International Regulation of Trade in the Products of Biotechnology

Grant E. Isaac
Associate
Estey Centre for Law and Economics in International Trade

Associate Professor of Biotechnology Management
University of Saskatchewan

Martin Phillipson
Associate
Estey Centre for Law and Economics in International Trade

Assistant Professor of Law
University of Saskatchewan

and

William A. Kerr
Senior Associate
Estey Centre for Law and Economics in International Trade

Van Vliet Professor
University of Saskatchewan

Estey Centre Research Papers, No. 2
(Electronic Version)

Estey Centre for Law and Economics in International Trade

Saskatoon, CANADA

March 2002

CONTENTS

SUMMARY OF THE RESEARCH REPORT

The products of modern biotechnology – such as genetically modified (GM) agricultural crops – are often commercialized on an international scale in order to cover high research and development costs. One complication of transboundary trade is that products approved under the regulatory approach at home may face a different regulatory approach in another jurisdiction. When the various regulatory approaches are in concert, both commercial and non-commercial benefits such as increased certainty and predictability result. On the other hand, when the various regulatory approaches are in conflict regulatory barriers to trade emerge and potential benefits can be lost.

The Cartagena Protocol on Biosafety to the Convention on Biological Diversity (hereinafter referred to as the Biosafety Protocol (BSP))[1] has emerged as a blueprint for an international regulatory regime that has the potential to minimize the risks to environmental biodiversity from the transboundary movement of products of biotechnology. In attempting to standardize the application of the principles of risk analysis, the BSP could simultaneously create commercial and non-commercial benefits. From a commercial perspective, a standardized approach to regulating risk would eliminate the inconsistent application that currently prevails, perhaps most notably between the United States and the European Union. From a non-commercial perspective, the BSP has the potential to create a regulatory floor, ensuring that any transboundary movements of biotech products meet or exceed this regulatory hurdle even if the importing country does not have adequate domestic regulations of its own.

Despite this potential win-win scenario, adoption of the BSP as it stands would not be straightforward; the specific regulatory regime it proposes is in direct and significant conflict with the general principles of the regulatory regime for international trade in goods and services embodied in the World Trade Organization (WTO). The WTO permits Members to unilaterally establish phytosanitary measures that would ban the

[1] *Cartagena Protocol on Biosafety to the Convention on Biological Diversity: Text and Annexes* (2000) Montreal: The Secretariat of the Convention on Biological Diversity, (http://www.biodiv.org)

international trade of GM crops under Article XX(b) (General Exemptions) if the Member has demonstrated an environmental safety risk according to the product-based scientific assessment methods employed by the International Plant Protection Convention. The process- or technology-based BSP, on the other hand, permits signatories to ban the international trade of GM crops if the signatory has demonstrated an environmental, a human health or a socio-economic impact, where the appropriate assessment of this impact is neither specified nor monitored by a third-party scientific organization. Further, to meet the human health and socio-economic objectives beyond the protection of environmental biodiversity the BSP also includes mandatory labelling and liability provisions.

These institutional differences give rise to a potential legal challenge under international trade law.

The institutional differences and legal uncertainty between the WTO and BSP result in the failure to establish a consistent international regulatory regime. This failure exposes businesses to regulatory risk, reducing the incentives to invest in the research and development of biotechnology and to pursue its full commercial potential. Regulatory regionalization imposes costs on firms, which must attempt to simultaneously satisfy multiple standards and procedures. Elevated costs and levels of risk can significantly impair international commercial opportunities and reduce international trade. This is detrimental to the interests of a country such as Canada that sees its future as a leader in the *knowledge economy*.

Canada is in a unique position to reconcile the two divergent regulatory regimes. It is a Member of the WTO and not only a signatory to the BSP but also host to the Secretariat of the Convention on Biological Diversity.[2] A conflict between the two regimes must be avoided because it would force an undesirable choice between the science-based, product-focus of the WTO and the process- or technology-based focus of the BSP, which relies less on scientific justifications. Such a choice would have symbolic repercussions:

[2] Located at the World Trade Centre, Montreal, Quebec, Canada.

the international trade regime v. Mother Earth. Indeed, the most prudent approach for Canadian trade policy is to work to prevent such a conflict in the first place.

As the champion of the BSP, the first thing Canada must do is advocate limiting the protocol to the protection of conservation and sustainable development from the risks posed by living modified organisms (LMOs) only. The full weight of influence of the protocol must be brought to bear on the risks to environmental biodiversity and not be obfuscated by secondary concerns such as human health risks, which may in fact be better addressed elsewhere. Issues such as socio-economic impacts, labelling and liability must be considered only in the context of environmental protection. For instance, labelling would be only an instrument used by those in the Party of Export to alert those in the Party of Import of the potential risk from the transboundary movement of an LMO; it would not be a consumer tool used to meet the consumers' right to know, as this issue has nothing to do with the protection of environmental biodiversity. Similarly, liability would refer only to the unintended release of an LMO in the Party of Import and not to the unintended presence of GMO material (adventitious contamination) in products destined for the market in the Party of Import. The latter is, again, an issue that has nothing to do with protecting environmental biodiversity.

Once the BSP has been refocused on environmental protection only, the Advance Informed Agreement (AIA) procedure must be more clearly specified to reduce the ambiguity and to inject certainty and predictability into the procedure. This is not to suggest that the regulatory hurdles under the AIA procedure should be set low. In fact, to protect environmental biodiversity the regulatory floor may be set quite high provided that it is operational and stable. Further, the regulations must focus on *actual* risk to environmental biodiversity and resist the pressures to regulate based on domestic risk *perceptions*. Actual environmental risks may be identified in two ways. One, the International Plant Protection Convention (IPPC) may have developed a phytosanitary standard for the particular LMO intended for environmental release, which can then be adopted by the Party of Import. If no such standard exists, then the risk assessment used in the AIA procedure by the Party of Import must be congruent with the scientific

standards-setting approach supported by the IPPC. If the Party of Import could demonstrate an actual risk from the environmental release of a particular LMO, then it would be free to take unilateral action to ban the importation of the LMO. Such a ban would be completely trade compliant under Article XX(b) of the WTO. That is, through the regulatory regime of the BSP, a Party of Import could establish a fully trade-compliant environmental protection measure.

This is an entirely desirable result with a win-win trade and environment outcome. The environmental benefit would be the establishment of a first-best regulatory floor, ensuring that biodiversity protection is the primary objective of a well-supported international protocol. The trade benefit would be the establishment of an agreement that identifies when countries may unilaterally impose environmental trade barriers provided they have a scientific justification to do so. Furthermore, the Committee on Trade and the Environment (CTE) of the WTO has recently argued that it would support such revisions to the BSP because it believes that a multilateral environmental agreement is, in fact, the best place to establish first-best policies for environmental protection.[3] Additionally, this approach avoids having the WTO decide which environmental protection regulatory approaches are the most trade compliant; instead, this task would reside with the BSP which, as a multilateral environmental agreement, is the more credible forum.

If Canada does not champion the BSP and refocus the protocol the potential benefits outlined here will be lost, conflicts between the two regimes will arise, and the demise of the BSP is sure to follow.

[3] World Trade Organization (1999) Trade and the Environment: Special Studies 4. Geneva. The Appellate Body and the CTE have also made numerous such pronouncements of a more general nature. See for example, the comments of the Appellate Body in Shrimp–Turtle Implementation, supra, note 206 at Paragraph 5.88 :

> In a context such as this, a multilateral agreement is clearly to be preferred.

I. INTRODUCTION

I.A. Introduction to Agricultural Biotechnology

Like all new technologies, the application of the techniques and procedures of modern biotechnology – such as genetic modification, gene-mapping and gene-tracking[4] – brings both benefits and risks. The policy challenge presented by "genetically modified organisms" (GMOs) is to maximize the benefits of technological progress while minimizing the risks through technological precaution. What are the various rationales for GMO *promotion* and *regulation* policies, specifically with respect to GM crops?

In order to understand the rationales for promoting the research, development and commercialization of GM crops, it is vital first to understand the general context of knowledge-based growth in the Canadian economy. The application of knowledge to economic activities can permit an increased efficiency in the utilization of all factors of production (land, labour and capital) that escapes the zero-sum trade-offs between economic activities. For example, with a finite supply of resources and a virtually infinite demand for policy action, governments have traditionally chosen to support some sectors at the expense of others. Now, knowledge-based growth allows for simultaneous increases in efficiency across sectors – a permanent outward shift of the frontier of a jurisdiction's production possibilities. Knowledge-based growth does not just improve a jurisdiction's given comparative advantage, it also allows for the *creation* of comparative advantage, escaping the constraints of the "natural endowment". More efficient production of higher-value economic activities permits economic development and growth, leading to higher incomes. Moreover, these economic benefits translate into social benefits as higher incomes lead to higher demands for income-elastic social regulations, in turn leading to an economic and social regulatory race to the top.

[4] For a discussion of the science of modern biotechnology see Alan McHughen (2000) *Pandora's Picnic Basket*, Oxford University Press; and Mae-Wan Ho (2000*) Genetic Engineering: Dream or Nightmare?* Continuum Press.

The research, development and commercialization of GM crops is very consistent with the general goal of promoting knowledge-based growth. GM crops represent scientific solutions, driven by the private sector, to pressing public policy problems. Two types of benefits stem from the use of modern biotechnology. The first are *technology-inherent benefits.* The techniques and procedures of modern biotechnology give crop developers new tools for their craft, increasing both the precision and the speed of crop development over those of traditional plant-breeding techniques.

Distinct from the *technology-inherent benefits* are the second type of benefits; *technology-transcendent benefits* emerge from the application, management and distribution of modern biotechnology. Agricultural crop production is plagued by risks in quantity (yield) and quality. Indeed, many production risks are beyond the control of farmers. In order to stabilize farm income in the face of such risks, significant public policy intervention has been used. However, these policies are increasingly unpopular with the non-agricultural sectors and have been of questionable success. By applying new crop development techniques to these problems, the research and development of GM crops promises scientific solutions to many production risks. For instance, advanced biotechnologies are used to develop seeds capable of withstanding pests and drought conditions and perhaps stabilizing crop quality and quantity. This promise is made even more attractive by the dominance of the private sector in the development of such crops. Companies, not public institutions, shoulder the risks of research, development and commercialization in return for legal protection over their intellectual property. In essence, GM crops promise government a double-dividend: decreased public spending on agricultural support programs and decreased public spending on research, development and commercialization of new technologies.

Biotechnology policies promoting technological progress have been established in some jurisdictions with the aim of building the capacity necessary to achieve this promise. The ideal policy structure includes policies to increase the scientific base of modern biotechnology and policies to promote applied research using the new techniques and procedures. This type of policy environment includes direct government expenditures and

research-based tax expenditures for companies participating in these activities. To enhance and protect the knowledge created by these companies, policy should also address intellectual property rights. While advanced knowledge is difficult to produce, it is easy to replicate once produced. Intellectual property rights encourage innovation by protecting the innovator's knowledge. This protection is achieved through the granting of monopoly power in exchange for the innovator's disclosure of the knowledge. Building and protecting the research capacity for modern biotechnology enhances the knowledge base, in turn enhancing the economic competitiveness of the jurisdiction, which reaps the benefits of knowledge-based growth.

In this light, it is not difficult to understand why public policies have promoted the use of modern biotechnology as an important source of knowledge-based growth in order to realize both technology-inherent benefits and technology-transcendent benefits.

As with all new technology, the use of modern biotechnology in crop production brings risks as well as benefits. Biotechnology regulation is established to deal with the risks, and, parallel to the discussion above, two types of risk can be identified. First are *technology-inherent risks*. These are risks arising from the technology per se – as opposed to traditional methods of plant breeding – and involve risks to human and environmental health. An example of a technology-inherent risk would be the possibility that a transgenic modification would result in an allergenicity transfer – to a crop that previously did not express this characteristic – that could not occur with traditional plant-breeding methods.

The second type of risk comprises *technology-transcendent risks*. Essentially, these risks are not directly related to the technology per se, but encompass the broader economic-political-social effects of the *application, management* and *distribution* of the technology. Consider for instance, the use of GM techniques to produce insect-resistant crops. While there is simply no evidence of *technology-inherent risks*, if improperly managed this application may have *technology-transcendent risks* such as an increased resistance in target insects to the particular insecticide used. Similarly, GM herbicide-tolerant crops

may present technology-transcendent risks in the form of increased concentration of the herbicide used. In addition, as GM applications target the intensive agricultural sector they may pose a technology-transcendent risk to other agricultural practices (i.e., organic practices). Further, the fact that GM crops have been principally commercialized by private, multinational corporations may provoke some to argue there is a technology-transcendent risk to the local agricultural economy as the economic benefits are perceived to flow to the multinational corporations.

Of course, regulations must target both technology-inherent and technology-transcendent risks. It is unacceptable to suggest that only the "science" of the technology matters and not its application, management and distribution. Yet, while regulations must target both, it appears essential that regulatory policies disentangle the technology-inherent risks to human and environmental safety and health from the technology-transcendent risks associated with the application, management and distribution of the technology. These are distinctly different risks, and safety-related policies justified by scientific evidence must be separated from the non-safety-related policies driven by societal preferences.

I.B. Research Problem

The research, development and commercialization of biotechnology bring regulatory disequilibrium as regulators attempt to balance the new benefits with the new risks. As the commercialization is increasingly international in scope – in part to achieve the economies of scale required to cover high research and development costs – the domestic regulatory balance of one jurisdiction comes into contact with the regulatory balance of another jurisdiction. When the various regulatory approaches are in concert, both commercial and non-commercial benefits such as increased certainty and predictability result. On the other hand, when the various regulatory approaches are in conflict, benefits can be lost.

With respect to the international trade of biotechnology-based products, the Biosafety Protocol (BSP)[5] has emerged as a potential blueprint for an international regulatory regime. The BSP aims to standardize the approach to regulating the transboundary movement of biotech products by standardizing the application of the principles of risk analysis. From a commercial perspective, a standardized application of the Risk Analysis Framework adopted by the U.S. National Academy of Sciences in 1983 would eliminate the inconsistent application that currently prevails, most notably between the United States and the European Union. From a non-commercial perspective, the BSP has the potential to create a regulatory floor, ensuring that any transboundary movements of biotech products meet or exceed this regulatory hurdle even if the importing country does not have adequate domestic regulations of its own.

Despite this potential win-win scenario, adoption of the BSP as it stands would not be straightforward; the specific regulatory regime it proposes is in direct and significant conflict with the general principles of the regulatory regime for international trade in goods and services embodied in the World Trade Organization.

The purpose of this research paper is to examine the degree of concert and conflict between the BSP and the WTO regulatory regimes. In section II, the institutional dimensions of the two regulatory regimes are compared. This comparison suggests that there are significant differences between the two regimes resulting in both *regulatory disequilibrium* and *regulatory regionalism*. The failure to reach an equilibrium exposes businesses to regulatory risk, reducing the incentive to invest in development of biotechnology and to pursue its full commercial potential. Regulatory regionalization imposes costs on firms, which must attempt to simultaneously satisfy multiple standards and procedures. Elevated costs and levels of risk can significantly impair international commercial opportunities and reduce international trade. This is detrimental to the interests of a country such as Canada that sees its future as a leader in the *knowledge economy*. The uncertainties imposed by the existence of regulatory flux and

[5] *Cartagena Protocol on Biosafety to the Convention on Biological Diversity: Text and Annexes* (2000). Montreal: The Secretariat of the Convention on Biological Diversity, (http://www.biodiv.org)

fragmentation are more detrimental than a relatively strict but transparent and common international regulatory environment. In other words, resolution of the regulatory problems currently surrounding biotechnology does not necessarily lie in a lax international regime that fails to provide the assurances required by those charged with ensuring the public welfare in individual countries.

Canada's greater dependence on international markets than most of the major countries vying for a leadership role in the biotechnology revolution creates a complex set of challenges for Canadian biotechnology policy. In section III, these challenges are examined from a legal perspective. This analysis includes an examination of the legal implications of conflict between a multilateral environmental agreement (the BSP) and the international trading system (the WTO). According to international law, what can Canada do? In section IV, the regulatory challenges presented by biotechnology are examined from an economic perspective. Given the analyses in sections II, III and IV, the objective of section V is to identify options for Canadian trade policy.

