as the protection of the consumers’ interest so that consumers’ wishes for information in selecting commodities were fulfilled. All these examples indicate that labeling will be more widely used and for a greater range of purposes in coming years. As a result, the TBT Agreement will have a greater role to play in setting the rules for international trade in food products.

Furthermore, labeling programs that currently fall under the TRIPS Agreement are also likely to take a larger role in affecting food trade. For example, a recent proposal by the EC for rules concerning food quality (G/AG/NG/W/18) stated as an objective to improve market access and fair competition opportunities for regional and traditional products. Several other countries have supported the idea that geographical indications should be extended to a wider range of agricultural products but such proposals have met with some resistance in selected cases.

Future WTO Regulation of Other Quality Attributes

There have been no direct calls for reopening the TBT Agreement in a new round of WTO negotiations. However, as the prior examples indicate, issues that have TBT dimensions are widely discussed in relation to the Agreement on Agriculture, the SPS Agreement, and the

general negotiations. Key examples are the ability of countries to protect aspects of their agricultural and food production systems, especially to ensure non-safety attributes, and to promote local development. For developed countries, the discussion over the use of the precautionary principle, the multifunctionality of agriculture, and the role of other legitimate factors in regulatory decision making all tie directly to TBT issues or become TBT issues when other avenues for regulation are blocked. For developing countries, escalating technical regulation standards are a major concern in terms of market access, as described in a subsequent section of this commissioned paper.

The continuing negotiations on agriculture, and a new WTO round when it materializes, will have to attempt to fashion a coordinated approach to the regulation of non-safety food attributes. This will include product regulations, process regulations, and related labeling programs. An example where a coordinated approach is needed is the regulation of animal production practices on the farm with the objective of improving animal welfare. Adoption of such regulations may place a country's domestic producers at a cost disadvantage vis-à-vis producers in other countries. Within the Agreement on Agriculture, countries may wish to legitimize payments to support these changes in production methods. Instead, or in addition, they may rely on labeling regimes that communicate production practices to consumers in the hope that domestic consumers will buy the products produced under the domestic process regulations and reject domestic or foreign products that are not. At the same time, the regulations on production practices may have safety implications that bring the SPS Agreement into play—this type of issue often spans several WTO agreements. Such issues will test the comprehensiveness of the WTO agreements as a whole. Some countries assert that such measures fall between cracks of the Uruguay Round agreements. For example, in its proposal on animal welfare and trade in agriculture, the EC asserts that “the WTO does not provide a framework within which to address animal welfare issues” (G/AG/NG/W/19).

The TRIPS Agreement will come increasingly into play if geographical indications are more widely used for a broader variety of process and product characteristics. This issue is likely to get more attention as several countries have indicated their interest in expanding the scope and use of geographical indications.

In this situation, what set of regulatory practices, spanning several WTO agreements, will establish the desirable balance between country level regulatory choice and prevention of unnecessary barriers to trade? Different countries have very different views on this balance and are implementing divergent strategies. Resolving this conflict is key to resolving potential trade disputes over a myriad of process related issues such as animal welfare, organic production, ecolabeling, and GMO labeling.

Discussion of the future of disciplines on regulation of other quality attributes is integrally related to developments in other areas of the negotiations. The TBT Agreement can be expected to take on increased prominence because of the interest in regulating and/or labeling non-safety product and particularly process attributes of food products. In addition, fairly strict discipline in the area of SPS regulation will lead countries to define policies to fit within the realm of the TBT Agreement, where challenge may be less likely to be successful. For example, in adopting a new GMO labeling regime, the Australia New Zealand Food Authority emphasized that the regime

was not safety related but strictly related to informing consumers, as described in more depth in the following section. In other words, it defined its action as a technical regulation to which the TBT Agreement would apply.

It will remain challenging to analyze the overall welfare impacts of the many types of technical regulations and their related conformity assessment systems. This is especially true for regulations whose objective is the prevention of consumer deception or the support of a consumer's right to know, where risk perception and prediction of what consumers would do under the proposed market situation (e.g. a new labeling scheme) play a major role in evaluating the impact. Furthermore, some countries may argue that some of their regulations are not in a sense subject to the evaluation criteria set out in the WTO agreements. They may simply say "This is the way we do it in our country, this is who we are, and we have a right to regulate in a way that is consistent with the desires of our citizens." The balance between country choice and trade liberalization in the area of technical regulations is a clear source of tension within the WTO today.

GMO Regulation

This section turns to the regulation of genetically modified organisms (GMOs). In an earlier analysis, Nelson et al (1999) characterized national GMO regulations as a “patchwork.” Many countries have handed regulatory responsibility for agricultural biotechnology to multiple agencies that deal with agriculture, the environment, and food safety, and these agencies have then typically grafted regulations concerning agricultural biotechnology onto existing regulations relating to release of new varieties, use of pesticides, and marketing of food products. This patchwork will not be, in and of itself, the cause of international frictions over biotechnology regulation. As discussed later, the WTO is unlikely to get involved in the means by which specific countries develop their regulatory processes. However, there is a lack of international coordination of certain aspects of GMO regulation that is generating the likelihood of future trade disputes.

This lack of international coordination is characterized by two key approaches to GMO regulation. The first, followed by the United States and Canada, is based on a scientific, risk-based assessment of GMOs and the principle of *substantial equivalence*. The second approach is for countries, such as those in the EU, to adhere to the *precautionary principle* as they revise or develop their regulatory regimes, and/or to adopt rules and guidelines for the mandatory labeling of GMOs and foods containing genetically modified (GM) ingredients. Recent developments in GM regulation have partly been the political response to widespread public concerns about biotechnology. As a result, disputes are likely to arise due to the inevitable tension between scientifically based regulations, and the desire to embody non-scientific issues such as ethical considerations.

Patterns of Regulation

A broad description of the types of regulations in use for those countries where information is available is presented in Table 4.1. What is most obvious from the table is that the majority of countries either has implemented or is considering implementing mandatory labeling of GM foods, although there is some range in the threshold being applied. It is useful to be more explicit about three country groupings, as it aids in discussion of differences in key approaches to regulation, and in illustrating those features of existing GMO regulatory regimes most likely to generate conflict in terms of the Uruguay Round agreements.

Country Grouping 1: Substantial Equivalence

This group consists of three major agricultural exporting countries, the United States, Canada, and Argentina, which have either a high level of development of agricultural biotechnology and/or high rates of commercial adoption of GM crops. Of these countries, the US and Canada account for nearly 70 percent of the 10,313 GMO field trials reported in the OECD’s Field Trial Database, and also account for 63 of the 74 entries in the OECD’s Biotech Product Database of GM products that have either received or are in the process of receiving commercial approval (OECD 2001). In addition, the three countries account for the bulk of the global commercial plantings of the four major GM crops, corn, soybeans, canola, and cotton.

Table 4.1. GMO Regulations by Country Groupings

COUNTRY GROUPING 1	Multiple Agencies	Field-testing Regulations	Food Approval Regulations	Products Approved (number)	Labeling (% threshold)
Argentina	?	Y	Y	Y (corn, cotton, and soybeans, ban on new approvals at present)	No rules
Canada	Y	Y	Y (concept of substantial equivalence)	Y (38)	Voluntary guidelines
United States	Y	Y	Y (concept of substantial equivalence)	Y (40+)	Voluntary guidelines
COUNTRY GROUPING 2					
Australia	Y	Y	Y (concept of substantial equivalence)	Y	Mandatory (1%)
Czech Republic	Y	Y	Y (procedures similar to EC Directives)	?	Mandatory
European Union	Y	Y	Y (concept of precautionary principle)	Y (10)	Mandatory (1%)
Bulgaria	Y	Y	Y (procedures similar to EC Directives)	?	Mandatory
Hungary	Y	Y	Y (procedures similar to EC Directives)	?	Mandatory
Japan	Y	Y	Y	Y (20)	Mandatory (5%)
New Zealand	Y	Y	Y (concept of substantial equivalence)	N	Mandatory (1%)
Norway	Y	?	Y	Y	Mandatory (2%)

Table 4.1. GMO Regulations by Country Groupings, continued

COUNTRY GROUPING 2	Multiple Agencies	Field-testing Regulations	Food Approval Regulations	Products Approved (number)	Labeling (% threshold)
Poland	Y	Y	Y (adopted EC Directives 90/219 and 90/220 90/220)	?	?
Russia	Y	?	Y	?	Mandatory (some exemptions)
Switzerland	Y	Y	Y	?	Mandatory
South Korea	Y	?	Y (based on Biosafety Protocol)	?	Mandatory under discussion, similar to Japan
COUNTRY GROUPING 3					
Brazil	CTNBio	Y	Y	Soybean approval suspended, and GM corn imports blocked	Likely mandatory (5%)
Chile	?	Y	?	?	Mandatory (1%)
Hong Kong	?	?	?	?	Likely voluntary (5%)
Indonesia	?	?	Y	?	Mandatory
Malaysia	Y	?	Y	Y (soybeans))	Preference for no labeling
Mexico	Y	Y	Cibiogem developing	?	Mandatory under discussion
Philippines	?	Y	?	?	Mandatory under discussion
Saudi Arabia	?	?	Y (proposed import ban)	N	Mandatory
Singapore	?	?	Case-by-case	?	No scheme proposed
Sri Lanka	?	?	Import ban	?	?
Thailand	Y	Y	Y	Y (40)	No scheme

In 2000, of the 107.76 million acres planted worldwide, 98 percent was planted in these three countries, the most being planted in the United States at 68 percent of the global total. Argentina accounted for 23 percent and Canada 7 percent (James 2000).

Of the three countries, the US and Canada have the most developed and well-documented GMO regulatory systems in place. These systems have been under public scrutiny over the past two years, but they have not yet been changed in any substantive way. In the US, biotechnology regulation is conducted via three agencies. USDA's Animal and Plant Health Inspection Service (APHIS) provides permits for introduction of genetically engineered organisms into the United States, and also regulates the small-scale field-testing of GM plants prior to their commercialization. The US Environmental Protection Agency (EPA) regulates plants that are genetically engineered to express pesticides, such as Bt corn. The US Food and Drug Administration (FDA) is responsible for regulation of pre-market approval of GMOs and foods containing GM ingredients, and also providing guidelines on the labeling of GM foods.

The FDA has been at the forefront of articulating the doctrine of *substantial equivalence* as a basis for regulation of GMOs, and it is worth laying out its approach to biotechnology regulation in detail, as it would likely form the basis of any position the US would take in a GMO trade dispute. The issues of labeling and regulation of GM foods were first addressed by the FDA in 1992 (Korwek 2000). Essentially, the FDA drew on the Federal Food Drug and Cosmetic Act (FFDCA), focusing on sections 403 (a) and 201 (n) (FDA 1992). The first of these requires that food or food ingredients should be described by their common name, while the second requires that labeling of food should detail all facts that are "material," and deals with the circumstances under which labeling can be either false or misleading. The concept of materiality relates to information about the attributes of food products, and the FDA has typically required labeling of foods with information that addresses a health risk or substantiates quantitatively any claims made about nutrient content of the food product (FDA 2001).

The FDA's 1992 position was very clear. Labeling of GM foods was not required. First, FDA took the position that recombinant DNA methods of plant development are not material information under the terms of sections 403(a) and 201(n) of the FFDCA. Essentially, the FDA argued that crop development through genetic modification is simply an extension to the molecular level of traditional plant breeding methods. Second, the FDA established the principle that existing GM foods do not differ in any substantial way from those developed through traditional plant breeding methods. This principle of substantial equivalence also establishes the circumstances under which the FDA would require labeling of a GM-food product: if the GM version of an existing food product is substantially different, if the GM version has very different nutritional properties, or if the GM food contains an allergen that would not normally be present in that food product. Except insofar as genetic modification could change food in the manner just suggested, there is no explicit right to know labeling requirement in the FD&C Act. In other words, consumers have no explicit right to know how their food was processed, but there are limited rights in terms of the food itself. In a recent review of its position on labeling, the FDA concluded:

The agency is still not aware of any data or other information that would form a basis for concluding that the fact that a food or its ingredients was produced using bioengineering is a

material fact that must be disclosed under sections 403(a) and 201(n) of the act. FDA is therefore reaffirming its decision to not require special labeling of all bioengineered foods (FDA, January 2001, p.6).

In addition to reaffirming its position on the labeling of genetically modified foods, the FDA in its recent policy statement also laid out guidelines for the appropriate, non-misleading labeling of both foods that have been bio-engineered, and foods that are either not genetically modified or do not contain GM ingredients

GMO regulation in Canada is very similar to the US in terms of the involvement of multiple agencies, pre-market approval of products, and the principles on which the approach to regulation and labeling is based. Food labeling in Canada is currently regulated under the Food and Drugs Act. While legislation covering GM food labeling remains under development, government guidelines rest on the view that there should be mandatory labeling only if there is a food safety concern over a product, and that voluntary *positive* labeling and voluntary *negative* labeling be allowed, provided the relevant claims are factual and neither misleading nor deceptive. For example, a positive label might state “product contains GM ingredients” and a negative label might state “product contains no GM ingredients.”

The key to US and Canadian approaches to regulation of GMOs is the principle of minimal oversight of food products that are *generally regarded as safe* (GRAS). Conventional food products are considered GRAS, and this is the standard by which GM foods are being judged in these countries. The approach recognizes that zero tolerance for potentially hazardous ingredients in food would result in few foods ever being marketed. As a result, if ingredients in GM foods are substantially equivalent to their conventional counterparts and if the existing food is GRAS, then the GM version is also regarded as safe. However, if the GM food contains ingredients that differ substantially from ingredients already in the conventional version of the food, pre-market review is required. This regulatory approach, based on the concept of substantial equivalence, is consistent with recommendations made by the Food and Agriculture Organization (FAO)/World Health Organization (WHO) (1995, 1996) for assessing the safety of GMOs, and the principles for evaluation of GM foods put forward by the OECD (1993).

Country Grouping 2: Precautionary Principle and Mandatory Labeling

This group consists of two sub-groups: countries with relatively well-developed regulatory systems, such as the EU, Japan, Australia, and New Zealand; and countries that are either independently developing their own systems of regulation, such as Norway and Switzerland, or are following the lead of the first sub-group, such as Hungary, Poland, and South Korea. Countries in the first sub-group can be characterized as having approved a number of GMOs during the 1990s, but adoption of such crops has been very limited. For example, in 2000, Spain, Germany and France had small areas of Bt corn, and Australia a small area of Bt cotton (James *op. cit.*). They have also significantly revised their approaches to regulation in light of concerns expressed by their consuming publics. In addition, their approaches to regulation reflect, to differing degrees, application of the precautionary principle, and many other countries in both Eastern and Central Europe, and South East Asia, either have or are likely to implement similar regulatory systems.

Prior to June 1999, the EU had approved 10 GM products for commercial marketing, including both GM corn and soybeans. These had been approved under a system of two Council directives, and one regulation. Directive 90/219/EEC concerns the management of GMO research and development, covering containment and control, record keeping, emergency planning, and notification. Directive 90/220/EEC covers the deliberate release of GMOs, the main elements of the directive requiring notification of the release to the relevant authority in the Member State where the GMO would first be marketed. After review, the Member State can give consent to the marketing. Finally, the Novel Foods Regulation, No. 258/97, was adopted in January 1997. This regulation established an approval procedure for novel foods and novel food ingredients, which are defined either as foods or food ingredients containing or consisting of GMOs, or foods and food ingredients produced from but not containing GMOs. In addition, the Novel Foods Regulation requires both unprocessed GMOs and foods that may contain GMOs to be labeled, and that labels must indicate whether it is no longer equivalent to the conventional version of that food. The labeling rules were subsequently refined such that food products containing at least one percent of GM corn or soybeans would have to be labeled as GM products.