II. COMPARISON OF THE WTO AND THE BSP

II.A. Introduction

There are many institutional dimensions over which to compare the WTO and the BSP regulatory regimes, including their development, their current status and their future prospects. Before doing such a comparison, it is important to understand that regulatory barriers facing products of biotechnology – especially GM crops – have emerged as a contentious issue facing the international trading regime. At the 1999 Ministerial Meeting of the WTO in Seattle, Canada and the United States jointly proposed a *World Trade Biotechnology Initiative* with two objectives: to establish an international fact-finding group to examine the trade issues raised by the development and commercialization of GM crops; and to establish binding international trade rules for GM crops. While the EU accepted the first objective, it completely rejected the second objective, stating:

> We reject requests to deal with biotechnology exclusively on trade grounds. We reject market access negotiations for GMOs. We reject any attempt to undermine the EU right to regulate. And we reject any attempt to derail, divert or delay the biosafety talks.[6]

The question may be raised: what is it about the "trade grounds" of the WTO approach that the EU rejects or, conversely, what is it about the BSP approach that the EU accepts? To answer these questions, it is necessary to examine how both approaches have arisen and how they currently function, followed by an examination of the future prospects for each of the regulatory regimes.

[6] *AgraFood Biotech* (1999) London: AgraEurope Ltd., No. 19: 8 December.

II.B. Background to the WTO and the BSP

Regime formation theories[7] suggest that the greater the differences between emerging regimes during the institutional development stages, the less likely is regime convergence. Therefore, while every effort has been made to keep this section brief, it is crucial that the important differences in the institutional development of the two regulatory regimes be explained in order to appropriately understand not only the degree of concert and conflict but also the likelihood of convergence between the WTO and the BSP regulatory regimes. The WTO will be examined first, followed by the BSP.

1. World Trade Organization

To begin with, an interesting aspect of the WTO is that – unlike many other international organizations – it holds a very narrow mandate: to enhance the market access for traded goods (goods/products, services and investments) by establishing certain and predictable rules for market access.[8] It has been built on the premise that industrial interests lobby domestic governments to provide commercial protection from foreign imports or support for domestic firms engaging in export. Yet such actions hinder the global welfare benefits that flow from comparative-advantage-based trade (trade based on each jurisdiction producing those goods and services it is most efficient at producing relative to other jurisdictions). Trade agreements, in order to enhance market access and achieve global welfare gains, attempt to limit the ability of governments to acquiesce to this lobby pressure.[9] The WTO can be seen as a political compromise between two needs: the need that firms wishing to engage in international commercial transactions have for strong rules to protect them from the trade-restricting actions of governments, and the need politicians have, at times, to extend protection to domestic vested interests. At the international level, protecting trade policy from such domestic pressures has resulted in a

[7] Gilpin, R. (2000) *Global Political Economy*. Princeton University Press; Strange, S. (1988) *States and Markets*. London : Pinter Publishers.
[8] For a comprehensive history of the international trading regime see Grimwade, N. (1996) *International Trade Policy: A Contemporary Analysis.* London: Routledge; and Jovanovic, M.N. (1998) *International Economic Integration: Limits and Prospects.* London: Routledge.
[9] Perdikis, N., W.A. Kerr, and J.E. Hobbs (1999) Can WTO/GATT Agreements on Sanitary and Phyto-Sanitary Measures and Technical Barriers to Trade be Renegotiated to Accommodate Agricultural Biotechnology? (1999) Paper presented at the NE-167 1999 conference "Transitions in Agbiotech: Economics of Strategy and Policy", Washington D.C., 24-25 June.

process for international trade negotiations characterized as closed-door and non-transparent.[10]

The motivation for sovereign states to engage in trade negotiations is reciprocity, whereby sovereign states are assured that any market access advantages they provide for foreign producers in the domestic market will also be provided for domestic producers in the foreign market. In this sense, and despite popular opinion, international trade agreements do not result in a "net" loss of sovereignty over the domestic market if all parties to the agreement engage in reciprocity.[11] This is important because the popular press and those opposed to globalization are fond of suggesting that the WTO "can make a country do" this or that, implying a loss of sovereignty to the international organization.[12] The WTO acts as a forum for negotiations and has been given the power to settle disputes among Members. It has no legislative function – i.e., it cannot make trade law and it cannot make any Member do anything it has not previously agreed to.

The notion of reciprocity was operationalized in the original General Agreement on Tariffs and Trade (GATT 1948) through the *principle of non-discrimination* (PND), summarized by the following three provisions:

1. the national treatment provision (Article I), which states that foreign products must be treated like domestic products;
2. the most-favoured-nation principle (Article III), which states there should be no discrimination between products originating from different countries; and
3. a distinction between processes and products whereby all "like products" were to be treated the same regardless of the process and production methods (PPMs) used in their manufacture.

[10] Isaac, Grant E. (2001a) International Trade and Citizen Engagement: Transparency and Participation in Canada's Trade Negotiation Process. Estey Centre for Law and Economics in International Trade. For Department of Foreign Affairs and International Trade (DFAIT), Government of Canada.
[11] See Lipsey, R.G. (1988) Sovereignty: Culturally, Economically and Socially. In: Crispo, J. (ed.) *Free Trade – The Real Story*. Toronto: Gage, pp. 148–160.
[12] Domestic decision makers may also find blaming the WTO for trade rules or rulings that are unpopular with some domestic vested interests politically convenient. Of course, it is the domestic government that previously agreed to WTO conventions that should be the object of the domestic vested interests' wrath.

These provisions essentially mean that "like" products must be subject to the same market access rules in a particular jurisdiction regardless of either their origin or the PPMs used in their production.

The PND may be thought of as the baseline principle of the international trading system that all domestic market access rules must meet. In fact, the various agreements negotiated since the GATT 1948 may be viewed as agreements upon when countries may legitimately violate the PND in order to meet domestic goals or address domestic concerns. In other words, in order to be trade compliant a domestic measure that affects market access for foreign products must meet the PND or qualify under a specific trade agreement for certain exemptions to the PND. Remember, with the principle of reciprocity all signatory countries to the various agreements are allowed to exercise the same degree of unilateral action permissible under the various agreements.

The PND has worked well in facilitating international negotiations aimed at disciplining traditional border-type market access barriers to products of industrial manufacture such as tariffs and quantitative restrictions. However, it has not been as useful in dealing with market access barriers caused by domestic social regulations.[13] The reason for this is that, institutionally, the GATT 1948 provided broad exemptions from the trade rules in the area of domestic regulations according to a number of the GATT articles. Article XI specifically permitted regulations setting out national "standards or regulations for the classification, grading, or marketing of [food] commodities in international trade." Article XX(b) permitted the adoption or enforcement of measures necessary to protect human, animal, or plant life or health. Some effort was made to discipline the degree of exemption. For instance, the discretionary measures invoked under Articles XI and XX(b) were not to be applied in such a manner as to cause arbitrary or unjustifiable violation of the PND. Yet a lack of further clarification (or willingness for clarification), meant that there was – in fact – an absence of any clear discipline on the type of domestic

[13] Isaac, Grant E. (2002) *Agricultural Biotechnology and Transatlantic Trade: Regulatory Barriers to GM Crops.* Oxon, UK: CAB International Publishers.

measure that could be implemented. As a result of these exemptions the legitimate, unilateral use of domestic regulations as either direct or indirect barriers to trade today represents the most important challenge to the international trading system. Indeed, the primary trade concern with regulatory barriers is that while they allow market access delay and prohibition, there are uncertain trade rules outlining their legitimate use.

The failure of the PND to deal effectively with regulations is exacerbated in the case biotech products. Because it focuses on products and not processes under the "like products" provision, the international trading system fails to deal directly with biotechnology as a process or technology – which is what many of the critics of the technology demand. Instead, the international trading system deals with market access barriers – such as domestic food safety and environmental safety measures – from the perspective of the product created by the use of biotechnology. As will be addressed more fully later, this approach is in contrast to the BSP, which is process- or technology-based and focuses on biotechnology specifically.

The relevant WTO rules for dealing with GM crop regulations are those associated with food safety and environmental protection. Several important aspects of these types of regulations distinguish them from the traditional border-type barriers to trade. First, they often qualify for the traditional exemption under the GATT 1948. Second, while the border-type measures demanded by industrial interests may be characterized as *commercial protectionism*, these other types of regulatory barriers are demanded by non-industrial actors, such as consumer and environmental organizations. While there tends to be little public legitimacy for *commercial protectionism*, *social protectionism* tends to command a significant degree of public legitimacy as grounds for hindering international trade.[14]

Despite the similarities, there is currently greater discipline on food safety–type regulatory barriers than on those for environmental protection. Essentially, food safety–

[14] Isaac, Grant E. (2002) *Agricultural Biotechnology and Transatlantic Trade: Regulatory Barriers to GM Crops.* Oxon, UK: CAB International Publishers.

type regulatory barriers are subject to more rules-based and science-based procedures for determining trade compliance. This should not be interpreted as suggesting that food safety rules under the WTO have been uncontroversial (indeed, the case of hormone-treated beef has created a significant transatlantic trade diplomacy challenge).[15] As the WTO further reinforces disciplines on food safety–type barriers, anti-biotechnology pressures are likely to shift from food safety to environmental protection justifications for regulatory barriers. The latter are not subject to the same rules-based and science-based standards, perhaps making them more difficult to discipline. Given the differing treatment of food safety and environmental protection measures under the WTO, the following background information will be categorized into *food safety and trade* and *environmental protection and trade*.

a. Food Safety and Trade

Two WTO sub-agreements deal with the international trade of food products. Food safety issues are dealt with under the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) while non-safety food quality issues are dealt with under the Agreement on Technical Barriers to Trade (TBT Agreement).[16] Both of these agreements defer to standards developed in international organizations. For instance, the SPS Agreement defers to the international measures on food safety and quality established under the Codex Alimentarius (Latin for "food code") and the International Plant Protection Convention (IPPC), two international institutions that pre-date the SPS Agreement. Hence, these institutions, as well as the SPS and TBT Agreements, will be examined in the following discussion.

i. The Agreement on the Application of Sanitary and Phytosanitary Measures

The SPS Agreement was the product of a convergence of interests among food exporting countries and multinational food processing and distributing companies that shared a

[15] For an in-depth examination of the North American–European Union dispute over beef produced using growth hormones see Kerr, W.A. and J.E. Hobbs (2000) *The WTO and the Dispute Over Beef Produced Using Growth Hormones*, CATRN Paper 2000-07, Canadian Agrifood Trade Research Network, http://www.eru.ulaval.ca/catrn/beef.pdf.

[16] The official texts of these agreements may be found at (http://www.wto.org/english/docs_e/legal_e/final_e.htm)

common concern about the lack of discipline on barriers facing food trade. During the Uruguay Round of trade negotiations these interests held significant policy power, even in the EU.[17]

The objective of the SPS Agreement is to identify those legitimate barriers imposed by Members to protect their domestic food supply, and so to establish predictable and stable market access rules promoting international trade. The agreement arose as a means to deal with the contentious ambiguities associated with discretionary food safety standards under the GATT Articles XI and XX(b). Unsafe imports can jeopardize human safety and health either directly in the case of unsafe imported foodstuffs, or indirectly in the case of unsafe imports that infect domestic food inputs, including livestock and agricultural plants, that are part of the domestic food chain. The agreement states that "no member should be prevented from adopting or enforcing measures necessary to protect human, animal, or plant life or health."[18] This provision remains consistent with the traditional exemption provisions under Article XX(b) of the GATT 1994. According to the agreement, the risks that sanitary and phytosanitary measures may target are those arising from:

- the entry, establishment, or spread of pests, diseases, disease-carrying organisms or disease-causing organisms;
- additives, contaminants, toxins, or disease-causing organisms in food, beverages or feedstuffs;
- diseases carried by animals, plants or products thereof.[19]

[17] In Phillips, P.W.B. (1991) *Wheat, Europe and the GATT* (London: Pinter Publishers), it is argued that the EU approached these negotiations from an economic perspective and with an export orientation. A broad coalition of interests including farmers and consumers viewed the SPS Agreement as a potential win-win situation whereby market access rules could be clarified, yet social food safety regulations would be protected. Hence, the EU was in support of the agreement's international trade rules for food safety–type regulatory barriers.

[18] *Agreement on the Application of Sanitary and Phyto-Sanitary Measures,* Uruguay Round of Multilateral Trade Negotiations Legal Texts (the "SPS Agreement"), Preamble, pp. 69-84.

[19] *SPS Agreement,* Annex A

In other words, the SPS Agreement outlines when and how WTO Members can violate the PND and deny market access to particular exporters because of the risk that imports will contain pests or diseases. In fact, four important provisions of the agreement violate the PND and allow Members to unilaterally establish SPS measures that restrict trade.

First, under the SPS Agreement, Members may discriminate against imports because of the presence of the above risks in the exporting country.[20] The agreement recognizes that different regions with different geographical conditions and agronomic practices face different incidence rates of pests and diseases. As a result, it is not possible to establish uniform SPS measures to apply to all exporters according to the principle of non-discrimination. Instead, trade measures need to specifically target those imports that may contaminate the domestic food supply, while other imported agricultural products may not face the same measures. This provision is an important exemption to the traditional non-discrimination principle. Members are not required to grant either national treatment or most-favoured-nation status to agricultural exporters whose products risk contaminating the domestic food supply.

Second, according to the agreement, Members may also establish domestic SPS measures more exacting than the accepted international standard if there is a legitimate scientific justification for doing so.[21] Generally, international trade agreements commit Members to adopt international standards if available; however, the SPS Agreement permits Members to establish even higher standards.

Third, the SPS Agreement permits Members to establish SPS measures based on scientific risk as well as on broader assessments of risk such as relevant economic factors, including:

- the potential damage in terms of loss of production or sales in the event of the entry, establishment or spread of the disease or pest;
- the costs of control or eradication in the territory of the importing Member;

[20] *SPS Agreement,* Article 2:3
[21] *SPS Agreement,* Article 3:3

- the relative cost-effectiveness of alternative approaches to limiting risks.[22]

Trade agreements traditionally avoid such socio-economic assessments because of the subjectivity complications that are associated with them. Indeed, as previously discussed, the economic perspective attempts to depoliticize trade and make it a function of comparative advantage,[23] yet the SPS Agreement recognizes the socio-economic nature of food safety regulations and permits such consideration.

Fourth and finally, under the SPS Agreement, Members may establish provisional SPS measures based on precaution, in the event that there is insufficient scientific evidence to conduct an appropriate risk assessment. The agreement states:

> In cases where the relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable amount of time.[24]

That is, Members are permitted to establish trade barriers based on the exercise of precaution (the debates regarding the use of the so-called precautionary principle will be assessed later). These barriers can remain in place until enough scientific evidence about the risk has been compiled. The major challenge, of course, is finding the line between SPS measures that legitimately restrict trade in order to protect human, animal and plant safety or health and those SPS measures that unnecessarily restrict trade.

---

[22] *SPS Agreement,* Article 5:3
[23] World Trade Organization (1995) *Regionalism and the World Trading System*. Geneva: WTO Secretariat.
[24] *SPS Agreement,* Article 5:7

The clear intent of the SPS is to prevent food safety standards and regulations from becoming a means of extending protection to domestic commercial interests. It does this by identifying the line between legitimate and illegitimate sanitary and phytosanitary measures. According to the agreement, the most objective way to decide the legitimacy of a measure is through a scientific risk assessment procedure. Hence, while the agreement allows Members considerable scope to impose unilateral food safety barriers, there are important conditions on these barriers that are meant to prevent them from being used as disguised protectionism. For instance, Members are expected to pursue both the international harmonization of SPS measures and the mutual recognition of measures employed by other Members. Members commit to adopting international standards, guidelines or recommendations – where they exist – as the prevailing national standards in order to promote international harmonization.[25] For food safety, the relevant international institution is the Codex Alimentarius Commission, for animal safety the International Office of Epizootics (OIE), and for plant safety the IPPC. With respect to mutual recognition, Members are committed, in principle, to granting equivalence to the SPS measures adopted by exporting countries "if the exporting Member objectively demonstrates to the importing Member that its measures achieve the importing Member's appropriate level of sanitary or phytosanitary protection."[26]

The SPS Agreement also commits Members to publish a draft of the domestic measures to the SPS Committee and to allow for a 60-day review and comment period for all concerned exporters.[27] The logic is that such a review and consultation process is a proactive step that will lessen the likelihood of future trade disputes by ensuring that the food safety measures adopted by a Member take into account the process and production realities in exporting countries. The agreement obliges, but does not require, the importing Member to take full account of the comments and endeavour to ensure that the SPS measure fulfills a legitimate and scientifically justifiable safety objective without unduly affecting agricultural trade. To facilitate the process, the importing Member must

[25] *SPS Agreement,* Preamble
[26] *SPS Agreement,* Article 4:1
[27] *SPS Agreement,* Annex B:5

be allowed to conduct a conformance assessment including inspection, testing, monitoring and evaluation of the measures in place in the exporting Member country.