In June 1999, the EU placed a moratorium on further approvals of GMOs. The Council of the European Union also recommended that a thoroughly precautionary approach be taken to future approval of GMOs, and that GMOs should not be placed on the market until it can be demonstrated that there is no adverse impact on human health and the environment. On February 14, 2001, the European Parliament voted in favor of a revised Directive 90/220/EEC, and the Council of Ministers adopted the revised directive on February 15, 2001 (EU Parliament and Council 2001). Along with legislative proposals on traceability and labeling of GMOs to be released in April this year, the revised directive should see the resumption of the process for EU approval of GMOs, although Austria, Denmark, France, Greece, Italy and Luxembourg have all stated they want the current moratorium to remain in force.

The revised directive has important implications for the future approval of GMOs in the EU, and will almost certainly impact other countries' approaches to GMO regulation. The directive has several important regulatory features relating to the general obligations of Member States: (1) the precautionary principle should be applied to ensure appropriate measures are taken to avoid any adverse effects on human health and the environment from the release and marketing of GMOs; (2) an environmental risk assessment has to be carried out before any notification is made to the relevant EU authority of intent to release a GMO; (3) the use of antibiotic resistance marker genes is to be phased out by the end of 2004 in the case of commercial release of GMOs and by the end of 2008 for research purposes; (4) assessment of risk should be conducted on a case-by-case basis; and (5) Member States are required to take measures to ensure traceability at all stages of the placing on the market of GMOs.

The revised directive is also very clear on the commercial marketing of either GMOs or products containing GMOs. The notification procedure requires, among other things, an environmental risk assessment, a plan for monitoring, a proposal for labeling, and a proposal for packaging. The Member State receiving notification has 90 days to respond to the notification. If consent is given to market the GMO, the period of consent will last for at most 10 years, and will be subject to evaluation prior to renewal.

In terms of EU-wide circulation of GMOs, the directive states that no Member State can restrict marketing of any GMO that has met the requirements for approval. There is, however, a safeguard clause which allows a Member State to provisionally restrict or prohibit marketing of a GMO if it has either new or additional information about the risk to human health and the environment made available since the date of consent. In addition, where either an objection is raised as regards the risk of a GMO to human health and the environment, or where consent is not given to place the GMO on the market, the European Commission will consult the relevant Scientific Committee. The European Commission may also consult the relevant committees concerning any ethical implications of biotechnology, and it is expected to implement the Cartagena Protocol on Biosafety.

Japan is also an interesting case of how public concerns over the safety of GMOs have affected the regulatory process. Between 1992 and 1999, Japan approved 37 GM crops, including soybeans, corn, and canola. In early 2000, Japan announced that suppliers of GM foods must provide proof of their safety prior to sale. So far, over 20 GM foods have been approved for use. As of April 2001, imports of foods containing GM ingredients that have not been approved will be banned. In addition, Japan has announced that, as of April 1, 2001, it will require the mandatory labeling and import notification for perishable and processed foods that are either genetically modified or contain GM ingredients. The draft of the regulation lists 24 different processed foods and ingredients, derived from corn and soybeans, which must be labeled if used as a “main ingredient” in a food product. The term main ingredient is defined to be the top three ingredients by weight, where each must weigh 5 percent or more of the food. Foods such as oils and other highly processed foods are exempt if they do not contain detectable levels of GMOs. Japan seems to be introducing even more rigorous mandatory labeling regulations than those currently adopted in the EU.

Finally, Australia and New Zealand are included in this sub-group because they have processes in place for pre-market approval and have implemented regulations for the mandatory labeling of GM foods. It should be noted though that neither country refers to the precautionary principle in its regulatory language. Australia and New Zealand regulate food safety together through the Australia New Zealand Food Authority (ANZFA) and the Australia New Zealand Food Standards Council (ANZFS). Specifically, the marketing of GMO foods is regulated through Standard A18 of the Australian Food Standards Code. This standard requires that a safety assessment, based on a scientific risk-based approach be conducted on all foods produced with biotechnology. Standard A18 provides an exemption for those foods currently on the market if an application was accepted by ANZFA prior to April 30, 1999, the food is lawfully permitted in another country, and the ANZFS has not obtained evidence showing the food is a risk to public health.

The ANZFA guidelines make a very clear reference to the concept of substantial equivalence and its application in food safety assessment, referring to the OECD principles (OECD 1993). In this sense, the Australian and New Zealand regulations are very similar to those of Canada and the US, with similar principles in place for risk assessment (ANZFA 2000). In contrast to Canada and the US, however, ANZSFC promulgated new mandatory labeling rules in July 2000. The new standard requires the labeling of food and food ingredients where rDNA and/or novel protein is present. It also requires labeling of food and ingredients where the food

has altered characteristics. There are a number of exemptions to the requirement, including highly processed foods where rDNA and/or novel proteins have been removed through refining, food prepared at the point of sale. Any one ingredient in a food is allowed to contain up to 1 percent of GM material whose presence is unintended. ANZFA makes clear that it implemented mandatory labeling not because of any safety issue, but rather on a “right to know” basis, to give consumers information so that they can make an informed choice if they have ethical, environmental, religious, or other reasons for avoiding GM foods (ANZFA 2000).

In summary, the first sub-group in this country grouping can be characterized as having probably the most rigorous regulations with regards to either pre-market approval and/or GMO labeling. The EU has adopted a restrictive set of regulations, and it would seem that Japan is following suit. Australia and New Zealand have implemented a system of pre-market approval that is more in line with the approach adopted by the Canada and the US, but their labeling regulations, which they claim to be more stringent than those of the EU, are mandatory, and reflect a response to consumer concerns about GM foods. It might also be argued that as agricultural exporters, Australia and New Zealand are attempting to differentiate themselves from the US and Canada by adopting labeling.

The second sub-group consists of those European countries such as Norway, Russia, and Switzerland that have implemented GM regulations, including mandatory labeling rules, and also those Eastern and Central European countries such as Bulgaria, the Czech Republic, Hungary, and Poland that have adopted regulations that are similar to those contained in the EC Directive 90/220. South Korea is also included as it is likely to implement labeling regulations similar to those being adopted in Japan.

In Norway, food and food ingredients either composed of or containing GM ingredients must be approved. A regulation was also introduced in March 2000 that will prohibit the use of antibiotic resistance marker genes in the production, import, and sale of foods and food ingredients. Norway has also developed guidelines for the mandatory labeling of all GM foods and food ingredients, if the product contains a GM ingredient that constitutes more than 2 percent of the ingredient. In the case of Russia, registration of GM foods and ingredients is required, with registration certificates being valid for three years. As of July 2000, Russia also issued a decree that all GM foods be labeled, although highly refined foods such as oils are exempt if they do not contain proteins. GM foods and ingredients have to be authorized in Switzerland in consultation with multiple agencies. Notably, authorization is granted if all danger to health can be excluded in light of the current scientific information. In addition, since 1995, all GM foods and GM food ingredients must be labeled in Switzerland. GM-free labeling can be used if it can be proven the food is not genetically modified and no GM organisms were used in production of the food.

Bulgaria, the Czech Republic, Hungary and Poland, have all, to some degree, opted for regulations that are harmonized with those of the EU, which is not surprising given their likely future accession to the EU. Poland’s regulations are explicitly conformable to EC Directive 90/220, and Hungary’s regulations contain language explicitly referring to EC directives. Hungary also adopted mandatory labeling of GM foods and foods containing GM ingredients as of July 1999. Bulgaria and the Czech Republic have probably the clearest set of guidelines

referring to both introduction of GMOs into the environment, and the placing of GM products on the market. In Bulgaria, applications for release and marketing of a GMO, which must contain a risk assessment, are submitted to Council for Safe Use of Genetically Modified Higher Plants, which then has to make a decision within a month. If a license is granted, the firm releasing/marketing the GMO must label the product accordingly. In the Czech Republic, firms must register a GMO with the Ministry of the Environment. The registration must include, amongst other things, a risk assessment. Similar to EU regulations, the Ministry of the Environment must issue a decision within 90 days of application. If a product is approved for commercial use, mandatory labeling must be used, stating it is a “genetically modified organism,” or that “this product contains a genetically modified organism.”