Members are permitted to exceed international standards provided there is a scientific justification to do so.[28] The science-based measures adopted must be proportional to the risk that is being targeted. In order to assess the risks, Members are committed to considering the risk assessment techniques used in the international standards-setting institutions, even if the relevant international standard is not being used.[29] Further, the agreement states:

> In the assessment of risks, Members shall take into account available scientific evidence; relevant processes and production methods; relevant inspection, sampling and testing methods; prevalence of specific diseases or pests; existence of pest- or disease-free areas; relevant ecological and environmental conditions and quarantine and other treatment.[30]

Hence, the SPS Agreement requires Members to provide a scientific justification for the adoption of measures where the scientific justification is crucial in supporting the domestic measure in the event of a trade challenge.

> When a Member has reason to believe that a specific sanitary or phytosanitary measure introduced or maintained by another Member is constraining, or has the potential to constrain, its exports and the measure is not based on the relevant international standards, guidelines or recommendations, or such standards, guidelines or recommendations do not exist, an explanation of the reasons for such

[28] *SPS Agreement,* Article 2:2
[29] *SPS Agreement,* Article 5:1
[30] *SPS Agreement,* Article 5:2

> sanitary or phytosanitary measure may be requested and shall be provided by the Member maintaining the measure.[31]

According to the agreement, in the event of a trade dispute over the use of a food safety measure, a WTO dispute settlement panel would seek the scientific advice of the Codex Alimentarius Commission. Without an acceptable scientific justification, it is unlikely that a trade dispute decision by a WTO dispute settlement panel or an appellate body would support the unilateral SPS measure. An SPS measure used by a Member will be considered legitimate if there is sufficient scientific proof to justify its use and if it is the measure with the lowest cost to the consumer and the international trading system.[32] In this sense, even if Members do not adopt international standards, it is important that domestic food safety measures remain congruent with the international risk analysis approach of the Codex Alimentarius Commission in the event of a trade dispute.

In practice, this means that there is no scope under the WTO to impose legitimate trade barriers beyond a scientifically justified prevention of risk. In addition, regulatory barriers that are justified must also meet the requirement of minimum trade disruption. In other words, trade and market access imperatives dominate even justified social regulatory barriers according to the economic integration approach of the SPS Agreement. Again, this reflects the WTO's concern with preventing the capricious use of trade barriers by governments in response to pressure from domestic commercial interests.

ii. The Agreement on Technical Barriers to Trade

[31] *SPS Agreement*, Article 5:8
[32] Roberts, D., Josling, T., and Orden, D. (1999) A Framework for Analyzing Technical Trade Barriers in Agricultural Markets. Market and Economics Division, Economic Research Service, US Department of Agriculture. Technical Bulletin No. 1876.

The TBT Agreement deals with technical, non-safety, food quality issues such as nutrition analysis, grading, packaging (labelling, symbols, markings, terminology) and protection against deceptive or fraudulent practices.[33]

Concern about the potential impact of technical standards and product labelling on international agricultural trade was raised at the multilateral level in the mid 1970s, driven mainly by Australia, Canada and the United States. The primary concern was that, while labelling schemes might be used either to restrict market access or to confer an advantage on domestic products in the domestic marketplace, there was no real discipline on their application. Such concern first lead to the TBT Code in the Tokyo Round of trade negotiations. Agricultural exporters, however, still had concerns because the TBT Code only applied to a limited number of developed-country contracting parties. As a result of these concerns, negotiations in the Uruguay Round produced the TBT Agreement, which applies to all the Members of the WTO.

There are three similarities between the SPS and the TBT Agreements. First, the TBT Agreement, like the SPS Agreement, allows Members to establish trade-restricting measures in order to protect human and environmental health and safety and to ensure the quality of imported products – the so-called legitimate objectives – provided that the measures do not unnecessarily obstruct international trade.[34]

Second, both agreements require Members to base their national standards on international measures established by international standards-setting bodies.[35] When internationally agreed standards cannot be adopted due to geographical, climatic or technological reasons, the Member must publish its draft measures in order to allow potentially affected foreign producers an opportunity to respond to them.[36] It is anticipated that concerns of exporters will then be incorporated into any subsequent measures.

[33] The TBT Agreement also has relevance to environmental protection and trade associated with agricultural biotechnology with respect to its jurisdiction over process and production methods.
[34] *TBT Agreement*, Article 2:2
[35] *TBT Agreement*, Article 2:4

Third, as with the SPS Agreement, the TBT Agreement requires that, where applicable, national measures should be scientifically justifiable.[37] The agreement includes specified criteria that Members must account for in formulating TBT measures in order to ensure that measures do not create unnecessary regulatory barriers to trade.

Despite the similarities, the SPS and the TBT Agreements differ in four crucial ways. First, unlike the SPS Agreement, which permits discrimination in the application of trade-restricting measures, the TBT Agreement is based on the traditional trade principle of non-discrimination. The agreement states that measures should be applied on a most-favoured-nation (MFN) basis to all imported products from all contracting parties.[38] It also states that measures should not extend to imported products treatment that is less favourable than that extended to domestically produced "like" products.[39]

Second, whereas the SPS Agreement deals with mandatory national food safety measures, the TBT Agreement deals with both mandatory (technical requirements) and voluntary (standards) measures. Both mandatory and voluntary measures can address product characteristics, PPMs, terminology and symbols, and packaging and labelling requirements (i.e., prevention of deceptive advertising practices). Voluntary standards are subject to the TBT Code of Good Practice for the Preparation, Adoption and Application of Standards. The code urges Members to ensure that voluntary trade-restricting measures are subject to the same principles and rules as mandatory standards.[40] It also urges Members to use international standards as a basis for national voluntary standards and to participate fully in the preparation of international standards.

Third, although the TBT Agreement requires that measures be scientifically justifiable, the problems with determining appropriate scientific risk assessment procedures for non-safety issues and other legitimate objectives, such as labelling for the consumers' right to

---

[36] *TBT Agreement*, Article 2:9
[37] *TBT Agreement*, Article 2:2
[38] *TBT Agreement*, Article 2:1 – MFN Principle of Non-Discrimination
[39] *TBT Agreement*, Article 2:1 – National Treatment Principle

know, are enormous. As a result, under the TBT Agreement the scientific justification principle is considerably weaker than it is under the SPS Agreement, potentially permitting food quality–type regulatory barriers. For instance, under the TBT Agreement labelling standards can prevent deceptive marketing practices that adversely affect informed consumerism, but since scientifically demonstrating adverse effects on informed consumerism is difficult, such measures do not really require a science-based justification. Specifically, where GM crops are concerned, the most relevant of the TBT Agreement's provisions are the ones to do with mandatory and voluntary labelling.

Finally, unlike the SPS Agreement, the TBT Agreement does not allow for provisional trade restriction based on precaution where scientific evidence is insufficient.

With respect to both the SPS and TBT Agreements, the role of science in imposing unilateral trade barriers is clear: the Member country must demonstrate a scientific "justification" for the barrier; once justified, the barrier is legitimate under international trading rules. But whose science? The WTO does not decide the appropriateness of the scientific justification. Instead, scientific international organizations do: the Codex Alimentarius for food safety and the IPPC for plant safety (as it impacts the food supply). Both organizations are discussed below.

iii. The Codex Alimentarius

With respect to the use of biotechnology in food production, the SPS Committee has deferred to the work of the Codex Alimentarius Commission in establishing both legitimate scientific risk analysis procedures and regulatory guidelines based on those procedures. The SPS Agreement states "Members shall base their sanitary or phytosanitary measures on international standards, guidelines or recommendations."[41] Similarly, the TBT Agreement states that "[w]ith a view to harmonizing technical regulations on as wide a basis as possible, Members shall play a full part … in the preparation by appropriate international standardizing bodies of international standards

[40] *TBT Agreement,* Article 4 & Annex 3
[41] *SPS Agreement,* Article 3:1

for products for which they have either adopted, or expect to adopt, technical regulations."[42] In other words, Codex food safety standards are relevant to the SPS Agreement while Codex food quality standards are relevant to the TBT Agreement.

The Codex Alimentarius, created in the early 1960s under the United Nations' Food Standards Programme, is a joint agency of the UN's Food and Agriculture Organization (FAO) and the World Health Organization (WHO). The FAO, established in 1945, has responsibilities covering food nutrition and international food standards while the WHO, established in 1948, has responsibilities covering human health and food standards. The first meeting of the Joint FAO/WHO Expert Committee on Nutrition in 1950 concluded there was a need for the international harmonization of food standards based on science. The meeting report explained that:

> Food regulations in different countries are often conflicting or contradictory. Legislation governing preservation, nomenclature and acceptable food standards often varies widely from country to country. New legislation not based on scientific knowledge is often introduced, and little account may be taken of nutritional principles in formulating regulations.[43]

The initial motivation for a Codex Alimentarius, then, was to establish science-based international standards for food safety and quality in order to enhance consumer protection and reduce market fragmentation.

Widely differing interests shared the desire for greater international co-operation and international leadership in food standards. For instance, on one hand, international trade associations were frustrated by the market fragmentation associated with divergent regulations and, hence, supported coordination efforts. On the other hand, consumers, including the food reform movements that emerged in the post-war period, were

[42] *TBT Agreement*, Article 2:6

concerned with the lack of minimum, science-based international standards for food safety as the international trade of food products increased. It has been argued that:

> The Codex Alimentarius was a response to a widely recognized need. It did not just happen. It was a product of a long evolutionary process involving a wide cross-section of the global community. Many people representing many interests and disciplines were involved in the process ….[44]

Administratively, three separate Codex agencies work together to develop the Codex Alimentarius: the Codex Alimentarius Commission, the Codex Secretariat, and the Codex Executive Committee. The Codex Alimentarius Commission, already mentioned, meets every two years. To date, there have been 23 Sessions of the CAC. Commission membership is on a country basis, where all member countries to the United Nations may be CAC members. Currently, the Commission has 165 member countries (representing over 97 percent of the world's population) who participate, in varying degrees, in the development of international food standards. Member countries are represented at CAC Sessions by national delegations composed primarily of senior officials (usually health officials) appointed by their governments; delegations may also include industry representatives, academics and representatives of national non-governmental organizations. Although the CAC Sessions were initially the domain of the developed countries, the number of developing-country delegations has steadily increased to nearly three times the number of developed-country delegations.[45] There is also scope in the CAC Sessions for international non-governmental organizations to participate as "observers" in order to express their points of view. Observers cannot participate in final decision making, only national delegations can. Most member countries have established a delegation contact point.

---

[43] Food and Agricultural Organisation /World Health Organisation (1950) Report of the First Meeting of the Joint FAO/WHO Expert Committee on Nutrition, 1950.
[44] Frawley, J.P. (1987) Codex Alimentarius – Food Safety – Pesticides. *Food Drug Cosmetic L.J.* 42:168.
[45] Frawley, J.P. (1987) Codex Alimentarius – Food Safety – Pesticides. *Food Drug Cosmetic L.J.* 42:168.

The second Codex agency is the permanent Codex Secretariat located in Rome and administered by the FAO's Food Quality and Standards Service within the Food and Nutrition Division. The purpose of the Secretariat is to provide day-to-day support for member countries as they attempt to interpret, develop and implement national food regulations congruent with the Codex Alimentarius. The Codex Secretary is an FAO official who serves also as the Chief of the Joint FAO/WHO Food Standards Programme.

The third Codex agency is the Codex Executive Committee. The Executive Committee meets yearly and, unlike the CAC, is organized according to principal regions: Europe, Africa, Asia, the South Pacific, Latin America, and North America. Hence, the Codex Executive Committee provides regional perspectives on food safety, consumer protection and, increasingly, agri-food trade.

The Codex Alimentarius, or food code, is composed of standards, codes of practice, guidelines and recommendations pertaining to food safety and quality. The CAC establishes international measures and coordinates an international dialogue on important food safety and quality issues through various expert committees and scientific consultations. The Commission can establish two kinds of subsidiary committees, Codex committees and coordinating committees. There are 24 of the former – 15 commodity committees and 9 general subject committees.[46] Each committee is chaired by a host member country and the committee may be active or dormant. Host members are influential since they, in collaboration with the Codex Secretariat, establish the agendas of meetings and issue invitations to member delegations and observers. Coordinating committees have no host country because they are organized according to regions. There are five such committees, representing Africa, Asia, Europe, Latin America and the Caribbean, as well as North America and Southwest Pacific. Along with the committees, there are joint FAO/WHO expert groups, which provide advice and guidance to the Commission.

[46] Codex Alimentarius Commission (1997) *Codex Alimentarius Commission Procedural Manual,* 10th Edition. Articles 1(a) – (e). Rome: FAO.

Since the Codex Alimentarius attempts to develop universal food safety and consumer protection principles based on a tradition of consensual decision making, it should come as no surprise that the administrative process is lengthy and subject to many iterative review processes. A Codex commodity food standard is adopted only after eight stages or steps of consultation have been completed. The eight steps are as follows:[47]

1. A food safety issue is identified by a national government or a subsidiary committee of the CAC and presented at a CAC plenary session (held every two years), where, if it is determined that a Codex food standard ought to be elaborated, the CAC or the Codex Executive Committee assigns the issue to either a commodity committee or a general subject committee.
2. The committee presents its elaboration, based on Codex food standard elements, to the Codex Secretariat, which produces a proposed draft standard.
3. The proposed draft standard is sent to all member governments and identified international non-governmental organizations for review and comments.
4. Comments from step 3 are returned to the committee that initially elaborated the food standard.
5. The committee amends the proposed draft standard subject to the review comments; the amended draft standard is then presented to the CAC by the Secretariat at a plenary session where it may be adopted as a draft standard.
6. The adopted draft standard is sent to all member governments and identified international non-governmental organizations for further comment.
7. Comments are returned to the committee through the Secretariat for amendments to the draft standard.
8. The amended draft standard is presented to the CAC for adoption as a Codex standard to be sent to member governments for acceptance.

Generally it takes about seven years to develop a Codex food standard (i.e., one-half year for each of steps one to six while steps seven and eight take two years each). There is a

fast-track procedure that can be employed if the proposed standard is relatively uncontroversial. Under the fast-track approach, it is possible for the amended draft standard to be adopted at step six as a Codex food standard instead of being sent for further review, if consensus has been achieved.

Determination of the safety of the food product is based on the Risk Analysis Framework as outlined by the Codex Committee on General Principles. Scientific risk assessment involves risk identification, characterization and exposure assessment, including toxicological studies of pesticide residues, microbial contaminants, chemical additives and veterinary biologics.

In March 1995, a Codex-sponsored joint FAO/WHO consultation proposed definitions for risk consideration activities in Codex.[48] The conclusions of this consultation were included in the 1996 CAC progress report, which clarified the definitions of risk, hazard, risk analysis, risk assessment, risk management and risk communication.[49]

At the 21st Session of the CAC (3-7 July 1995, Rome) amendments to the Codex Procedural Manual included four statements of principle concerning the role of science in the Codex decision making process and the extent to which other factors are taken into account. The four statements of principle were as follows:

1. The food standards, guidelines and other recommendations of Codex Alimentarius shall be based on the principle of sound scientific analysis and evidence, involving a thorough review of all relevant information, in order that standards assure the quality and safety of the food supply.
2. When elaborating and deciding on food standards Codex Alimentarius will have regard, where appropriate, to other legitimate factors relevant for the

[47] Codex Alimentarius Commission (1997) *Codex Alimentarius Commission Procedural Manual*, 10th Edition. Articles 1(a) – (e). Rome: FAO.
[48] Food and Agricultural Organisation/World Health Organisation (1995) Expert Consultation on the Application of Risk Analysis to Food Standards Issues. WHO/FNU/FOS 95.3, 13 – 17 March.
[49] Codex Alimentarius Commission (1996) Report of the Twelfth Session of the Codex Committee on General Principles, Paris, France, 23-26 November. ALINORM 97/33. Rome: FAO.

health protection of consumers and for the promotion of fair practices in food trade.

3. In this regard, it is noted that food plays an important role in furthering both of these objectives.
4. When the situation arises that the members of Codex agree on the necessary level of protection of public health but hold differing views about other considerations, members may abstain from acceptance of the relevant standard without necessarily preventing the decision by Codex.[50]

These amendments were put forward by the United States and supported by other agricultural exporters and many G77 nations, against the strong opposition of the EU and the Member State representatives in the EU delegation. The first principle was the major source of contention. It has been the traditional risk analysis approach of the Codex Alimentarius that "risk" should be interpreted as scientific evidence of risk to human health similar to that outlined in the SPS Agreement. The EU was attempting to broaden the risk analysis approach to include other concerns. The first principle, however, firmly supported the Codex's traditional scientific approach to the Risk Analysis Framework. Although the second principle mentions the consideration of other legitimate factors, it is only within the parameters of the first principle that such consideration is possible. That is, only those other legitimate factors that enhance the health protection of consumers from *identified* potential hazards may be considered. Further, the third principle reinforced the linkage between Codex and food trade. Therefore, the amendments to the procedural manual rejected the focus of food standards on broader concerns.

An important aspect of Codex standards is that they are subject to revision as new scientific knowledge becomes available. It is the responsibility of each member country to present to the Commission and the relevant subsidiary committee new information that

---

[50] Codex Alimentarius Commission (1995) Report of the 21st Session, Rome, 3-7 July. ALINORM 95/37 Appendix 2. Rome: FAO.

may require revision to a Codex standard. This information must, however, meet the Codex requirements for a scientific justification.

Concerns associated with linking the Codex to international trade agreements were the focus of a 1991 conference. The 1991 FAO/WHO Conference on Food Standards, Chemicals in Food and Food Trade in co-operation with the GATT Secretariat, included several important proposed reforms to the Codex to make it more congruent with trade agreements. All were eventually adopted, making the Codex more adapted to trade than to food safety.

First, it was proposed that the standards development process should be more rapid and that majority voting procedures should be adopted. Specifically, it was proposed that, at stage five, a two-thirds majority vote in favour of a standard would be sufficient for its adoption. This departed from the Codex tradition of consensus-based decision making and shifted it towards judicious and timely decision making in order to support trade interests. There was considerable support for this linkage even among the Members from the EU.

Second, as the Codex Alimentarius is composed of standards, guidelines, codes of practice and recommendations, it was proposed that all types of Codex initiatives be considered as "standards" under the trade agreements. This proposal was also included in the Report of the Twelfth Session of the Codex Committee on General Principles (CCGP) in 1996.[51] In September 1998, the CCGP decided that with respect to the SPS Agreement all types of Codex initiatives are functionally the same. In April 1999, the CCGP decided that all types of initiatives were "food standards" according to the TBT Agreement as well. This decision was based on a TBT Committee recommendation that "governments harmonize their regulations on the basis of international standards, and in the framework of Codex this applies to all the provisions which do not address the protection of consumers' health …" and "there is no difference between the various

[51] Codex Alimentarius Commission (1996) Report of the Twelfth Session of the Codex Committee on General Principles, Paris, France, 23-26 November. ALINORM 97/33. Rome: FAO.

categories of Codex texts involved; for the purpose of the TBT Agreement all Codex standards and related texts correspond to the TBT definition of a standard."[52]

Third, a proposal to increase the transparency of Codex was brought forward. Traditionally Codex had been an international institutional arrangement dominated by technical discussions among leading scientists, food safety experts and major food industries. Prior to its linking with the SPS Agreement, there was little reason for broader interest in the work of Codex. This meant there had been no pressure for it to be accessible to interests beyond individuals and groups conversant with technical food standards issues.

The fourth proposal from the 1991 conference asked that priority be given to horizontal committees over vertical committees. That is, because the harmonization of standards across specific categories was found to be very difficult and time-consuming, there should be a move towards the development of general international standards or minimum requirements rather than numerous, specific vertical standards.

To summarize, the approach of the international trade regime for dealing with food safety regulations is to use a two-pronged strategy. Safety-related measures (i.e., hazard or risk) are separated from non-safety measures (i.e., quality, packaging or labelling). In the case of the former, countries may take unilateral actions, subject to scientific justification of risk, to prevent food safety risks from entering their territory. In the case of the latter, non-safety measures are subject to the traditional PND and violations would be in contravention of the international trade regime.

b. Environmental Protection and Trade

To date, much of the discussion on GM crops and trade has focused on the relationship between food safety measures and the rights and obligations related to trade

[52] Codex Secretariat (1999) Report of the 14th Session of the Codex Committee on General Principles, Paris, 13-19 April. CX/GP 99/7. Rome: FAO.

agreements.[53] Yet environmental biodiversity concerns are a significant aspect of current consumer apprehensions about GM crops, and they create pressures to impose environmental protection measures that can become regulatory barriers. Moreover, environmental protection measures have traditionally been less rules-based and science-based under international agreements than have food safety measures. The trade concern is that because the use of environmental protection measures is less disciplined under international agreements than is the use of food safety measures, the opportunity for disguised protectionism is increased.

Perhaps the most important reason for this divergence is that the science of food toxicology is more advanced than the science of predictive ecology, essentially limiting the extent to which environmental regulatory development could rely upon science. However, with the Uruguay Round Agreement, environmental protection measures became more science-based trade rules, in a manner similar to the formalization of food safety rules. The change in their nature came about in two distinct ways. First, there has been an attempt to clarify safety-related environmental measures under the SPS Agreement's link to the IPPC and to clarify non-safety-related environmental measures under the TBT Agreement. Second, there has been an attempt to demarcate the line between trade agreements and multilateral environmental agreements.

i. International Plant Protection Convention

While the Codex deals with sanitary (food) standards and regulations, the International Plant Protection Convention deals with phytosanitary (plant) standards and regulations. It is a multilateral environmental agreement with a broad biodiversity protection remit. It was signed in 1951 and came into force in 1952. The IPPC is administered through the IPPC Secretariat and is part of the FAO's Plant Protection Service. One hundred and

---

[53] See Isaac, G.E. and S. B. Woolcock (1999b) Food Safety and Trade Policy: Agricultural Biotechnology Issues. London: Consumers' Association; Perdikis, N., W.A. Kerr, and J.E. Hobbs (1999) Can WTO/GATT Agreements on Sanitary and Phyto-Sanitary Measures and Technical Barriers to Trade be Renegotiated to Accommodate Agricultural Biotechnology? Paper presented at the NE-167 1999 conference "Transitions in Agbiotech: Economics of Strategy and Policy", Washington D.C., 24-25 June.

seven (107) governments are currently contracting parties to the IPPC. The Secretariat, in collaboration with both regional and national plant protection organizations (RPPOs and NPPOs), provides a forum for the international co-operation, harmonization and technical exchange of plant protection information.

The scope of the convention is the protection of natural flora, cultivated plants and plant products. Similar to the Codex, the motivation for the IPPC was to develop international standards, applicable to all countries, for the protection of plant health and, hence, remove the fragmented collection of standards in the various jurisdictions. To achieve this, the IPPC seeks to harmonize international measures designed to prevent the introduction and spread of diseases and pests to plants and plant products. Clearly, as the environmental biodiversity concerns regarding GM crops are mostly comprised of speculation on the risks, extent, and consequences of gene transfer between GM crops, non-GM or conventional crops, wild relatives and other natural flora and organisms, the scope of the IPPC is well positioned to focus precisely on these concerns.

With respect to the WTO, the IPPC is recognized as the institution responsible for developing international standards for what constitute scientifically justifiable phytosanitary measures affecting trade in plants and plant products. Where the SPS Agreement is concerned, the IPPC standards are considered in the limited capacity of protecting the health of plants (i.e., from pests and diseases) used in the domestic food supply. IPPC standards, which are based on scientific risk analysis procedures, may be used legitimately under the SPS Agreement to restrict imports of certain plants and products produced from plants; a restriction would be legitimate if the aim were to protect plants used in the domestic food supply from diseases or pests, but not if the aim were to protect overall plant biodiversity.

To accommodate the formal link with the SPS Agreement, signatories to the IPPC agreed on amendments in 1997 aimed at clarifying the scientific procedures for standards-setting. The 1997 amendments, captured in the New Revised Text of the IPPC, include provisions that:

1. formalize the role of the IPPC Secretariat and update the standards-setting procedures;
2. emphasize co-operation and the exchange of information toward the objective of global harmonization; and
3. establish the Commission on Phytosanitary Measures (CPM). CPM will serve as the global agreement's new governing body.

The members of the Commission on Phytosanitary Measures are the contracting parties to the Iinternational Plant Protection Convention. The creation of the CPM in effect institutionalized the global role of the IPPC. The CPM meets annually to establish priorities for standard setting and harmonization of phytosanitary measures in co-ordination with the IPPC Secretariat. Special sessions of the Commission may also be called. The functions of the Commission are to review the state of plant protection in the world, provide direction to the work programme of the IPPC Secretariat, and approve proposed International Standards for Phytosanitary Measures (ISPMs). Thus, the IPPC is an active player in the development and integration of GM crop regulations.

The IPPC signatories develop ISPMs. These standards do not explicitly address agricultural biotechnology as a process; rather their scope encompasses products of agricultural biotechnology that pose a risk to plant health. In this sense, the risk assessment efforts of the IPPC have adopted a product-based approach to GM crops similar to the Codex approach and congruent with the traditional trade principle of "like" products or "substantial equivalence". There are currently nine ISPMs accepted by the contracting parties to the convention that reflect procedural standards.[54]

The development of ISPMs follows a three-stage procedure. First, a suggestion to draft an ISPM is made by either the Secretariat, an NPPO, an RPPO, an industry participant, or

[54] The ISPMs include: Principles of Plant Quarantine as Related to International Trade; Guidelines for Pest Risk Analysis; Code of Conduct for the Import and Release of Exotic Biological Control Agents; Requirements for the Establishment of Pest-Free Areas; Glossary of Phyto-sanitary Terms; Guidelines for

an individual. A draft standard is then developed and submitted to the Secretariat by the NPPO or RPPO. Draft standards are reviewed by the Committee of Experts on Phytosanitary Measures (CEPM) – a group of phytosanitary experts from around the world that meets annually to review and comment on the suitability of documents prepared by the Secretariat. Alternatively, a draft standard may be reviewed by an international working group formed by the Secretariat. Recommendations to either develop an ISPM from the draft proposal or modify the draft proposal for further review are made. After a draft ISPM is developed, contracting parties and RPPOs are consulted. Comments are submitted to the CEPM and the IPPC Secretariat and a redrafted standard is developed. This standard is then submitted to the CPM for approval and adoption as an ISPM. The standard is published and distributed by the FAO.

As with Codex standards, the importance of IPPC standards is that measures based on them do not require supporting scientific justification. Measures that deviate from international standards or that exist in the absence of international standards must be based on scientific principles and evidence in order to be considered scientifically justified under the SPS Agreement. Emergency (or provisional) measures may be taken without such analysis, but must be reviewed for their scientific justification and modified accordingly in order to remain legitimate.

The IPPC can perform an important function that the Codex cannot – dispute resolution. The IPPC has built-in provisions for dispute avoidance and dispute settlement in the event that measures are challenged as unjustified barriers to trade. The Secretariat provides guidance, support, and information to contracting parties concerning phytosanitary measures and it facilitates the exchange of information between the parties with respect to regulatory requirements and pest status. The dispute settlement process provides a neutral forum for a technical dialogue on the dispute. Countries first consult bilaterally with the aim of resolving the problem. The IPPC Secretariat provides technical support and facilitates the exchange of views and information in this process. If further

---

Surveillance; Export Certification Systems; Determination of Pest Status in an Area; and Guidelines for Pest Eradication Programmes.

action is deemed necessary, the disputing parties can request that the Director General of the FAO form an expert panel to review the situation and recommend a course of action. Although the dispute settlement process in the IPPC is non-binding, the results of the process can be expected to have substantial influence in disputes that may be raised at the WTO under the SPS Agreement. This is because the IPPC Secretariat both nominates experts for WTO dispute panels and provides technical background to the panels. Once a dispute is brought to WTO, the decision will be legally binding and can have serious economic and political consequences. Therefore, the IPPC encourages governments to begin with consultation and a technical exchange, with the aim of dispute avoidance at this technical stage before the political stakes are raised in a trade dispute.

The effectiveness of the dispute avoidance and dispute resolution provisions of the IPPC remains unknown. In the event that trade barriers to GM crops are supported by phytosanitary measures, then it is possible that the dispute provisions in the IPPC, rather than the WTO dispute settlement mechanism, will be used to resolve the regulatory barriers. However, the problem would be that the IPPC would be thrust fully into the realm of risk management, rather than remain an international forum for providing risk information and establishing science-based principles for risk assessment.

In short, it is easy to understand why the international trading system supports the IPPC as the international organization responsible for developing internationally harmonized phytosanitary standards for GM crops. Its remit to promote the health of natural flora, cultivated plants and plant products allows it considerable scope to cover the various environmental biodiversity concerns which have been levelled against GM crops. Yet its adherence to scientific principles limits consideration of “other legitimate factors”. Further, its built-in dispute settlement provisions would adopt the strategy of separating safety-based phytosanitary measures from non-safety-based measures by requiring science-based evidence of risk.

2. Cartagena Protocol on Biosafety

The Cartagena Protocol on Biosafety to the Convention on Biological Diversity (hereafter the Biosafety Protocol or BSP) represents an international multilateral environmental agreement on the transboundary movement of living products of modern biotechnology.[55] Although it has not yet been ratified, it is important to assess the BSP because the EU has stated that rules and guidelines established under the protocol will be the foundation of its regulatory integration strategy dealing with biotechnology products.[56] Hence, it is a proxy for the EU's trade policy position on GM crops. Further, Canada had a large part in brokering the deal that led to the final version of the protocol and has signed the BSP.

The BSP negotiations were an international effort, under the auspices of the United Nations Environment Programme's (UNEP's) 1992 Convention on Biological Diversity (CBD). The UNEP was established in 1972 by the General Assembly as the UN's official environmental agency. Its mandate was sustainable development – to safeguard and enhance the environment for present and future generations. The UNEP is involved in both technical scientific research on the environment and in reconciling the global objectives of environmental protection with other objectives, such as trade and socio-economic development. For instance, the UNEP is involved in negotiations to establish international environmental law through multilateral environmental agreements (MEAs) such as the Montreal Protocol and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

Perhaps the most ambitious initiatives of the UNEP have been the Convention on Biodiversity and the subsequent negotiations to create a Biosafety Protocol. The CBD was the culmination of a decade-long effort, begun at the Third World Congress on National Parks and Protected Areas in Bali, Indonesia in 1982.[57] The objective of the

---

[55] *Cartagena Protocol on Biosafety to the Convention on Biological Diversity: Text and Annexes* (2000). Montreal: The Secretariat of the Convention on Biological Diversity, (http://www.biodiv.org)
[56] *AgraFood Biotech* (1999) London: AgraEurope Ltd. No. 19: 8 December.
[57] Swanson, T. (1997) *Global Action for Biodiversity*. London: Earthscan Publications Ltd.

CBD was to develop an international convention to commit the global community to the conservation and protection of biodiversity. In June 1992, the CBD was included as Agenda 21 of the United Nations Conference on Environment and Development in Rio de Janeiro – the Earth Summit – and was signed by participating countries at the conference. The BSP was proposed as an initiative to regulate the transboundary movement of living products of modern biotechnology in order to protect biodiversity. Negotiations concluded in January 2000 after being suspended in February 1999 because of significant obstacles.

The initial scope of the BSP was to protect biodiversity by developing legally binding international rules governing the testing, importation and exportation (transboundary movement), deliberate release and commercial use of living modified organisms (LMOs). The Advance Informed Agreement (AIA) principle meant that the Party of import would be notified prior to a shipment of LMOs so that it could perform a risk assessment in order to identify any potential risk(s) to regional biodiversity. The Party of import, upon completion of the risk assessment, could allow or restrict the importation of the LMO because of identified risk(s) to biodiversity.

Although the BSP is not explicitly intended to be a trade agreement, the fact that its scope includes export and import activities makes it an implicit or de facto trade agreement associated with the international trade of GM products. A successful BSP has the potential to positively influence international trade in three significant ways. The first is through increased trade transparency according to the use of the AIA principle. That is, the Party of import would be notified in advance of shipments of LMOs. The second is through increased trade fairness, because the risk assessment procedures are intended to ensure that biodiversity risks from GM products, whether domestic or foreign, are assessed consistently, using credible procedures. That is, the use of science in performing risk assessments on products of biotechnology would be harmonized among all signatories. Third, an international protocol could overcome the lack of domestic

regulations in those countries with little or no experience with regulating GM products.[58] In light of these positive aspects, the successful negotiation of the BSP can be interpreted as a potential win-win outcome. The global benefit, shared by all countries, would be the overall conservation and protection of biodiversity. From an industry perspective, successful completion of the BSP has potential benefits for the further research, development, adoption and commercial use of GM products because it would potentially increase predictability and market access opportunities.

In order to understand the current nature of the BSP, it is useful to understand the complicated negotiation procedure.[59] As mentioned, the CBD Secretariat – located in Montreal, Canada – administers the BSP. Seven negotiating sessions have been held involving over 120 countries.[60]

Negotiations began in May 1996 with the discussion of general issues, including who should be involved in the negotiating sessions.[61] A request for draft protocols resulted in an Ethiopian submission in October 1996, submitted on behalf of the African delegation and written by the Third World Network (TWN). This draft protocol, considered representative of the views of many developing countries, used as a framework the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. As a result, the draft protocol treated shipments of LMOs with the same degree of prescriptive regulation as shipments of toxic or nuclear waste. Further, this draft protocol placed an enormous burden upon the Party of export (the exporting country) and the exporter to ensure biosafety and to gain approval before any shipment of LMOs.