In the case of South Korea, a bill is under consideration that will require importers of GM foods and processed foods containing GM ingredients to receive approval prior to import, with specific reference to corn and soybean imports. The bill has been prepared in response to the requirements of the Cartagena Protocol on Biosafety, and is likely to be in force later in 2001. In terms of labeling, Korea is likely to implement GM standards similar to those being developed in Japan. In April 2000, Korea released guidelines that would mandate labeling for products using GM products as a major ingredient, these products being corn, soybeans, and bean sprouts. These guidelines are likely to be implemented in July 2001.

Country Grouping 3: Cartagena Protocol and Nascent Regulations

Finally there is a group of countries that either have some limited regulations in place, are developing regulations, or are less developed country signatories of the Cartagena Protocol on Biosafety. Indonesian regulations currently require a safety review and labeling of GM foods and ingredients, while in June 2000, Chile approved a decree that requires mandatory labeling of GM foods or foods containing GM ingredients at levels of 1 percent or higher. Mexico and the Phillipines are also both considering mandatory GM labeling regulations. In Thailand, 40 GM plants have been exempted from being prohibited in the use of processed foods and animal feeds, although this amendment does not exempt these plants as either imports or for domestic planting. Thailand currently has no scheme in place for labeling, which is also the case in Malaysia, and Singapore, while Hong Kong is likely to put a voluntary scheme in place. In contrast, Saudi Arabia has proposed an import ban on GMOs and has a mandatory labeling scheme in place. Sri Lanka has banned imports of GMOs.

Brazil is an interesting case in light of its importance in the global soybean complex. The Brazilian Biosafety Law was enacted in 1995, prohibiting entry of GMOs without prior approval. Under this law, CTNbio approved both GM soybeans for planting in Brazil, and also decided to allow Bt corn to be imported from Argentina for use in animal feed. A federal judge, however, subsequently stopped the commercial planting of GM soybeans, and the Brazilian government used the Biosafety Law to block imports of Bt corn. In addition, Brazil is expected to implement mandatory labeling of foods containing more than 5 percent GM ingredients.

The Cartagena Protocol on Biosafety to the Convention on Biological Diversity was finalized and adopted by 133 governments on January 29, 2000, and now has to be ratified by the parliaments of 50 signatories before coming into effect. It is likely that this will provide a guide

to many developing countries as they develop and implement their regulations on GMOs. A key to the Biosafety Protocol is that, in accordance with the precautionary approach, as contained in Principle 15 of the Rio Declaration on Environment and Development, its objective is to ensure that the transfer, handling, and use of living modified organisms (LMOs) does not have an adverse effect on biological diversity and impose risks on human health. There are several key features of the Protocol. Anyone wishing to export an LMO has to inform the relevant authority in the importing country of the intentional trans-boundary movement of the LMO. The importing country then has 90 days in which to notify the exporter of its decision as to whether trans-boundary movement can proceed. The decision to allow the import has to include a scientifically sound risk assessment. In addition, there is a process for notification of any LMO that is placed on the market for direct use as food or feed, or for processing.

Of key interest are clauses that state that lack of scientific certainty due to insufficient relevant scientific information of any adverse effects of the LMO should not prevent an importer from taking a decision to minimize potential adverse effects. In addition, any LMO intended for marketing as either food, feed, or processing has to be clearly identified that they “may contain” LMOs and are not intended for introduction into the environment. LMOs that are intended for either contained use or intentional introduction into the environment have to be clearly identified along with documentation of the requirements relating to aspects such as traits, safe handling, storage, and transport. Finally, in reaching a decision over whether to approve imports, a country may take into account, consistent with their international obligations, any socio-economic considerations relating to the impact of LMOs on the value of biological diversity to indigenous and local communities.

GM Regulations and the WTO

The preceding discussion suggests the potential for international conflict between the two approaches being adopted to regulate GMOs. On the one hand, there is the US/Canadian approach to evaluating GMOs, which is based on a scientific, risk-based assessment that also appeals to the concept of substantial equivalence, and the notion that zero risk in food safety regulation is not practical, given that conventional foods are already presumed to be safe. On the other hand, there is the regulatory approach adopted by the EU, and the Biosafety Protocol, that is based on a precautionary approach to risk assessment and management of GMOs. The first formal complaint to the WTO over GMO import regulations did not arise between the US and EU, instead it concerned a prohibition on imports by Egypt from Thailand of canned tuna packed in GM soybean oil (WT/DS205/1). While this dispute has now been settled, it is indicative of the likelihood of conflict over GMO regulations as they impact international trade. In addition, the negotiating proposals put forward in the first phase of the agriculture negotiations by the US, Japan, Korea and Switzerland relating to GMOs suggest that further disputes may occur.

Given the potential for conflict, how do GM regulations fit into the rules of the WTO? It should be obvious from the discussion that much of the regulation of GMOs is not focused directly on trade. The WTO explicitly recognizes the right of countries to adopt measures that protect human, plant and animal health (GATT Article XX). In this sense, the Biosafety Protocol is not in conflict with obligations countries have under the WTO (Anderson and Nielsen 2001). The WTO would, however, be involved in any potential conflict over GMO regulation insofar as there are rules on import restrictions contained in the GATT 1994, and the SPS and TBT

Agreements. It is not clear yet whether the rights to restrict trade in LMOs as embodied in the Biosafety Protocol will generate conflict with the WTO agreements.

One main principle in the WTO that would impinge on the regulation of GMOs in world trade is that of non-discrimination. It would neither be WTO consistent to ban imports of GM products from one WTO member and allow them from another, nor to impose restrictions on imported GM products if such restrictions were not imposed on domestic producers of the GM product. However, it is unlikely that the EU, for example, would either explicitly discriminate against US exports of GM products, or allow domestic production of a GM product with limited regulation, but impose extensive regulations on the imported product.

More controversially, there might be a claim of discrimination when a major trader such as the EU, as a deliberate act of trade policy, were to ban imports of a GM product but allow imports of the conventional product. GATT Article III states countries cannot discriminate between like goods on the basis of country of origin. The key issue in any GMO dispute will be the definition of "like goods." Does either genetic modification or presence of GM ingredients constitute sufficient grounds for differentiation from conventional products? By the principle of substantial equivalence used in the US and Canada, import rules targeted specifically at GMOs would be considered discriminatory, whereas by the EU's concept of equivalence, GMOs are not viewed as being the same as their conventional counterparts, and, hence, are not "like goods."

In terms of the differing approaches to risk assessment and labeling of GMOs being adopted, there is an issue of how these will be evaluated in terms of the SPS and TBT Agreements. The standard interpretation of the SPS Agreement is that an import ban on a GM product would have to meet the risk assessment criteria of the agreement, and scientific justification would have to be made if risk aversion exceeded international standards. The point of conflict might be where, for example, the US has approved a GM product under its regulatory system, whereas the EU appealing to the precautionary principle determines there is still a scientific reason not to approve that product for import.

Article 5.7 of the SPS Agreement allows WTO member states to take precautionary measures if scientific information is unavailable, but at the same time members have to seek additional risk-assessment information. Interpretation of the precautionary principle, and its potential application to GMO regulations has triggered a good deal of debate in the popular and scientific media (Foster, Vecchia and Repacholi 2000). The EU has issued an important communication in this respect (February 2000). It describes the framework for science-based risk assessment, and lay out guidelines for implementing the principle in a transparent manner: specifically, zero risk must not be aimed for; implementation should be non-discriminatory and consistent with measures taken in equivalent areas where the scientific data are available; cost/benefit analysis should be conducted; and any measures taken should be provisional pending new more reliable scientific data becoming available. The communication, however, is vague on what weight of evidence is required for triggering the precautionary principle and how much evidence of safety has to be provided for a new technology to be approved. It remains to be seen whether the EU's precautionary approach to regulating GMOs will be found in violation of the SPS Agreement, especially if, as suggested by this communication, the EU aims to implement a science-based risk assessment.

An additional problem arises in that the EU, and other members of the WTO, may appeal to ethical, cultural, and religious grounds for restricting/banning imports of GM foods. Such language is clearly contained in Article 29 of the EU's revision of Directive 90/220, and also Article 26 of the Biosafety Protocol. GATT Article XX (a) allows the use of trade barriers to protect public morals, but there is insufficient detail in the article to predict how a dispute panel might rule in a specific GMO case. The Codex Committee on General Principles continues to debate the role of the precautionary principle.

GMO products highlight the potential tension between the focus of the GATT/WTO on establishing rules to promote trade, and increasing demands that various other concerns be incorporated into the regulatory system for global markets. One problem with ethical concerns entering into trade regulations is that most countries are themselves just beginning to grapple with such issues through public debate. Even in countries such as the US, where agricultural biotechnology receives considerably more public support than in the EU, extension of biotechnology to the commercialization of animal cloning is likely to foster much more extensive debate over ethical issues (*The Economist*, April 14, 2001). It might be expecting too much of existing WTO arrangements to deal with ethical concerns as a basis for GM import regulation. Some observers have suggested that the existing SPS and TBT agreements are inappropriate for dealing with GMOs, and that new agreements will have to be developed to evaluate the legitimacy of consumer and ethical concerns (Perdikis 2000).

Within the current agreements, the use of mandatory labeling may be challenged under either the SPS or TBT Agreement. As noted earlier, application of the TBT Agreement to food products has so far been very limited. The comments on the EU's 1998 notification to the TBT Committee of its proposed mandatory labeling regime, responses, and the EU's subsequent replies, provide an interesting example of the differing approaches to GMO regulation and the potential grounds for a dispute. In its response to comments by the US, the EU states that there is a difference between the concept of equivalence, which it intends to apply in labeling of GMOs, and the concept of substantial equivalence (G/TBT/W/78). The EU claims that the latter principle relates to the process of gaining authorization to place GMOs on the market, while the former is used to determine whether GM foods and foods containing GMOs should be labeled. Specifically, the EU claims that foods and food ingredients containing either rDNA or proteins resulting from genetic modification are not equivalent to their conventional counterparts, and, therefore, should be labeled. In further comments, the US argues that the EU provides no support for the argument that GM foods and ingredients are not substantially equivalent to foods produced by conventional methods, and that food products should not be labeled on the basis of production method if their essential characteristics are unchanged (G/TBT/W/94). Australia and New Zealand use the principle of substantial equivalence in their approach to GMO regulation, yet have adopted labeling. This may seem contradictory, but the principle of consumer sovereignty may be more relevant to near-term policy than complex scientific arguments about whether GMOs are or are not equivalent to conventionally produced foods. In addition, as exporters, these two countries perhaps recognize the potential for differentiating their products from those of the US and Canada. Resolution of the GMO labeling argument will have important implications for how the WTO handles other disputes over the labeling of products based on process as opposed to product characteristics.

Developing Country Perspectives

As discussions begin in the negotiations on agriculture as part of the embedded agenda at the WTO, and with the possible launch of a new round of multilateral negotiations, the impact of standards and technical regulations is of particular concern to developing countries that bear additional costs in meeting regulatory requirements for market access. The debates over product attributes are important for developing countries both as they seek to expand export markets and accelerate domestic regulatory reform.¹¹ Domestic regulation affecting imports through technical requirements, testing, certification, and labeling represent one of the most important new areas of focus in continuing liberalization efforts.

Developing Country Agricultural Trade

The developing countries, especially the least developed, have a direct stake in accelerating global trade in agriculture. This includes removal of discriminatory regulatory barriers that restrict trade based on product attributes. A majority of the poorest nations remain largely exporters of agricultural products. Between 40-60% of these countries' populations live in rural areas (World Bank 2000). Net food importers also have a stake in removing regulatory barriers to trade in agriculture. The difficulty in a trade policy context arises from the complexity associated with identifying and quantifying the costs and benefits of regulatory interventions.

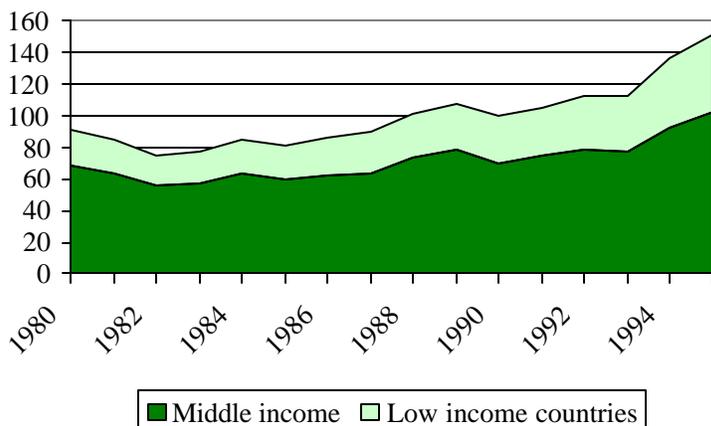
The export profile of developing countries overall is characterized by a growing share of manufactures exports and declining share of minerals and foods in total exports. Food exports, however, remain an essential part of trade in many of the least developed countries. These countries have comparative advantage in food production stemming from low-cost labor and abundant arable land for cultivation. Food exports from developing countries have exhibited steady growth since the early 1980s as shown in Figure 5.1. Growth of food exports was as high as 120 percent in low-income countries between 1980 and 1995, and was greater than 50 percent in middle-income countries.¹²

The shares of five groups of food products exported from middle- and low-income developing countries are shown in Figure 5.2. Cereals were the most important export until the mid-1980s, but their importance declined substantially in the 1990s. In contrast, processed foods have increased as a share of total food exports, and have become increasingly important in the 1990s. This trend is likely to continue. Developing countries have leveraged their comparative advantage in low-cost labor into the processing stage, and as a result have become increasingly competitive in international markets. Thus, product attribute regulations affecting trade will be more important over time to developing country exporters.

¹¹ For an overview of the status of implementation of Uruguay Round commitments of particular importance to developing countries see Finger and Schuler (1999). Wilson (2000) outlines specific implementation difficulties faced by developing countries in the Agreement on Technical Barriers to Trade. See also "Technical Barriers to Trade: Challenges and Opportunities for Developing Countries," Statement of the World Bank to the Technical Barriers to Trade Committee, World Trade Organization, Geneva, 24 February 2000.

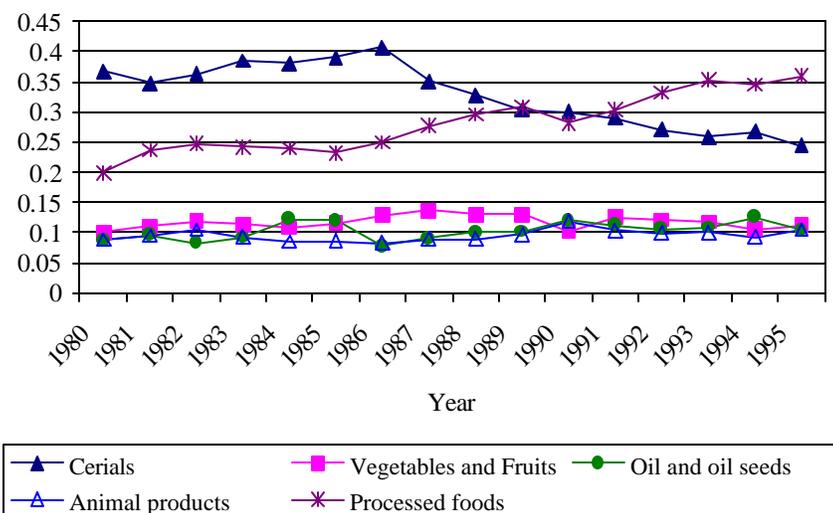
¹² Definition of middle- and low-income countries follows that of the World Bank in 1999.

Figure 5.1. Value of Food Exports from Developing Countries (1995 US\$ million)



Source: Authors calculations, based on GTAP

Figure 5.2. Commodity Shares of Food Exports from Developing Countries



Source: Authors calculations, based on GTAP

Trade Impact of Standards and Regulations

Standards and product attribute regulations are designed to facilitate information exchange, ensure quality, and achieve the provision of public goods, as described throughout this commissioned paper. These are also major development goals. The implementation of standards and regulations, of course, also involves costs, potentially important costs for developing countries when commitments are bound in negotiated agreements. Some of these costs are inevitable. They arise from the testing and certification (conformity assessment) procedures necessary to determine if a product, such as fresh fish or produce, meets standardized requirements justified by scientific risk. Unnecessary and duplicative testing and certification requirements, however, impose costs on small and medium sized firms, consumers, and society.