---

[58] Mulongoy, K. (1997) Different Perspectives on the International Biosafety Protocol. *Biotechnology and Development Monitor* 30. The Hague, Netherlands.

[59] See also IISD (International Institute for Sustainable Development) (2000) Report of the Resumed Session of the Extraordinary Meeting of the Conference of the Parties for the Adoption of the Protocol on Biosafety to the Convention on Biological Diversity, 24-28 January 2000. *Earth Negotiations Bulletin* 9(137), (www.iisd.ca/biodiv/)

[60] July 1996, Aarhus, Denmark; May 1997, Montreal, Canada; October 1997, Montreal, Canada; February 1998, Montreal, Canada; August 1998, Montreal, Canada; February 1999 at Cartagena, Columbia (suspended talks); and January 2000, Montreal, Canada.

[61] As in other international governmental arrangements, the main actors would be national governments. However, the BSP has been characterized by a high level of openness from the beginning; a broad range of

In response to the draft protocol submissions, the second negotiating session, in May 1997, involved parties staking out their positions. The third session, in October 1997, was characterized by an emerging awareness of the agricultural commodity trade issue and the potential impact of the protocol on the international trade of products of modern biotechnology. Countries with agricultural exports reacted negatively to the Ethiopian draft protocol, highlighting the substantial differences of opinion between many developed and developing countries on what constitutes an LMO and what are the associated risks.

The fourth and fifth negotiating sessions, both held in 1998, primarily involved the elucidation of crucial definitions and issues, including the definition of an LMO, the roles of the Party of export, the exporter, the importer and the Party of import, the opportunity for exemptions, and the scope of the AIA. Many of these issues remained unresolved.

The sixth negotiating session was to be followed by the Extraordinary Conference of the Parties to the Convention (ECOP) where the final draft BSP was to be presented for signing. However, on 24 February 1999, after it became clear that a final draft protocol was not going to be established, the decision was made to push back the deadline for the final protocol for 18 months. The impasse emerged when the Miami group of countries (United States, Canada, Australia, Argentina, Chile and Uruguay) rejected European efforts, supported by the other 140 negotiating countries, to extend the coverage of the protocol in two directions: (1) to include risks to human health and (2) to include agri-food shipments intended for processing. The position of the Miami Group was driven mostly by trade concerns. Specifically, the ambiguous interpretations of AIA and LMOs, along with the unclear provisions on labelling and liability laws, meant that there was significant uncertainty as to what trade impact the BSP might actually have on agri-food exports from countries where GM crops had been commercialized. For instance, a study of the potential trade impact – given the ambiguity – concluded that the effect on

---

industry representatives and environmental non-governmental organisations have participated in the negotiations.

Canadian agricultural exports could range widely, from as low as $C 6 million to as high as $C 1.2 billion.[62] Until this severe uncertainty could be cleared up, major agricultural exporters simply could not support the protocol.

The seventh negotiating session, held in January 2000 in Montreal, Canada resulted in the signing, by 140 countries, of the Cartagena Protocol on Biosafety. Yet the protocol has not been ratified, and will not come into effect for some time. In the document's final form, the significant ambiguities that were of concern to the Miami Group were either dealt with or at least set aside for further consideration. For instance, the agreed-upon definition of an LMO distinguishes between LMOs intended for environmental release and GM commodities not intended for environmental release. The former are subject to an AIA for the first-time shipment only and there must be a clear scientific justification for a ban. The protocol permits, however, a "precautionary" ban, which can include socio-economic risks such as impacts on local farmers. While GM commodities are not subject to an AIA, the protocol does require mandatory labelling of GM material in accordance with the consumers' right to know. However, both the labelling rules and the liability rules are provisional pending further negotiations.

The BSP is intended to create an international regulatory approach to the protection of biodiversity from LMOs, and to do so within the package of other international environmental protocols included in the CBD. In fact, attempts have been made to link the BSP to other UNEP international environmental regulations including the International Technical Guidelines for Safety in Biotechnology, which are guidelines for the development of domestic regulations that deal with the safe handling and containment of GMOs within a country, and the UN Recommendations on the Transport of Dangerous Goods, which are recommendations for the development of domestic regulations pertaining to the transport of hazardous and toxic materials. Notable by its absence is any effort to link the potential BSP with international trade agreements.

[62] Isaac, G.E. and Phillips, P.W.B. (1999a) The Biosafety Protocol and International Trade in Transgenic Canola: An Economic Assessment of the Impact on Canada. Paper presented at the NE-167 1999 conference, "Transitions in Agbiotech: Economics of Strategy and Policy", Washington D.C., 24-25 June.

Several crucial issues remain unresolved, effectively dampening enthusiasm for the BSP. As mentioned, and unlike the International Plant Protection Convention, there is no link to any international trade agreements (even though the BSP is a de facto trade agreement) and there is no institutional mechanism for dispute settlement. Second, the United States is not a signatory. Although not an official negotiating party (the U.S. Congress has not ratified the 1992 CBD) the United States remains the world leader in biotechnology research and plays an influential role in the negotiations. Whether the U.S. position assumes a cautionary approach to the agricultural trade issue or an outright opposition to the BSP can have vital influence on those signatories to the protocol, such as Canada, that rely heavily upon market access to the United States. Third, it appears that it will be at least seven years before the BSP is in effect. Negotiations on the provisional labelling rules continue until 2002 while those for the provisional liability laws continue until 2004. Once settled, the BSP must be ratified by at least 50 signatories and then transposed into national laws. Of course, during this time, technological innovation in agricultural biotechnology will continue, perhaps making the BSP obsolete as an international regulatory development and integration agreement even before it becomes ratified as an international treaty.

In fact, in many respects, it appears that the BSP represents a political compromise rather than an actual attempt to establish an institutional structure for GM crop regulations. The most contentious issues remain “provisional” (unresolved) and the time-consuming ratification and implementation process could ensure its obsolescence. The BSP’s major contribution was the illusion that a multilateral environmental agreement with significant trade impacts could be agreed to on a wide basis.

II.C. Current Status

The previous section revealed that the regulatory regimes for biotechnology-based products supported by the WTO and the BSP have emerged from quite different backgrounds. For instance, the WTO approach – in pursuit of a narrow, market access mandate and driven by trade interests – seeks to establish certain and predictable international trade rules that depart from the principle of non-discrimination only in the presence of a scientific justification. On the other hand, the baseline principle of the BSP is the AIA principle, which involves a much wider mandate of sustainable development, is supported by a broad range of social interests, and permits market access barriers based on a significant degree of non-scientific justification.

Given these very different institutional backgrounds, the purpose of this section is to examine the distinct trajectories followed by each regulatory regime. Each regime will be compared according to the manner in which each approach employs the National Academy of Sciences' Risk Analysis Framework (RAF) and the subsequent regulatory principles associated with this framework.

Prior to looking at their trajectories, it is illustrative to consider the current strength of each of the regulatory regimes. In terms of signatories, the two regimes seem similar, as they both have around 140 signatories. However, when ratification by signatories is compared, it is clear that the WTO dominates the BSP. Since the signing of the World Trade Organization Agreement in 1994, the WTO has been ratified in over 150 countries. The Members of the WTO appear to take their rights and obligations very seriously.[63] In fact, a major priority for non-Members such as Russia is to accede to the WTO.[64] While the WTO remains a strong international organization, the BSP remains in limbo. Though the protocol was signed in January 2000, many important issues remain provisional and are subject to further negotiations (in some cases until 2004, a fact which will be discussed in more detail below). To date the BSP has been ratified in onlya handful of

[63] Especially when compared to multilateral environmental agreements such as the Kyoto Protocol.
[64] Kerr, W.A. and J.E. Hobbs (2000) *The WTO and the Dispute Over Beef Produced Using Growth Hormones*, CATRN Paper 2000-07, Canadian Agrifood Trade Research Network, http://www.eru.ulaval.ca/catrn/beef.pdf.

countries – and no EU Member States have ratified it despite the very strong public endorsement given by the EU in November 1999.[65]

It may be tempting at this point to declare the WTO's regulatory regime for biotech products victorious and not bother with further comparisons. Such a declaration is, however, premature. Should the fifteen EU Member States ratify the protocol and further make its ratification contingent upon EU accession by other Western and Eastern European states then the tide will have turned dramatically. Arguably, in such a scenario the two pillars of the international trading system – the United States and the EU – would be in support of different regulatory regimes, with the likely result that other nations would have to choose which regime to adopt. A comprehensive comparison of the two regulatory regimes is therefore both important and timely.

1. Comparison of the Regulatory Regimes' Approaches to the Risk Analysis Framework

At first glance, it appears that the biotechnology regulatory regimes supported by the WTO and the BSP are similar, and several examples incisively illustrate this apparent similarity in both spirit and intent. First, both regimes claim to be based upon scientific principles and to support use of the RAF for collecting regulatory evidence.[66] Second, both regimes claim to support the use of precaution in the event that scientific evidence is insufficient.[67] Finally, both regimes suggest that other legitimate factors beyond just scientific evidence, for example, socio-economic effects, must be a part of the regulatory calculation.[68]

Yet recent research has revealed that significant differences can exist in how regulatory regimes collect and manage scientific risk information in the RAF, with the result that the

---

[65] *AgraFood Biotech* (1999) London: AgraEurope Ltd., No. 19: 8 December.
[66] *SPS Agreement* 2(2) and *BSP* Article 15, Annex III
[67] *SPS Agreement* 5(7) and *BSP* Preamble
[68] *SPS Agreement* 5(3) and *BSP* Article 26

apparent similarities may only be superficial.[69] The discussion below begins with a general discussion on the Risk Analysis Framework followed by comparisons of how the WTO and BSP each employ the many regulatory principles captured under this framework.

a. The Risk Analysis Framework

Regulatory policies for biotechnology-based products must strike a delicate balance between technological progress and technological precaution. There is widespread agreement that the best way to strike the progress/precaution balance is through the Risk Analysis Framework developed in 1983 by the U.S. National Academy of Sciences.[70] The RAF is comprised of three functions:

1. Risk assessment: to provide objective, neutral risk information (incidence, characterization, etc.)
2. Risk management: to take a regulatory decision based on the objective risk information gathered through the risk assessment
3. Risk communication: to ensure the two-way flow of information between both the risk assessment and risk management functions and between those responsible for those functions and affected constituents.

The RAF tries to disentangle *technology-inherent* benefits and risks from *technology-transcendent* benefits and risks through the introduction of science into public policy formulation. The benefits of using science in public policy decision making are two-fold. First, a cornerstone of scientific inquiry is to remove normative preferences from the scientific analysis; that is to find the line between safety and non-safety-related issues. Second, in the event of a scientific dispute, there exist rules for resolution through further scientific analysis.

---

[69] Isaac, Grant E. (2002) *Agricultural Biotechnology and Transatlantic Trade: Regulatory Barriers to GM Crops*. Oxon, UK: CAB International Publishers; and Isaac, Grant E. and W.A. Kerr (2001b) GMO Policy Debates. Paper presented at the Canadian Bar Association Annual Conference, Saskatoon, Canada, 14 August 2001.

[70] National Academy of Sciences (NAS) Committee on the Institutional Means for Assessment of Risks to Public Health, Commission of Life Sciences (1983) Risk Assessment in the Federal Government: Managing the Process. National Research Council. Washington D.C.: National Academy Press.

Despite widespread agreement on the use of the RAF to deal with the benefits and risks of new technologies, there are in fact significant debates on how to actually implement and "operationalize" the RAF. Specifically there is not universal agreement on how to make different benefit/risk calculations for both the technology-inherent and technology transcendent impacts of the research, development, and commercialization of GM crops. This lack of consensus results in different interpretations of the various regulatory principles under the RAF.

Two dominant approaches to the RAF can be identified: a scientific rationality approach and a social rationality approach (table 2).[71] The major debate between these two approaches is associated both with the role of technology in society and the role of science in public policy. From the scientific rationality perspective, science facilitates advancements in invention and innovation. Such advancements allow for greater efficiency in the use of scarce resources while greater efficiency encourages economic development and growth. With economic development and growth, real incomes rise, culminating in a rising demand for higher-quality products, which can include products that achieve greater levels of food safety and environmental protection. Accordingly, public policies that adopt the scientific rationality perspective encourage technological progress. In terms of risks, this perspective holds that a science-based approach that poses empirical questions can produce "facts" or "matters of knowledge" that transcend cultural differences. In short, the scientific rationality approach to the RAF aims to use a scientific basis to separate actual from perceived risks so that any regulatory constraints on technological progress are scientifically justified.

The social rationality perspective takes a different view. From this perspective, science and technology cannot be disentangled from the broader normative social construct, which represents a delicate balance between many diverse interests and preferences.

[71] This discussion on scientific and social rationality is adopted from Isaac, Grant E. (2002) *Agricultural Biotechnology and Transatlantic Trade: Regulatory Barriers to GM Crops*. Oxon, UK: CAB International Publishers.

Science and technology inevitably produce change and change disrupts the normative social construct. Yet, because “science” in pursuit of empirical questions is not sensitive to normative interests and preferences, some changes brought by technological progress may be unacceptable. According to the social rationality perspective, science and technology must be greeted with precaution; if the social normative construct is to be destabilized, then public policies better make sure that such change is acceptable beyond just a scientific justification. In short, the social rationality approach to the RAF aims to bring technological precaution into public policy development.

From this fundamental distinction in the view of the role of science in society, the adoption of either the scientific or the social rationality approach to the RAF sets a jurisdiction on a particular regulatory trajectory that determines the positions taken on key policy debates such as those associated with substantial equivalence, the precautionary principle and labelling. For instance, the labelling strategy supported tends to be a function of the policy position on substantial equivalence, which, in turn, tends to be a function of the view of science in society.

	The Risk Analysis Framework (RAF)	
	Scientific Rationality	***Social Rationality***
Belief	Technological progress	Technological precaution
General Regulatory Issues		
Type of Risk	Recognized Hypothetical	Recognized Hypothetical *and* speculative
Substantial equivalence	Accepts S.E.	Rejects S.E.
Science or other in risk assessment	Safety Health	Safety Health Quality "Other legitimate factors"
Burden of proof	Traditional: innocent until proven guilty	Guilty until proven innocent
Risk tolerance	Minimum risk	Zero risk
Science or other in risk management	Safety- or hazard-based: risk management is for risk reduction and prevention only.	Broader socio-economic concerns: risk management is for social responsiveness.
Specific Regulatory Issues		
Precautionary principle	Scientific interpretation	Social interpretation
Focus	Product-based, novel applications	Process- or technology-based
Structure	Vertical, existing structures	Horizontal, new structures
Participation	Narrow, technical experts Judicial decision-making	Wide: "social dimensions" Consensual decision-making
Mandatory labelling strategy	Safety- or hazard-based	Consumers'-right-to-know based

Table 2: Regulatory Frameworks for Biotechnology

Source: Isaac, G. (Forthcoming 2002) ***Agricultural Biotechnology and Transatlantic Trade: Regulatory Barriers and GM crops.*** Oxon, UK: CAB International Publishers.

2. The Risk Analysis Framework Under the WTO and the BSP

Given their different institutional trajectories, it should come as no surprise that the key difference between the regulatory regimes of the WTO and the BSP is their respective interpretations of the Risk Analysis Framework. It will be argued below that the WTO regulatory regime is best represented by the scientific rationality approach while the BSP regulatory regime is best represented by the social rationality approach. In order to illustrate the differences between the two approaches, three examples are presented. The first is a domestic and import ban on GMOs based on food safety, the second is a ban based on environmental protection, and the third is a mandatory labelling standard imposed on biotechnology-based products. In each case, the approaches employed by the WTO and the BSP in dealing with such trade issues are assessed.

a. Food Safety Ban on GMOs

i. The World Trade Organization

Recent research identifies how the scientific rationality approach of the WTO deals with regulation of genetically modified crops.[72] Assume that a jurisdiction, e.g., the EU, imposed, in conjunction with a domestic ban on production, a ban on imports from Canada of GM varieties of crops (but not non-GM or conventional varieties of the same end-use crops), based on food safety concerns. Assume further that Canada complained to the WTO. How would the international trade regime deal with this issue and what are the strengths and weaknesses of its approach?