In particular, the cost and complexity in determining conformity to varying national technical regulations is high and rising (G/TBT/W/130). For Africa, compliance costs are especially high under conditions of duplicative requirements for market access (Oyejide, Ogunkola, Bankole 2001). As Hooker and Caswell (1999) document, SPS measures can raise compliance costs of foreign producers in particular, resulting in reduced imports and increased domestic production.

The history of the GATT and experience under the WTO demonstrate that in practice countries may use regulation for simple protectionist purposes. Technical regulations can discriminate against foreign suppliers, both in their construction and in their outcomes. They may be used to gain strategic trade advantages for domestic firms over foreign competitors. Standards are often non-transparent. Regulations may be drafted as barriers to entry that exclude both new domestic and foreign firms from a particular market. In small developing countries, this can serve to support entrenched monopolies.

From a development perspective what is needed is a process to rationalize costly regulations, along with the type of technical assistance necessary to implement current obligations under the WTO. The broad goals for rationalization, advanced through WTO negotiations and extension of Uruguay Round commitments in the SPS and TBT Agreements, would involve (1) further restricting discriminatory treatment of imports, (2) systematically removing duplicative testing requirements for market access, (3) formally recognizing that foreign standards can achieve the same level of social or consumer protection as domestic standards, (4) making regulation more transparent through a strengthened WTO enquiry point mechanism, and (5) scaling regulatory intervention to levels that do not impose excess costs on consumers and firms.

Developing countries can face substantial technical constraints imposed by importers. Consider for example recent research on food safety standards in Otsuki, Wilson, and Sewadeh (2000). This work provides estimates of the impact of differing levels of food safety regulation based on the EU standard on aflatoxin in food compared to levels suggested by international standards. The results suggest that the implementation of the new aflatoxin standard in the EU would have a negative impact on African exports of cereals, dried fruits and nuts to Europe. The EU standard, which would reduce health risk by approximately 1.4 deaths per billion per year, would decrease the African exports by 64 percent, or US\$ 670 million, in contrast to regulation set at an international standard.

Differences in standards for similar goods in export markets also increase costs. For example, differing worldwide standards on aflatoxin diverts trade toward regions where regulations are less restrictive and consumption is growing in Eastern and Central Europe, Africa, and Latin America, and the Caribbean (Otsuki and Wilson 2001). Increasingly tight standards tend to accelerate trade between industrialized countries in groundnuts, where regulation is already restrictive. Therefore, lack of consensus on an international standard based in sound science provides strong conditions in which developing country exports may be restricted and diverted, at a high net welfare cost over time.

WTO Disputes and Developing Countries

To date, the WTO Dispute Settlement Body has considered a total of 18 disputes related to the regulation of agricultural product attributes (see Table 1.1). In procedural terms, these cases ranged from requests for consultations through panel and appellate body rulings. Most of these complaints have been brought by developed countries against the measures of other developed countries, mirroring the overall pattern of disputes before the WTO. However, disputes between developed members, such as the United States and the EU, have market access implications for developing country exporters as well.

Developing countries have exercised their rights in three complaints against the measures of developed countries (EC – Trade Description of Scallops; US – Import Prohibition on Certain Shrimp and Shrimp Products; and EC – Restrictions on Rice). Developing countries have also made one complaint against another developing country (Egypt – Import Prohibition on Canned Tuna with Genetically Modified Soybean Oil). They have joined three disputes as third parties and were respondents in four cases. In no case has a least developed country been the target of a complaint.

Infrastructure to Implement WTO Commitments

Two relevant problems are how to provide the means through which developing countries can conduct risk assessment in SPS cases and build the capacity needed to gain market access by meeting the required standards of importers. Building on the mechanisms at the WTO and other institutions (such as FAO) to share scientific information and risk analysis techniques among members is critical. This provides the background context for developing countries in the WTO negotiations. Their focus centers largely on the infrastructure needed to implement obligations and exercise rights under the agreements. This includes both physical infrastructure and trained professionals needed to support regulatory and scientific work by governments.

The most basic of obligations under the SPS Agreement has yet to be achieved by all developing countries. Despite the obligation to establish enquiry points, as of 1999 only 76% of middle- and low-income WTO members had done so under the SPS Agreement, as shown in Table 5.1. This contrasts with 92% of high-income members.

The laboratories, inspection facilities, customs control mechanisms, and other physical capital necessary to support implementation of WTO commitments, including notification of new regulations, remains a concern for developing countries. Consider the case of Sub Saharan Africa. Based on reviews by Oyejide et al (2000), the Centre for Food Economic Research's multi-regional survey of Africa, North Africa, Middle-East and South Asia, and other SPS-related studies, the following development challenges are apparent:

- (1) Improvement of production methods, including grain growing and harvesting technique, livestock feeding, slaughtering and milking techniques.
- (2) Improvement of transportation and storage methods: transportation time, artisanal technique, and sanitation of storage facilities.

Table 5.1. WTO Members with Enquiry Points for SPS Measures

Year	Middle and low income countries		High income countries	
	Members	Enquiry Points	Members	Enquiry Points
1995	78	49 (63%)	34	28 (82%)
1999	98	74 (76%)	36	33 (92%)

Source: Author calculations as based on WTO data.

- (3) Improvement of access to compliance resources: assistance by technical experts and information resources and laboratory and quarantine stations.
- (4) Improvements in access to international negotiation and establishment of inquiry points and contact points in WTO to promote developing countries' participation in negotiations.
- (5) Balancing scale economies and benefits from market liberalization; balanced development of centralized quality control system and competitive market systems for exports.

In addition, as Finger and Schuler (1999) note, the cost of compliance with obligations related to the SPS Agreement, along with those on intellectual property rights and customs valuation, can exceed a full year's development budget in the least developed countries. In Sub-Saharan Africa, the least developed region in the world, many countries lack the technology available to support inspection capacities, while other countries adopt progressively more restrictive sanitary and phytosanitary standards.

Issues for Negotiations

The current positions taken by developing countries towards the agriculture negotiations were formulated to a large extent in preparatory work in advance of the WTO Seattle ministerial of September 1999. Developing country members of the WTO wanted a focus on implementation of existing obligations under the Uruguay Round SPS and TBT Agreements as part of discussions leading to a possible new multilateral round.

Proposal in Advance of the Seattle Ministerial. The primary aspect of the developing country focus is noted in submissions in advance of Seattle concerning a lack of modern technical infrastructure and the capacity to (1) engage in international standards development activities, and (2) provide internationally-recognized testing and certification procedures for their products. Without the resources necessary to build and maintain modern standards and conformity assessment systems, it is difficult to both ensure rights and exercise responsibilities under existing WTO rules. This theme was repeatedly referenced in regard to the foundations of rights and responsibilities in the WTO agreements tied to international standards. If developing countries lack resources to access information on international standards, or participate in their development, the link between the rule of law as specified in the WTO system and ability to fulfill and defend rights by developing countries is called into question.

Most developing-country submissions to the WTO leading to Seattle, therefore, recommended a targeted review of the SPS and TBT Agreements in light of development needs. One area of consensus related to implementation was the common position of developed and developing countries that issues of technical barriers to trade in goods be part of the embedded agenda of the WTO in 2000 in the 2nd Triennial Review of the TBT Agreement. There were no recommendations by member to include the SPS or TBT Agreement within the negotiating framework of a new round.

A major objective of developing countries reflected in positions for Seattle was further clarification of provisions regarding special and differential treatment under Article 10 of the SPS Agreement and Article 12 of the TBT Agreement. India, for example, recommended extending the timeframe for compliance by developing country members with existing provisions of WTO agreements referencing standards. Developing countries also raised the problems with the SPS and TBT notifications of new regulations by members. For example, notification of the intent to promulgate a new regulation with a 60-day comment rule provides questionable value to developing countries in the absence of capacities to react to new requirements on imports. Other proposals noted the lack in notifications of useful information on methodology or other factors linked to the regulations that might assist developing countries in commenting on new import rules.