At the heart of such a ban against GM crops is a focus on their process and production methods (PPMs). Yet, as previously mentioned, an important concept in the traditional principle of non-discrimination is that of "like" products. This concept has worked well for dealing with the international trade of industrial goods. However, when dealing, for instance, with domestic regulations for food safety and environmental protection, this concept has proved to be controversial. For both of these latter types of regulations, how

[72]Isaac, G. E. and W.A. Kerr (2001b) GMOs and International Trade. Paper presented at the Canadian Bar Association Annual Conference, Saskatoon, Canada, 14 August 2001.

a product is processed and produced is crucial, and two products for the same end use could not be considered substantially equivalent if their PPMs were drastically different.

The approach that the international trade regime would adopt to deal with a market access ban based on a product's PPMs is summarized in table 3. The first question to ask is whether the PPM-based ban is for safety reasons or for non-safety reasons.

If the ban is based on safety-related concerns about PPMs – that is, the manner in which the good is processed or produced affects the safety of the good – then the international trade regime would deal with the ban in the following manner. A scientific justification must exist to prove that the ban is legitimately safety-related. What constitutes a scientific justification? The WTO itself does not decide scientific legitimacy. Instead, it defers to three international scientific organizations whose mandates are to develop both international standards and international standards-setting guidelines in their relevant areas: Codex Alimentarius (food safety); International Office of Epizootics (animal safety); and the International Plant Protection Convention (plant safety). If, according to the standards or standards-setting guidelines used by any of the three relevant organizations, a legitimate scientific justification exists for the ban, then the Member is permitted under the SPS Agreement to impose the ban in violation of all the concepts of non-discrimination (see the left-hand column of table 3). For instance, "like" products from one jurisdiction may be banned because of particular safety risks only relevant to that jurisdiction and, in this case, the Member does not have to offer either national treatment or most-favoured-nation status to that jurisdiction.

Food Safety Trade Barriers to GMOs **1. Is it a safety-related or non-safety-related ban?**		
i). Safety-related	***ii). Non-safety-related*** **A. Nature of PPMs?**	
	a). Product-related PPM (novelty)	**b). Non-product-related PPM**
SPS Agreement	**TBT Agreement**	**Out-of-scope**
Scientific justification Permissible use of SPS measures to ban trade where measures may violate the principle of non-discrimination provided a scientific justification exists. (e.g. Beef hormones case)	Permissible use of TBT measures to ban trade where measures may violate the "like" products concept of non-discrimination. However, measures must adhere to the national treatment and most-favoured-nation concepts of non-discrimination.	No permissible use of TBT measures to ban trade (e.g., Shrimp–Turtle, Tuna–Dolphin cases) Measures must adhere entirely to non-discrimination.

Table 3: Trade Approach to Food Safety Regulatory Barriers

If the trade ban is focused on non-safety-related PPMs – there is no scientific justification to support a safety-related ban – then a different approach is used by the international trading regime. A further question is posed. What is the nature of the PPMs under consideration; are they *product-related* or *non-product-related*? This categorization of PPMs is the result of a compromise struck during the Tokyo Round of multilateral trade negotiations under the GATT.[73] Most countries recognized that in some cases a product's non-safety-related PPMs were relevant for issues of market access, however, there was considerable disagreement on how to relax the "like" products concept of non-discrimination in order to deal with this. Countries such as Canada and the United States wanted all technical barriers to trade to come under the discipline of the international trading system in order to prevent countries from imposing trade bans through mechanisms such as packaging and labelling rules. In essence, this position meant that countries could legitimately use measures against non-safety-related PPMs to ban trade subject to certain constraints. On the other hand, less developed countries such as India did not want any linking of trade rules and PPMs; this latter position meant that there would be no legitimate violations of the "like" products concept. The compromise was to split PPMs into two categories, product-related PPMs and non-product-related PPMs.

In the event that the PPMs are found to be product-related, the relevant WTO agreement is the TBT Agreement, which allows for legitimate violations of the "like" products concept. For example, consider two meat products where one has been produced under conventional practices while the other has been produced under a quality assurance program. As a result of the quality assurance program, the latter product's PPMs affect the final product; the quality assurance program would be considered a product-related PPM (see the centre column of table 3).

On the other hand, in the event that the PPMs are found to be non-product-related there are no legitimate circumstances for which they may be used as a barrier to trade, because they do not legitimately violate the "like" products concept. For instance, consider two

[73] Grimwade, N. (1996) *International Trade Policy: A Contemporary Analysis.* London: Routledge.

cotton shirts where the cotton for the first has been grown in an intensive agricultural system while the cotton for the second has been grown in an organic system. Regardless of the intensive or organic PPMs employed, there is no impact upon the final product (the cotton shirt) and so the PPMs would be considered non-product-related and a trade ban based on the agricultural system of the cotton would be in contravention of international trade rules (see the right-hand column of table 3).

The overwhelming strength of the international trading system is that it brings discipline to the use of domestic food safety regulations that hinder international trade. Among signatories, the default position is non-discrimination; all Members may impose any domestic standards they wish, provided that for all "like" products the national treatment and most-favoured-nation concepts are respected. From this default position, Members may violate the principle of non-discrimination under certain circumstances.

For safety-related issues, Members may violate all the concepts of non-discrimination provided they have a scientific justification to do so and the measure adopted is the least trade distorting to fulfill the safety objectives. The results of the Canada/U.S. – EU Beef Hormones dispute clearly indicate this.[74] The strength of this approach is that a scientific orientation attempts to disentangle real safety issues from normative beliefs such as preferences and concerns. Of course, while a perfect separation has not – and will never – occur, it is argued that a scientific approach at least has an accepted methodology for risk assessment and procedures for dispute resolution, which normative disagreements rarely enjoy.

Yet, while bringing real trade discipline to the use of safety-related PPM-based measures by Member countries is a tremendous strength of the international trading regime, it is at the same time perhaps its greatest weakness. Specifically, drawing the line between what is legitimately safety-related and what is non-safety-related is a most controversial issue.

[74] Kerr, W.A. and J.E. Hobbs (2000) *The WTO and the Dispute Over Beef Produced Using Growth Hormones*, CATRN Paper 2000-07, Canadian Agrifood Trade Research Network, http://www.eru.ulaval.ca/catrn/beef.pdf.

As mentioned previously, the WTO does not take this decision, but instead defers to several organizations that develop international standards for safety as well as international guidelines for setting standards according to scientific principles. What if, however, a Member country to the WTO does not agree with the scientific principles of these international organizations? For instance, a Member may impose a ban that contravenes the international standards because of a belief that the scientific studies were not long-term enough, or comprehensive enough, or that the statistical thresholds for risk were too high. In fact, there are many grounds on which a Member may not agree with the scientific principles of the international organization. Of course, when the WTO was linked to such international organizations, the notion was that Members would actively work to ensure that their views on scientific standards and standards-setting procedures would be included within the frameworks used by the international organizations. Problems arise, however, in the case of standards or standards-setting procedures that were adopted previously – and are currently not open for amendment – or were adopted without consensus – such that particular Members may not have agreed with the international standards at the outset. In short, the debate associated with what constitutes "international scientific principles" for the purpose of determining a scientific justification for a safety-related trade ban is sure to continue.

The basis of the scientific approach is the assumption that a scientific consensus can be reached, at least among "experts" in the field. These experts are then deferred to in establishing the rules for international trade. There is, however, a further assumption regarding the "scientific approach". That is that the judgment of the "experts" will be accepted. This assumption is at the heart of the GMO debate regarding safety. It seems clear that a sufficient proportion of consumers (where sufficient is defined to mean that politicians do not feel they can safely ignore them) in some countries are not willing to accept the scientific consensus nor to defer to the judgment of experts.[75] The international trading regime has always recognized that governments must, at times, bow to

[75] Kerr, W.A. (1999a) International Trade in Transgenic Food Products: A New Focus for Agricultural Disputes, *The World Economy*, 22 (2): 245-259.

protectionist pressure and not comply with their international obligations.[76] The cost of choosing to ignore one's WTO commitments is to accept retaliation from trade partners. This is the route chosen by the EU in its dispute with the United States and Canada over beef produced using growth hormones.[77] Accepting retaliation, however, signals that the political consensus that underlies the WTO has broken down and that renegotiation is required. This breakdown will force the WTO to deal with non-commercial requests for protection head-on.

The scientific approach the WTO supports for dealing with products of modern biotechnology has been determined by the Codex Alimentarius, which deals with GM crops on a product basis, not on a technology basis. Indeed, in 1995, there was an unsuccessful attempt to permanently include foods derived from GM techniques on the agenda of the horizontal Codex Committee on Special Nutritionals. Currently, there is neither a vertical committee nor a horizontal "general subject" biotechnology committee. Instead, various vertical commodity and general subject committees address issues and concerns associated with agricultural biotechnology products as they fall within traditional jurisdictions such as the Codex Committee on Food Labelling.

In 1990, a WHO/FAO Joint Expert Consultation examined the issue of foods produced from GM ingredients and made seven recommendations:

1. GM (rDNA) foods should be evaluated for both safety and nutritional value.
2. New processes of production should be evaluated for safety.
3. Evaluations should have broad participation.
4. Evaluation can result in recommendations for animal testing.
5. Evaluation committees should have de facto authority over national policies on GM foods.

[76] Kerr, W.A. and N. Perdikis (1995) *The Economics of International Business*. London: Chapman and Hall.
[77] Kerr, W.A. and J.E. Hobbs (2000) *The WTO and the Dispute Over Beef Produced Using Growth Hormones*, CATRN Paper 2000-07, Canadian Agrifood Trade Research Network, http://www.eru.ulaval.ca/catrn/beef.pdf.

6. International organizations should harmonize risk (safety) assessments for both products and processes.
7. Consumer information should be scientifically based and only concerned with food safety issues.[78]

These recommendations were crucial in forming a baseline scientific approach for assessing and regulating GM crops. The first recommendation supported the product basis for regulatory oversight, while the second recommendation suggested specific oversight in the instance of novelty. The third recommendation supported the need to include the "other legitimate factors" in the regulatory development. The fourth recommendation encouraged more pharmaceutical-type assessment procedures for approval of novel foods while both the fifth and sixth recommendations called for the development of a harmonized, international regulatory framework for GM crops that would override national regulations. The seventh recommendation supported consumer information, such as labelling strategies, only in instances of hazard or food safety concern such as the possible presence of allergens, not on the basis of the consumers' right to know. Also in 1990, the Joint Expert Committee on Food Additives developed risk assessment guidelines for the use of GM material additives in foodstuffs.

At the 23rd CAC Session in Rome, 28 June – 3 July 1999, the United States proposed a "Biotechnology Code" that clarified the dominant role of science in the food standards associated with products of biotechnology. This code, congruent with the 1993 Codex Secretariat guidelines, called for novelty-based regulations. Although the proposal was unsuccessful, the CAC agreed instead to establish an *Ad Hoc Intergovernmental Task Force on Foods Derived From Biotechnology* to examine the issues surrounding Codex efforts to develop biotechnology standards, codes of practice, guidelines and recommendations. The task force is wider in remit than was the proposed Biotechnology Code, as it will allow for broader non-science issues such as consumer and environmental protection issues to be considered. Specifically, the task force will:

[78] World Health Organisation/Food and Agriculture Organisation (1991) Strategies for Assessing the Safety of Foods Produced Through Biotechnology.

1. elaborate standards, guidelines and other principles, as appropriate, for food derived from biotechnology;
2. co-ordinate and closely collaborate, as necessary, with appropriate Codex committees within their mandates as related to foods derived from biotechnology; and
3. take full account of existing work carried out by national authorities, FAO, WHO, other international organizations and other relevant international fora.

The task force was initially given a four-year mandate from July 1999 to July 2003. The mandate requires a preliminary report to the 24th CAC in 2001, a mid-term report to the CEC in 2002 and a final report to the 25th CAC in 2003.[79] The first meeting of the task force was held in Chiba, Japan in March 2000 and the issues covered included: establishing the scope and priorities of the task force, clarifying key concepts and definitions for core principles such as risk analysis, and examining national and regional experiences with the regulatory problems created by foods derived from biotechnology.

While the Codex appears committed to a product-based, novelty-focused approach to GM crop regulations, an institutional shift may be on the way. The Codex Medium Term Programme of Work 1998 – 2002 contained a proposal to establish Codex measures over the application of biotechnology. It requires "consideration of a general standard for foods derived from biotechnology or traits introduced into foods by biotechnology." This means that a Codex horizontal general subject committee on biotechnology would have to be established, essentially shifting biotechnology from its current novelty focus to a process- or technology-based focus. Whether this fundamental shift will occur remains to be seen.

ii. Biosafety Protocol

While the BSP is an environmental agreement intended to protect biodiversity – not a food safety agreement intended to protect human health – there is considerable scope under the current articles to allow a Party of Import to ban the transboundary movement

[79] *AgraFood Biotech* (1999) London: AgraEurope Ltd. No. 19: 8 December.

of a living biotech product because of food safety risks. Indeed, the text to the BSP clearly states its role in protecting human health:

> Such risk assessments shall be based, at a minimum, on information provided … in order to identify and evaluate the possible adverse effects of living modified organisms on the conservation and sustainable use of biological diversity, taking also into account the risk to human health.[80]

As such, and similar to the discussion on the WTO above, it is important to understand how this would occur.

The BSP lays out the method for performing a scientific risk analysis procedure on living products of biotechnology in order to identify actual safety risks.[81] According to the text of the BSP, signatories have an obligation to "take into account, as appropriate, available expertise, instruments and work undertaken in international forums with competence in the area of risks to human health."[82] This passage also seems to indicate a link between the BSP and the Codex; however, the key term seems to be "as appropriate". In fact, as will be argued below, the approach to risk analysis supported by the BSP is drastically different from that supported by Codex with the result that the Codex appears not to be an "appropriate" international forum in the context of the BSP. Yet, unlike the WTO approach which attempts to clearly separate safety risks from non-safety risks, the BSP appears to open the door for "other legitimate factors" in the risk analysis procedure under an AIA determination through Article 26: Socio-Economic Considerations. The result is that, unlike the WTO approach, the BSP approach is characterized by a heavily blurred distinction between safety-related and non-safety related justifications for denying transboundary movement.

The inclusion of human health issues and the broadening of the term "risks" to include socio-economic considerations create significant uncertainty about the true scope of the BSP. For instance, would it be legitimate under this environmental agreement to ban a

[80] *BSP* Introduction. See also *BSP* Preamble and *BSP* Article 4: Scope, which include "taking also into account risks to human health."
[81] *BSP* Article 15: Risk Assessment and *BSP* Annex III: Risk Assessment,
[82] *BSP* Article 2(5): General Provisions

biotech product if there were scientific evidence of a human health risk even in the absence of scientific evidence of an environmental risk? Remember, the BSP is supposed to protect biodiversity, yet in this instance it would be protecting human health. The uncertainty is exacerbated even further if the definition of risk also includes socio-economic risks to humans from the import of the biotech product, for example, the risk to local producers from the economic competition created by trade. Essentially, given the ambiguous scope of the BSP a non-safety, non-environmental concern could actually become the basis for an import ban under the jurisdiction of a multilateral environmental agreement allegedly adopted to protect biodiversity from scientifically justifiable risks.

Clearly there is some confusion surrounding the use and extent of the various regulatory provisions under the BSP. As a result, it is important to examine these regulatory provisions in more detail.

From a regulatory point of view, the most important aspect of the BSP is its process-based focused. A living modified organism (LMO) is defined as any living organism that possesses a novel combination of genetic material obtained through the use of genetic modification.[83] This definition is problematic. At first it seems to be a novel- or product-based regulatory approach consistent with the "like products" approach employed by the WTO. Yet clearly the focus is on "the use of genetic modification" per se.[84] The result is that the BSP is not a novel-based regulatory regime, but is instead a process- or technology-based regime.

This process-based focus is operationalized through the Advance Informed Agreement (AIA) procedure.[85] The Party of Import must be notified prior to any first-time shipment of an LMO so that an assessment of the biodiversity risk(s) can be assessed. Of course, as noted above, the ambiguous scope of "risk" means that this assessment is not limited to just biodiversity risks but may also include assessment of human health and socio-economic risks. A further ambiguity exists with respect to the operationalization of the

[83] *BSP* Article 3(g): Use of Terms
[84] *BSP* Article 3(i) (a. and b.) clarifies which genetic modification technologies are subject to BSP scrutiny.

AIA procedure. While AIA is supposed to be limited to first-time transboundary movement, Article 12(4): Review of Decisions states "the Party of import may, at its discretion, require a risk assessment for subsequent imports."[86]

The notification process for AIA appears to shift trade notification from a commercial function (between two economic actors) to a state function between the Party of Export and the Party of Import.[87] According to this article, the Party of Export – not the exporter nor the importer – notifies both the Party of Import and the Biosafety Clearing-House of eligible transboudary movements of LMOs.[88] That is, the BSP requires state-to-state relations. Following notification, the Party of import must acknowledge receipt of the notification to the Party of Export within 90 days. Yet, if the Party of Import exceeds 90 days, the Party of Export still cannot assume that this means the transboundary movement has been approved.[89] Since there are no consequences for delaying the process there is little incentive for the Party of Import to follow prescribed timelines, especially when the LMO under consideration is perhaps controversial. The Party of Import must make a decision based on its own risk assessment to deny or allow the shipment, or to withhold the decision until more information is provided by the Party of Export.[90] The final decision by the Party of Import must follow the initial notification within 270 days, but again there appear to be no consequences if this timeframe is violated. Finally, according to the BSP, the costs of notification and risk assessment are borne by the notifier. Technically the notifier is the state, and the costs could be borne by either the exporter or the state.[91] This case-by-case, government-dominated trade process is of course much different than the trade rules outlined under the WTO, where oversight for transboundary movements remains a commercial function rather than a governmental function.

The risk assessment performed by the Party of Import begins with information provided by the Party of Export according to requirements outlined in the BSP. The Party of

---

[85] *BSP* Article 7: Application of the Advance Informed Agreement Procedure
[86] *BSP* Article 12(4): Review of Decisions
[87] *BSP* Article 8: Notification
[88] *BSP* Article 20: Information Sharing and the Biosafety Clearing-House
[89] *BSP* Article 9(4): Acknowledgement of Receipt of Notification
[90] *BSP* Article 10: Decision Procedure

Export is to provide detailed information about the biotechnology process used in production of the LMO, the regulatory status of the LMO within the Party of Export, and a declaration that the information provided is factually correct.[92] Given this information, the Party of Import is then permitted to undertake a risk assessment of its own, subject to the following procedures. According to Article 15 the risk assessment must be performed in a scientifically sound manner[93] that includes observations commensurate with the life cycle of the biotech product in question.[94] The reliance upon a life-cycle analysis (LCA) is problematic for two reasons. First, it is process-based, conflicting with the product-based focus under which many GM crops have been approved. This means that while regulatory approval for these substantially equivalent products does not require a life-cycle analysis, such an analysis would now be mandatory in order to meet the terms of the BSP risk assessment. Second, and perhaps more importantly, life-cycle analysis remains a relatively complex procedure surrounded by much debate.[95] Establishing an acceptable LCA procedure for GM crops across many jurisdictions – some employing a product focus and some employing a process focus – is likely to create a challenge equal to or greater than that of integrating the WTO and the BSP regulatory approaches! In short, the use of LCA for the risk assessment of LMOs appears to open yet another front for conflict rather than concert.

The BSP risk assessment methodology initially appears to be consistent with Codex, as the parameters for what constitutes an appropriate risk assessment include both environmental and human safety risks, taking into account guidelines developed by relevant international organizations.[96] However, the extent to which socio-economic risks are a part of the risk assessment remains in doubt since there is a provision to include consideration of "whether or not the risks are *acceptable* or manageable …."[97] This means that the focus of the risk assessment is not just on actual risks, but also on the

---

[91] *BSP* Article 15(3): Risk Assessment
[92] *BSP* Annex I: Information Required in Notifications Under Articles 8, 10 and 13
[93] *BSP* Article 15(1): Risk Assessment
[94] *BSP* Article 16(4): Risk Management
[95] Isaac, G.E. and S. B. Woolcock (1999b) Food Safety and Trade Policy: Agricultural Biotechnology Issues. London: Consumers' Association.
[96] *BSP* Annex III
[97] *BSP* Annex III 8(e)

prevailing perception of risk regardless of the scientific justification for such a perception. Indeed, this allowance for perception is embodied in the use of the precautionary principle under the risk assessment approach of the BSP.[98] At first it appears that this interpretation of the precautionary principle is consistent with the interpretation found in the WTO's SPS Agreement Article 5(7) as "lack of information should not be considered as consent nor denial; but instead suggests more research."[99] Yet, as we systematically open up the assessment to socio-economic risk perceptions, it becomes clear that the use of the precautionary principle within the BSP approach differs significantly from the scientifically restricted use according to the SPS Agreement.

Once the risk assessment is complete, it is time to make a risk management decision according to Article 16.[100] Under the scientific rationality approach adopted by the WTO and supported by the Codex, the role of socio-economic considerations is limited. Essentially, the scientific risk assessment *makes* the regulatory decision. Alternatively, under the BSP it appears that the information from the scientific risk assessment only *informs* the regulatory decision, while information about potential socio-economic impacts is also considered. According to Article 26(1), in reaching a decision on import the Party of Import "may take into account … socio-economic considerations arising from the impact of LMOs … especially with regard to the value of biological diversity to indigenous and local communities."[101]

According to the BSP, in the event that the Party of Export is not satisfied with the risk assessment and/or risk management decision by the Party of Import, the Party of Export can ask for a review of the decision, and the Party of Import must comply within 90 days.[102] Yet, with no process for dispute resolution, the Party of Import appears to be under no obligation to provide further justification of its ban and there is no way for the Party of Export to overturn the decision. In fact, it appears that Article 12: Review of Decisions is intended not to protect the Party of Export by preventing spurious trade

[98] *BSP* Articles 10(6); 11(8); and Annex III
[99] *BSP* Annex III
[100] *BSP* Article 16: Risk Management
[101] *BSP* Article 26(1): Socio-Economic Considerations

barriers, but to support the efforts of the Party of Import at being technologically cautious. The Party of Import can change previous decisions in light of new scientific information about the adverse impacts of LMOs and must notify the Biosafety Clearing-House within 30 days of any changes. Yet, given that what constitutes new scientific information could involve socio-economic risks, the potential for trade barriers that have nothing to do with protecting biodiversity from actual risks seems quite high.

There are many exemptions to the BSP that appear to be based on the absence of risk to environmental biodiveristy. For instance, biotech products for use as pharmaceuticals are outside the scope of the protocol as they are considered to be completely contained and not a risk to environmental biodiversity.[103] While some GM crops are intended for direct environmental release others are not, and careful distinction has been made for these different uses. For instance, LMOs in transit are exempt based on the notion that during transport the LMO is completely contained, with no chance of accidental release.[104] Similarly, LMOs in contained use are also exempt.[105] Perhaps the most contentious exemption has been the one proposed and supported by the Miami Group of agricultural commodity exporters: LMOs for direct use as food or feed or for processing.[106] The commodity exporters argued that LMOs for such uses hold only a very small risk of environmental release compounded with a very small environmental biodiversity risk and hence should not face burdensome regulatory approval requirements under the AIA procedure and the BSP's interpretation of risks. Ultimately, the signatories agreed to develop a list of LMOs that would be exempted from the AIA procedure if there was agreement that there was no environmental biodiversity risk.[107]

The strengths and weaknesses of this risk analysis approach contrast with those of the WTO. The strengths of the BSP regulatory regime are that it is very socially responsive,

---

[102] *BSP* Article 12: Review of Decisions
[103] *BSP* Article 5: Pharmaceuticals
[104] *BSP* Article 6(1): Transit and Contained Use
[105] *BSP* Article 6(2): Transit and Contained Use
[106] *BSP* Article 7(2): Application of the Advance Informed Agreement Procedure; *BSP* Article 11: Procedure for Living Modified Organisms Intended for Direct Use as Food or Feed, or for Processing
[107] *BSP* Article 7(4): Application of the Advance Informed Agreement Procedure; *BSP* Article 13: Simplified Procedure)

focusing on perceived risks from the technology itself across the spectrum from scientific hazards to biodiversity, through human health risks, to adverse socio-economic effects. However, the weakness is that this “catch-all” regulatory approach does just that; it potentially offers to Parties of Import the power to impose unilateral trade-restricting measures that may have nothing to do with actual biodiversity risks, while at the same time it offers no mechanisms for the Party of Export to challenge these measures in the event that an AIA decision comes under dispute.

b. Environmental Protection Ban on GMOs

The following analysis of how both the WTO and the BSP would deal with a trade barrier predicated on protecting the environment in many ways mirrors the analysis above pertaining to a food safety–type trade barrier.

i. World Trade Organization

Environmental measures have traditionally fallen under the jurisdiction of Article XX(b) of the GATT 1948. Yet, with respect to GM crops, the linking of the International Plant Protection Convention to the international trade regime through the SPS Agreement may be interpreted as a sign of future "scientification" of environmental measures similar to what has happened with food safety measures. That is, in the case of a trade barrier facing a GM crop, the WTO will essentially ask: is the barrier related to an environmental risk and justified in terms of a scientific risk assessment, or is it non-safety related, associated instead with the environmental perceptions and preferences within the jurisdiction? Similar to its approach when dealing with food trade regulations, the WTO's aim in environmental regulation has been to disentangle safety measures from non-safety measures and make the former science-based and the latter subject to the traditional trade principle of non-discrimination.

In the event that there is a scientificically demonstrable environmental safety risk to a Member from the importation of a GM crop, then the importing Member would have considerable scope under the WTO to ban that GM crop, presumably under Article XX(b) and subject to the PND. Consider what would be required to demonstrate scientifically an environmental safety risk. First, the risk must either be recognized and accepted by the IPPC in its own standards and guidelines, or the risk assessment procedures must be congruent with the standards-setting procedures of the IPPC. As previously mentioned, the IPPC is a scientifically rational organization that focuses on actual risks while limiting the influence of risk perceptions or non-scientific risks such as socio-economic impacts. If the alleged safety risk cited by the importing Member does not meet these requirements, then it is unlikely that the WTO would support the use of such a barrier on the grounds that it protects environmental biodiversity (table 4).

This assessment of the WTO's scientific approach is supported by a recent appellate body decision on the legitimate use of an environmental trade barrier focused on non-product, non-safety PPMs.[108] The ruling was in favour of the U.S.-imposed ban, on the basis that the environmental safety risk to animals (turtles) had been scientifically justified and therefore qualified for Article XX(b).

Non-safety-related PPM-based environmental measures are not subject to the same degree of scientific justification as safety-related measures. Without this scientific basis, non-safety-related measures are disciplined under the TBT Agreement according to the traditional trade principle of non-discrimination. In the case of environmental measures pertaining to GM crops, the main TBT issue is the permissible use of non-safety trade-restriction measures based on the PPMs.

With respect to food trade, non-safety product-related PPMs can include, for instance, the type of veterinary practices and quality assurance systems that may be employed in a beef production system, because these PPMs may affect the safety and quality of the final beef products. That is, product-related PPMs are associated with the consumption or use stage of the product and may cause negative consumption externalities. According to the TBT Agreement, coverage includes "product characteristics or their related processes and production methods" but only as they avoid "consumption externalities".[109] Therefore, only consumption externalities associated with product-related PPMs are within the scope of the TBT Agreement. Further, and similar to the SPS Agreement, there are limits to the permissible use of product-related PPM-based measures that Members may enact. Under the TBT Agreement the legitimate deviations are not as precise as those under the SPS Agreement and can include "different social objectives and priorities attached to environmental protection."[110]

[108] *WTO Appellate Body Ruling: Shrimp–Turtle*, 26 October 2001
[109] *TBT Agreement*, Annex 1

On the other hand, non-safety, non-product-related PPMs in the trade of agricultural crops are generally associated with the agronomic system, but have no influence on the end product. For instance, the technologies employed for soil cultivation or the conservation strategies used are non-product-related PPMs. Although not responsible for consumption externalities, these PPMs may cause negative production related environmental externalities. Yet, these PPMs are out of scope of the TBT Agreement, and are the sovereign domain of the Member government. From a trade perspective, such measures must follow the principles of non-discrimination.

From an environmental protection perspective, the problem with the fact that non-safety, non-product-related PPMs are out of scope is that the pursuit of sustainable development and the protection of biodiversity focus on production externalities and result in pressures on domestic governments to establish environmental protection measures pertaining to non-product-related PPMs which can become regulatory market access barriers. Specifically, GM crops are associated with concerns about their impact upon the environment and this concern has led to opposition in Member states to the domestic environmental release of GM crops. It is reasonable to suppose, however, that this may even lead to a Member enacting trade measures based on the non-product-related PPMs of GM crops grown elsewhere and imported into the Member country.

Several important issues must be considered. For instance, with respect to crop development, the first important issue is whether or not the use of modern genetic modification techniques constitutes a PPM. There is some debate about this. On one hand, it is argued that the techniques and procedures of genetic modification are used in the development of the seed, but not in the growth of the seed after planting. With both herbicide-tolerant and insect-resistant GM varieties, those GM seeds may then be grown in the same intensive production system using the same PPMs used for non-GM crops.

---

[110] Organization for Economic Cooperation and Development (1997) Processes and Production Methods (PPMs): Conceptual Framework and Considerations on the Use of PPM-Based Trade Measures.

According to this argument, GM crops would not have different PPMs than non-GM crops and, therefore, would be substantially equivalent. On the other hand, it is argued that it is use of genetic modification techniques that makes GM crops inherently different from non-GM crops and therefore, GM crops have different PPMs and should not be considered substantially equivalent to non-GM crops. Hence, an important debate sure to plague the TBT Committee of the WTO is whether the use of modern biotechnology in fact represents a change in the PPMs in the first instance.

Even if we assume that GMOs are not substantially equivalent and that they have different PPMs, how would they be dealt with under the WTO? A decision would have to be made regarding whether the PPMs are product-related or non-product-related. If the PPMs change the end-product characteristics (i.e., more quality or less quality) then they would be considered product-related. As such, there is a possibility that a Member could violate the "like" products concept of non-discrimination and ban the use of product-related PPMs of GM crops, provided that the ban applies equally to all domestic and foreign GM crops. If the PPMs of GM crops are considered to be non-product-related, with no impact upon the quality or novelty of the end product, then trade law has concluded in the Tuna–Dolphin case that non-safety, non-product-related PPMs cannot be legitimately used to ban trade because they unjustifiably violate the "like" products concept of non-discrimination.[111]

Of course, the TBT Committee does not have to proactively make this decision. Instead, it could allow differences of opinion among Members to escalate from regulatory barriers to trade tensions, followed by trade disputes brought to the WTO's dispute settlement body.

The conclusion is that while the procedure used by the international trading regime to ban GMOs is straightforward in its approach, the approach remains controversial and several key decisions about how GMOs appropriately fit into it remain undecided.

OECD/GD(97)/37, Paris.

[111] Jovanovic, M.N. (1998) *International Economic Integration: Limits and Prospects.* London: Routledge.

Environmental Trade Barriers to GMOs **1. Is it a safety-related or non-safety-related ban?**		
i). Safety-related	***ii). Non-safety-related*** **A. Nature of PPMs?**	
	a). Product-related PPM (novelty)	**b). Non-product-related PPM**
SPS Agreement	**TBT Agreement**	**Out-of-scope**
Scientific justification under IPPC Permissible use of SPS measures to ban trade where measures may violate the principle of non-discrimination provided a scientific justification exists. Compliance requires: 1. IPPC standards on phyto-sanitary measures; 2. scientific evidence of risk to deviate from the non-discrimination principles according to the IPPC approach to the Risk Analysis Framework (e.g., Beef Hormones case).	Permissible use of TBT measures to ban trade where measures may violate the "like" products concept of non-discrimination. However, measures must adhere to the national treatment and most-favoured-nation concepts of non-discrimination.	No permissible use of TBT measures to ban trade (e.g., Shrimp–Turtle, Tuna–Dolphin) Measures must adhere entirely to non-discrimination.

Table 4: Trade Approach to Environmental Regulatory Barriers

ii. Biosafety Protocol

The BSP was designed specifically for this purpose: to protect conservation and the sustainable use of environmental biodiversity from risks resulting from modern biotechnology.[112] Similar to the BSP's treatment of food safety–type justifications for trade barriers, the protocol does not make efforts to disentangle legitimate and illegitimate environmental trade barriers according to whether the barriers are safety- or non-safety-related.

Instead, the BSP allows for non-scientific and non-safety risks to justify unilateral action to ban the transboundary movement of products of modern biotechnology. Process- or technology-based risk assessments necessary for the AIA procedure are permitted to focus on both actual safety risks and on acceptable or manageable risk perceptions as well. Further, the assessments would be broadened to include socio-economic risks to environmental biodiversity. Indeed, in contrast to the WTO approach, under the BSP the distinction between safety-related and non-safety-related justifications for denying transboundary movement is heavily blurred. Although the AIA risk assessment procedure is intended only for the first-time transboundary movement of an LMO for intentional environmental release, the ambiguity surrounding subsequent transboundary movements[113] and the extent to which the protocol applies to biotech products not intended for environmental release raise significant uncertainty. Serious doubts may be raised about the risk assessment procedure, especially the reliance upon a life-cycle analysis (LCA). In the case of predictive ecology, the LCA is even less robust than it is for food safety considerations. As previously stated, establishing an acceptable LCA procedure for the environmental safety of GM crops across many jurisdictions – some employing a product focus and some employing a process focus – is likely to create a challenge equal to or greater than that of integrating the WTO and the BSP regulatory approaches.