Concern over the use of environmental standards to restrict imports was also a consistent and prominent theme in developing country submissions to the WTO in preparation for the Seattle Ministerial. The issue of trade disciplines of the WTO and environmental standards was viewed with serious alarm by some developing countries in regard to both industrial goods and agricultural products. Among other issues, the lack of clear rules on the appropriate use of labels to indicate environmental impacts, and rise in use of standards for product and production measures in developed countries, were noted.

Finally, a number of submissions to the WTO by developing countries raised the question of how and under what circumstances Mutual Recognition Agreements (MRAs) are best implemented to facilitate trade. These agreements between governments seek to reduce technical barriers through recognition of equivalence of national product testing and certification procedures. To date they have only been negotiated between developed countries, but WTO members are specifically encouraged in the SPS and TBT Agreements to enter into MRAs. Whether developing countries will benefit with their implementation remains an issue related to MRAs as a means by which global trade is facilitated.

The Agriculture Negotiations and Product Attributes. A number of key issues for developing countries are expressed in proposals submitted to the WTO as part of the agriculture negotiations through March 2001. The emphasis on developing country concerns at the WTO is also reflected in the involvement of the General Council in debate over implementation of the SPS and TBT Agreements for developing countries.

The majority of submissions to the WTO on product attributes have centered on developing countries and the SPS Agreement. There is not a unified position being taken by all middle-income or least developed countries toward product attribute regulations. A number of

proposals under discussion reference equivalence and harmonization of standards and Article 4 of the SPS Agreement. From developing country perspectives, concerns about harmonization center largely on problems in access to information and participation in international standards setting activities (World Bank 2000). Standards developed by CODEX, the IPPC and OIE can facilitate harmonization. However, limited resources in developing countries preclude access to active engagement in the development of international standards in many cases.

It is difficult for most developing countries to have their standards accepted as equivalent by developed countries and MRAs are not feasible given the lack of modern facilities to test and certify in many countries. Even under conditions of technological parity between trading partners, such as the US, Europe and Japan, there is little evidence so far that MRAs have facilitated trade (Roberts et al in press).

The proposal submitted by the Small Island Developing States (G/AG/NG/W97) to the WTO, along with several others, suggests access to appropriate technology to meet SPS standards and assistance to participate in international standards setting. These are first steps necessary before concrete progress can be made toward harmonization. Submissions by Cuba and other members in the Western Hemisphere, Asia, and Africa (G/AG/NG/W37) suggest that “failure to recognize equivalence of measures” is a major problem confronting developing countries.

The requirements on the application of science and risk assessment in decision making have also been addressed in proposals by developing countries to the agriculture negotiations. From a developing country perspective, a problem with SPS regulations concerns the lack of consideration of dynamic benefits to economic development and trade under conditions in which acceptable risk is not set at zero tolerance levels. When combined with the lack of progress on harmonization of standards and options for importers to set regulation at nationally-defined levels, developing country exporters argue they are placed at a disadvantage.

As noted for the case of aflatoxin standards in Europe, regulation at differing levels within a range of risk tolerances can have a significant impact on trade. Several proposals from developing countries reflect concern over balancing science and risk in the SPS Agreement. India (G/AG/NG/W102) argues that that overly strict SPS measures have denied market access opportunities for developed countries. Conversely, the Small Island Developing States (G/AG/NG/W97) suggest that developing countries should not be subject to risk assessment requirements when bans are imposed to protect bio-diversity and environmental balance. Other net food importing members have noted the importance of ensuring food safety standards are met by exporters (Mauritius, among others). Kenya has raised the need to ensure that imports meet international food safety standards so that exporters cannot divert lower quality exports to overseas markets (G/AG/NG/W/136).

Discussions regarding the precautionary principle and food safety are important areas of focus for developing countries. The SPS Agreement provides flexibility for provisional or temporary measures under conditions in which scientific evidence is insufficient. The EU proposal on the precautionary principle, however, is counter to the implicit movement toward objective risk assessments based on international consensus science embedded in the SPS

Agreement. Broadening use of the SPS Agreement to provide a check against the use of new technology in agriculture is likely not consistent with needs to improve productivity in the developing world. The debate over GMOs in agriculture is therefore also of relevance to developing countries in the current negotiations. Whether consensus on labeling, harmonized conformity assessment mechanisms, or the need for regulation in this area at all can be achieved within the context of WTO negotiations is not certain.

Developing countries also have a stake in the outcome of debate over the proposed recognition of the multi-functionality of agricultural production. The Europeans (EC Comprehensive Negotiating Proposal, G/AG/NG/W/90) have suggested that non-trade concerns should be addressed in WTO agreements, including the SPS Agreement, in order to address environmental, consumer, and other needs. Poland and other Eastern European countries have expressed general support for inclusion of these topics in the negotiations. Animal welfare considerations in trade are included in this broad topic. To the extent recognition of non-trade concerns provides additional channels through which trade is restricted in agricultural commodities, net exporters from the least developed nations will be disadvantaged. At a minimum, detailed debate and negotiating resources devoted to issues that are not central to the basic functioning of the SPS Agreement in regard to notification, risk assessment and management techniques, and use of international standards, will delay progress in building on the foundations of the Agreement. India's submission (G/AG/NG/W/114) includes reference to similar notes of caution in this area.

Finally, some WTO members have suggested that special and differential treatment should include mandatory provision of technical assistance, or that longer phase-in periods be allowed for developing countries to implement obligations under the SPS and TBT Agreements. It is doubtful, however, that a focus on expansion of special and differential treatment is in the long-term interests of developing countries, especially the least developed in Asia and Africa. Integration into the WTO system requires a focus on the tools to implement commitments and exercise rights, not a process of special and differential treatment that provides an easy way to postpone necessary action on technical assistance.

Looking Forward Briefly

This IATRC commissioned paper has summarized the state of affairs with respect to WTO rules about product attribute regulations, identified the key stresses in this area of trade relations, and evaluated the prospects for trade-liberalizing resolution of some of the current and potential disputes over attribute-based trade restrictions. Product attributes have become an important determinant of transactions costs in international trade and of the patterns of product movements, and are likely to be more significant in both respects in the coming years. The multilateral regime of trade restrictions based on product attributes transcends specific agreements within the WTO and has emerged as one of the over-arching issues to be addressed. Whether significantly strengthened integration of global agricultural markets can be achieved now rests as fully on what is determined about the regime for product attribute regulations as it does on whether average tariffs on farm products can be brought down significantly over the next ten or twenty years.

The international regulatory regime concerned with product attributes faces stresses that were hardly anticipated in the Uruguay Round negotiations. Pests and pestilence have proliferated unexpectedly since 1994. Public confidence in the full availability of the scientific understanding required to keep a food supply safe and in the ability of regulatory agencies to ensure that safety has been shaken by mad cow disease. New outbreaks of foot and mouth disease in Europe and elsewhere have reminded those responsible for agricultural production systems of the need for constant vigilance about even the most well-known biological risks.

Were these challenges not enough to bring into contention the nascent WTO efforts to discipline product attribute trade regulations, additional tensions have arisen as commercial agri-food channels place emphasis on uniformity of products. Integrated market channels capable of delivering this uniformity have replaced independent entrepreneurs in the food distribution systems of some countries, and are on the way to doing so in others. At the same time, niche market demands are growing for specialty products that offer some form of high product-quality in the eyes of some consumers. This demand for quality creates specialized production and marketing opportunities, but only with strict attention to process-defined and product quality attributes. Definition of acceptable quality in both the mass and niche markets has differed among countries. Thus, the two market developments that are gaining strength, while potentially creating international trade opportunities, are also intensifying tensions among trade partners.

As has been described in depth herein, the WTO agreements governing product attribute regulations that affect trade provide only limited disciplines on the various regulatory measures adopted among countries. The basic WTO mandate to achieve the benefits of expanded international trade is counterbalanced for product attribute policies by the assignment of explicit sovereign rights of nations to determine their levels of risk aversion and to set standards for other quality attributes. Across a wide array of regulatory decision making, these decisions are often highly contested *within* sovereign states, let alone between them. The WTO agreements do not mandate how countries weigh benefits and costs of their regulatory decisions, nor do they fully describe other aspects of an optimal regulatory regime. Instead, the agreements proscribe those measures that can be shown to result in egregious discrimination against trade.

The WTO disciplines have proven effective in a number of product attribute regulation cases brought to formal consultations or dispute resolution. There have been more of these highly visible cases than in the past because of strengthened WTO dispute settlement rules, and the outcomes have demonstrated that trade-restrictive regulations about product attributes can be challenged on their merits. The complainant has won the argument and the offending country has modified its policies accordingly in most cases.

There are numerous product-attribute regulations that are contested less visibly. These cases are largely the subject of informal discussions and negotiations between affected industries and trade and regulatory agencies within the relevant countries. The WTO requirements for transparency of regulatory regimes have made it easier to identify and track contentious product attribute regulations, the few WTO panel rulings have a demonstration effect that underpins trade-liberalizing resolution of other disputes, and the discussions among affected parties are facilitated by the existence of the WTO committees. Still, concerns remain that many countries are setting risk aversion levels and product quality standards too conservatively when international trade is involved. In this event, they give up substantial gains from trade for very little risk protection or avoidance of other adverse consequences.

The WTO agreements addressing product attributes have been less successful in their more subtle dimensions aimed at reducing transactions costs to trade resulting from diverse product attribute regulations. Countries have resisted substantial recognition of equivalence between national regulatory regimes as a basis for ensuring national treatment, nor has harmonization of standards yet proven effective in defining uniform standards multilaterally. The regionalization provisions of the SPS agreement are a strong testimony to the principle that regulation of pest risks need not be tied to national borders if such territorial demarcation lines are a sub-optimal basis for disease control, and to national regulatory agencies entrusting some enforcement obligations to their foreign counterparts. But only a few cases in which trade has been opened on the basis of regional assessments of risks can be cited. Perhaps more progress on equivalence, harmonization and regionalization will be able to be reported in the future. Increased recognition of the potential contribution of imports to economic welfare might lead to additional investments in regulatory infrastructure (including more risk assessors to speed equivalency determinations) that will facilitate trade while maintaining desired risk-related and other quality attribute standards.

The growing importance of product attributes in modern markets raises the question of whether demand for heightened standards necessarily conflicts with further trade liberalization. This need not be the case. We have argued that the whole attributes/trade debate could constructively be turned to shift the focus from expanded trade as a *threat* to desired product attributes to expanded trade as a resource efficient means to *achieve* those attributes. Trade reality precedes trade policy in this respect, with the recent rise in trade of high-value raw and processed food products partly reflecting a quality sourcing objective. Regulatory policy related to product attributes could be less contentious if imposition of new standards was accompanied by greater market access for products meeting those standards.

In other respects, there is growing apprehension about the integrity of the global trading system as demand arises for specific product attributes. Despite some powerful economic forces

that promote integration of global markets, GMO policy regimes appear to be increasingly bifurcated. This could split the world into adoptive and nonadoptive regions and exacerbate trade tensions across the divide. The economic costs of regionalization of GMO policy, and related trade restrictions, could be high—indeed one wonders just how far such bifurcation will go given the real costs. The GMO regulatory issues are new: there remains fluidity in technology development and determination of regulatory regimes. Yet if positions harden and a rigid bifurcation of policy emerges less than ten years after GMO crop production took off in the mid 1990s, it could set back agricultural trade liberalization in much the way that excluding agriculture from the GATT has postponed reform by nearly half a century.

A second source of apprehension arises from developing countries, many of which feel burdened by either the requirements to justify their product attribute trade regulations, by the increasing standards required of their export products, or both. To the extent that regulatory authorities adopt stringent regimes without full consideration of their costs, those costs (but few benefits) may fall hard on developing countries, as described for proposed EU aflatoxin standards. To the extent that product standards are market-demand driven, the markets will squeeze out inefficient firms, regardless of location. Private resources will be forthcoming to meet the standards when profitable opportunities can be captured, and there is room for public technical assistance to developing countries both to strengthen their own regulatory regimes and to meet the standards required in international markets.

With all of these issues at play, the current round of agriculture negotiations can be characterized as one in which governments are seeking additional latitude, discipline or clarity with respect to their multilateral commitments regarding product attribute regulations. The case for additional clarity about the existing legal obligations is strong. Simply dismissing as protectionist any initiative to discuss risk management principles, the regulation of production and processing methods, or labeling regimes not only hardens opposition to further trade liberalization among some constituency groups, it also squanders an important opportunity to examine how trade can contribute to providing consumers with desired products in the most cost-effective manner. Progress in terms of these issues will depend on abandoning the polarizing debate over which objectives are legitimate and instead focusing on the requirement that policy regimes that are adopted provide the means for achieving a stated objective that is the least trade restrictive. A useful first step for those who propose increased product attribute regulations would be to identify, for example, how production and processing method regulations can be formulated so that *all* producers have the opportunity to compete in markets. Regulatory proposals that advance measures not coincidentally favorable toward domestic production circumstances, or that indicate a willingness to fund technical assistance for developing countries to enter marketing channels, or that consider independent, third-party certification authorities, could help dispel suspicion that consumer concerns are addressed only when it is politically expedient to do so. Those who favor less national regulation about product attributes are likewise challenged to offer explanations and examples of when and how the market, or the market in tandem with limited government intervention, provides optimal (and often more agile) solutions to matching product availability with evolving consumer preferences. Refusal to engage in this debate will not forestall consumers' interest in certain product quality attributes; indeed, those who wish to export to some markets have already found that the requirements of private firms exceed those found in WTO negotiating proposals.

Contrary to the case for additional clarity, proposals that seek additional latitude for policy interventions may obfuscate the language of the WTO disciplines on product attribute regulations. To the extent that the negotiations provide more latitude for countries to respond to revealed or perceived domestic demands for product standards with regulatory decision making, the goal of the WTO should be to ensure that this latitude does not limit trade. Some of the calls for additional regulatory latitude may be designed with other social goals in mind, and to this extent are disingenuous when cast as questions of regulatory policy related to product attributes. Surely the WTO has to draw the line and say that there is not latitude in defining product attributes to call “home grown” an attribute that trade-restricting regulations can enforce! Perhaps no proposal on the table in the agriculture negotiations is quite so brazen, but some tilt in this direction is evident when their content is given careful analysis.

The most difficult of the three issues to address is whether stronger disciplines on product attribute regulations should be sought in the WTO agreements through the current negotiations. There is a consensus not to reopen the SPS and TBT agreements formally, if only because everyone fears losing control of such a process. Still, language could be included in a new agriculture agreement that would strengthen those aspects of the WTO rules that require scientific risk assessments, limit deviations from international standards, or otherwise tighten the criteria for a legitimate product attribute regulation.

The problems with writing additional disciplines into the WTO rules are at least twofold. First, put simply, it is difficult to write language to effectively impose general criteria on specific cases of regulation, the merits of which most often have to be ascertained on a case-specific basis. Second, as noted above, regulatory decision making within member countries about product attributes that affect trade is part of a larger contest over regulation domestically. Within this larger debate, economics suggests the merit of market-based solutions over rigid command and control rules, of careful assessments of the costs of regulation, and of weighing the costs and benefits that are derived. The non-separability of domestic and trade policies has been recognized under the WTO Agreement on Agriculture and the legitimacy of the WTO in setting limits on domestic policy regimes has been established. This principle applies to product attribute regulations as well. But it is unrealistic to expect WTO disciplines alone to resolve food safety and quality regulatory debates: the trade tail will not wag the domestic dog.

Acknowledging these limitations about what can be accomplished in the current international negotiations is not to preclude the WTO from serving a useful role in disciplining product attribute regulation multilaterally. The effort to secure global integration of agricultural markets can limit regulatory excesses when those excesses blatantly restrict trade. This will pressure countries to weigh benefits and costs more carefully than they otherwise would—and the WTO provides an institutional setting for market participants likely to bear the costs to be heard. This is exactly analogous with the role of the WTO in traditional trade policy. How much will be accomplished on global agricultural market integration in the current round of negotiations remains at question. But odds seem at least even for as much progress in the next decade on limiting product attribute restrictions on trade as for progress reducing other agricultural trade barriers.

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