[112] *BSP* Preamble
[113] *BSP* Article 12(4): Review of Decisions

From an operational risk management perspective, given the apparent lack of consequences for the Party of import for failing to meet its regulatory timelines coupled with both the social interpretation of the precautionary principle and the fact that the Party of Export bears the costs of notification and AIA, there appears to be little encouragement under the regulatory regime for technological progress. In fact, this problem is exacerbated by the lack of recourse for a Party of Export unsatisfied with a risk assessment decision of the Party of Import.

The BSP's assessment of environmental risk is therefore similar to its assessment of food safety. The protocol stands as a regulatory regime for the international trade of GM crops that blurs the line between scientific safety justifications for trade barriers and non-science, non-safety justifications in order to remain socially responsive to concerns about the processes of modern biotechnology, not the products.

c. Mandatory Labelling of GMOs

The final trade barrier case study to assess involves the imposition of a mandatory labelling strategy for GMOs. It should come as no surprise that the WTO and BSP regimes support much different mandatory labelling strategies. These are examined below.

i. World Trade Organization

The mandatory labelling of GMOs is an important issue because while the Codex Alimentarius is currently working to develop international standards for the mandatory labelling of biotechnology-based food products, many countries have pressed ahead with their own mandatory labelling policies. The result is a fragmented collection of labelling regulations.

Table 5 summarizes the approach adopted by the international trading system to deal with mandatory labelling standards for GMOs. Similar to the previous discussion of a ban on GMOs, the first distinction to draw here is between safety-based labelling and non-safety-based labelling predicated on the consumers' right to know (CRTK) about the nature of a product.

A safety- or hazard-basis for mandatory labelling is the traditional approach, and is supported under the SPS Agreement. According to this approach, there are three categories of hazard to consider: (1) if a product is risky for most, then a ban, not a mandatory labelling strategy is the first-best policy; (2) if a product is risky for none, then neither a ban nor a mandatory hazard label is necessary; yet, (3) if a product presents risks to a few, then a mandatory hazard label is necessary. The classic example of the third category is product allergenicity, which requires products to be labelled in order to signal to at-risk groups that there is a scientifically justified hazard from consumption. In applying this rationale to products of, or derived from, GMOs an important requirement is that there exists scientific evidence that the product poses a hazard to particular at-risk groups. If a scientific justification for a hazard-based label for certain products exists, then a Member may legitimately impose a mandatory labelling standard that contravenes

the non-discrimination principle. For instance, if the hazard is associated with a certain product from a particular exporting country, a mandatory labelling standard may be imposed that contravenes the “like” products, national treatment and most-favoured-nation concepts.

An increasing rationale for mandatory labelling is to meet the CRTK about the process and production methods of a particular product. With respect to GMOs, there are two aspects of this rationale to consider. First, some jurisdictions – such as Canada – have permitted mandatory labelling based on the CRTK provided the product in question is novel. In order to be novel, a product must be unique enough that no “like” products exist (there are no substantially equivalent substitutes). If a product is deemed novel, then a mandatory labelling standard that contravenes the like products concept of the principle of non-discrimination is permissible because it deals with (non-safety-related) product-related PPMs. However, the mandatory labelling standard must be applied in a non-discriminatory manner; that is, products subsequently developed that are “like” the novel product must be labelled and the national treatment and most-favoured-nation concepts must be met.

Mandatory Labelling for GMOs **1. Rationale for labelling?**		
i). Hazard	***ii). Consumers' right to know*** **2. Rationale for CRTK?**	
	i). Novel/product-based (product-related PPMs)	**ii). Technology/process-based (non-product-related PPMs)**
SPS Agreement (safety issue)	**TBT Agreement**	**Out-of-scope**
Permissible use of mandatory labelling standards for products derived from GMOs where standards may violate the principle of non-discrimination, provided scientific evidence of hazard exists. Three categories of hazard: 1. Hazard for all = ban, no need for hazard label 2. Hazard for none = no ban, no mandatory hazard label required ***3. Hazard for some = mandatory, hazard label***	Permissible use of mandatory labelling standards for "novel" GMOs: - no prior characterization - no substantial equivalence - no "like" products exist However, standards must adhere to the principle of non-discrimination.	No permissible use of mandatory labelling standards for the consumers' right to know. A non-discriminatory voluntary labelling standard is supported.

Table 5: Trade Approach to Mandatory Labelling

The second CRTK rationale for a mandatory labelling strategy of GMOs does not deal with the novelty of the end product. It deals instead with the technology used. In other words, it is a technology- or process-based CRTK mandatory labelling strategy dealing with non-product-related PPMs. According to the international trade regime, there are no legitimate uses of mandatory labelling based on the consumers' right to know about non-safety-related and non-product-related PPMs. The argument is that if there is no safety risk and no justification that the use of genetic modification results in a novel product, then there is no justification for violation of the "like" products concept. For example, a mandatory "GMO" label for GM canola found to be substantially equivalent to non-GM canola would not be justifiable because it does not deal with either safety or novelty and, as such, there are no grounds for imposing different standards upon it.

There is, however, precedence for labelling based on the consumers' right to know about a food's process or production method – the Codex guidelines on labelling the use of food irradiation. Yet, for several reasons this precedent is not very relevant to the case of GM crops. First and foremost, in the case of irradiated meat there is a long-standing Codex standard first agreed in 1983 and amended in 1989. The issue of labelling GM foods at Codex has not produced a Codex guideline that supports the consumers' right to know. In fact, the only Codex recommendation on the issue, from the Codex Secretariat, supports labelling only for novel GM products, not for the consumers' right to know about process and production methods for non-safety reasons. Given the important role of Codex it is useful to briefly discuss the development of this Codex recommendation.

The Codex Committee on Food Labelling (CCFL), currently chaired by Canada, considers international food labelling issues, drafts labelling provisions (and amendments) that are applicable to all foods, and endorses labelling provisions in the standards, codes of practice, guidelines and recommendations prepared by other Codex committees. The CCFL has discussed the labelling of biotechnology products at five separate meetings without reaching a conclusive position. At the first meeting (October 1994) the key issue was whether to develop a mandatory and comprehensive label scheme to apply to all foods derived from biotechnology or to apply only to novel

products. On one hand, Australia, Canada and the United States argued that the science- and safety-based Codex was not the proper venue for consideration of CRTK product information about process and production methods. On the other hand the EU position, supported by many civil society organizations, was that CRTK must be a crucial objective of food standards. In 1995, at the request of the CCFL, the United States produced a position paper on biotechnology labelling which argued for a case-by-case, product-based approach to labelling, not a broad mandatory policy on labelling the use of modern biotechnology in food production.[114] At the 43rd Session of the Codex Executive Committee, the issue of mandatory labelling for other than safety reasons was also considered, but with no resolution.[115]

At the second meeting (May 1996), the two general positions were reiterated. The CCFL requested that the Codex Secretariat prepare a discussion draft on the biotechnology labelling issue for the next meeting.

At the third meeting (October 1997) the Codex Secretariat's discussion draft was presented. The two crucial recommendations from the Codex Secretariat were that mandatory labelling should (1) only cover non-equivalent or novel products, and (2) focus on health risks, including allergens. These recommendations were consistent with the scientific rationality position on mandatory labelling and they did not support the consumers' right to know about non-safety, non-product PPMs as a justification for a mandatory labelling policy. Other delegations, as might have been expected, could not agree to these recommendations. Little progress was made at the fourth meeting in May 1998. Some leading agricultural exporters, such as Australia, Brazil, Canada, New Zealand, Peru and the United States, supported the adoption of both proposals but many European delegations along with India continued to block agreement.

[114] Horton, L. (1997) International Harmonisation of Food and Veterinary Medicine Regulation. *Fundamentals of Law and Regulation*, pp. 381-483.
[115] Codex Executive Committee (CEC) (1996) Risk Analysis in Codex Work: Progress Report for Consideration of the 43rd Session of the Codex Executive Committee, Geneva, 4-7 June. CX/EXEC 96/43/6. Rome: FAO.

At the April 1999 CCFL meeting there was still no success in establishing a Codex standard on a mandatory labelling policy for foods produced through modern biotechnology techniques. The U.S. delegation, along with other major agricultural exporters, reasserted support for the Codex Secretariat's recommendations. The German delegation, on behalf of the EU, supported a mandatory comprehensive labelling policy based on the use of biotechnology. Many delegations informed the CCFL that they were unilaterally developing mandatory labelling policies for the consumers' right to know, with or without the endorsement of Codex. They argued that essential or substantial equivalence was a useless term when the justification was the consumers' right to know. Consumers' International (CI) argued that the consumers' right to know must be the basis for the Codex labelling policy,[116] as it was with irradiated meat. CI also supported the alteration of terminology to focus on GM, not on the use of modern biotechnology in general.[117] The Canadian hosts of the CCFL proposed that the ambiguity around the use of the term "substantial or essential equivalence" should be clarified by a working group.[118]

The regulatory integration issue associated with labelling GM foods is also on the agenda of the TBT Committee. Technical labelling requirements are justified under the TBT Agreement according to the protection of consumer health and safety and according to the consumers' right to know in order to prevent deceptive practices. As previously discussed, the United States has submitted a request to the EU and the WTO's TBT Committee that the regulation (EU Regulation 1139/98Soya/Maize regulations) be amended to reflect the trade concerns of the United States and other agricultural exporters such as Australia, Canada and New Zealand. The submission claims (1) that the EU regulation does not achieve a legitimate objective and (2) that the implementation of the

[116] Consumers' International CI (1999) Statement of Julian Edwards, Director General of Consumers International, to the CCFL, 28 April, Ottawa. www.oneworld.org/consumers//campaigns/food/codex/julian0499.html.
[117] Consumers' International CI (1999) Statement of Julian Edwards, Director General of Consumers International, to the CCFL, 28 April, Ottawa. www.oneworld.org/consumers//campaigns/food/codex/julian0499.html.
[118] Codex Alimentarius Commission (CAC) (1999) Report of the 27th Session of the Codex Committee on Food Labelling Ottawa, Canada, 27 – 30 April. ALINORM 99/22A. Rome: FAO.

regulation is problematic and creates an unjustifiable barrier to trade. With respect to the first claim, the United States argues that GM crops do not differ as a class from conventional varieties. Since other GM techniques besides transgenic modification, such as mutagenesis and somoclonal variation, do not have to be labelled as such, there is no justification for differentiating transgenic crop varieties. With respect to the second claim, the United States argues that the regulation is not non-discriminatory as required under the TBT Agreement, as it would discriminate between those exporters where GM crops are produced and exporters where GM crops are not produced. Further, with respect to the 1 percent tolerance threshold for adventitious contamination agreed in the EU, the United States is concerned that there is a lack of standardized and accurate testing methodologies, so that different tests will produce different test results. In the event that testing methods between jurisdictions differ, concerns arise about the liability of a positive test and, perhaps, a rejection of an export shipment.

Therefore, although not consensual, the current Codex Secretariat recommendation for the mandatory labelling of biotechnology-based products supports labelling for product-related PPMs only, not for the consumers' right to know about non-safety, non-product related PPMs. Recall, all Codex standards, codes, guidelines and recommendations are considered "standards" according to both the SPS and TBT Agreements. As a result, the establishment of a mandatory comprehensive and extensive labelling scheme is sure to initiate a trade challenge, and in all likelihood would be found non-compliant with the WTO for two reasons. First, there would be insufficient scientific justification for a mandatory labelling policy based on food safety concerns under the SPS Agreement. Second, the labelling recommendation of the Codex Secretariat does not support the use of a mandatory comprehensive labelling policy for the consumers' right to know in the case of non-safety issues. Additionally, although a voluntary labelling scheme for products made from GM crops would be compliant with trade rules, a voluntary scheme is unlikely to be acceptable to social interests because it would lack the sanctions to ensure that the consumers' right to know is met.

There are both strengths and weaknesses to the approach of the international trading system in dealing with mandatory labelling standards. One strength is that the approach attempts to adopt a rules-based approach to labelling, built on a scientific foundation of standards and standards-setting procedures established by international scientific organizations that is consistent and predictable. According to this approach, GMO products that pose a scientifically justifiable hazard or that are novel may be legitimately subject to a mandatory labelling standard such that at-risk groups or consumers who wish to exercise their right to know about a GMO product may identify such products in the marketplace. Yet a mandatory labelling standard for GMOs that pose no scientifically justifiable hazard and that are substantially equivalent to products already in the marketplace (and not subject to a mandatory labelling standard) would contravene the non-discrimination principle of the international trade system.

An important weakness of this approach is that it does not meet the consumers' right to know about the use of modern biotechnology in the absence of a hazard justification or of novelty. Due to moral, ethical or religious concerns they may hold, some consumers may wish to know whether techniques of modern biotechnology were used in products.[119] Without a mandatory process-based labelling standard for non-safety-related and non-product-related PPMs, such consumers must rely upon the producers to voluntarily identify that their products are derived from GMOs. Yet, if producers have secured market approval for these products based on the fact that they do not pose a hazard and that they are substantially equivalent to conventional products then they have very little incentive to voluntarily label their GMO products as distinct from the non-GMO "like" products.

ii. The Biosafety Protocol

The initial intent of Article 18 of the BSP is to ensure that those in the Party of Import responsible for handling the relevant LMO are informed about the environmental biodiversity risks in the event that an unintended environmental release occurs. The logic

[119] Gaisford, J.D., J.E. Hobbs, W.A. Kerr, N. Perdikis and M.D. Plunkett (2001) *The Economics of Biotechnology*. Cheltenham: Edward Elgar.

of this is that armed with this information, the handlers in the Party of Import will take necessary precautions. Labelling must appear as a "contains LMOs"–type indication on imported materials for contained use and for intentional environmental release (i.e., seed stock).

The problem with the labelling provisions of Article 18 is that they extend beyond the apparent initial scope of the article. The labelling of LMOs is supported as a process-based measure to ensure the identification of the relevant LMO according to the consumers' right to know,[120] regardless of the absence of scientific risk information. In order to meet the consumers' right to know, the protocol calls for "may contain" labelling of LMOs for direct use as food, as feed, or in processing, and of other LMOs not intended for environmental introduction. Similar to the problem of including human health and socio-economic risks in the risk assessment procedure, it is unclear how mandatory labellng of LMOs not intended for environmental release – and indeed, perhaps no longer viable in the event of an unintended release – is a legitimate environmental protection measure.

The labelling issue was only provisionally settled at the conclusion of the BSP deliberations in January 2000. It is subject to further negotiation by the Conference of the Parties up to January 2002. For instance, one important issue yet unresolved is whether or not the labelling is to be transferred to the Party of Import's marketplace or is only for use of those involved in the handling, transport, packaging and identification of the LMO during transboundary movement. Clearly, many of the supporters of the BSP view the protocol as the vehicle for bringing about the mandatory labelling strategy that so far has not been supported in the Codex nor in the United States or Canada.[121]

---

[120] *BSP* Article 18: Handling, Transport, Packaging and Identification

[121] In October 2001 a Private Members' Bill C-287 (Charles Caccia – Liberal MP) calling for a mandatory, technology-based labelling strategy based on the consumers' right to know was voted down on the third reading in the Canadian Parliament, 126–91.

II.D. Future Status

An important way to assess the future status of a regulatory regime is to consider whether or not its principles can be operationalized from an institutional perspective. Given the current circumstances facing both regulatory regimes, it is clear that in the future both the WTO and the BSP face important challenges. Which one is likely to succeed and which one is likely to fail?

The challenge regulatory barriers present to the traditional trade diplomacy approach embodied in the WTO is significant. The WTO is not institutionally designed to allow Members to impose unilateral trade barriers based on non-safety concerns that are not justified by a scientific risk assessment congruent with either standards established in scientific international organizations or congruent with the standards-setting procedures of such organizations.[122] The issue of regulatory barriers is not a challenge to be taken lightly as it has the potential to undermine the legitimacy of and support for the WTO.[123] For instance, the EU decision to remain in permanent contravention of the WTO dispute settlement decision against the ban on hormone-treated beef should stand as a stark warning of the willingness of countries to impose social protectionism even in the absence of scientific evidence in order to be socially responsive. Yet, despite these challenges, the WTO remains a credible international organization and the Members take their rights and obligations very seriously. On balance, it appears the future of the WTO will be characterized by a "business as usual" approach when dealing with the more traditional border-type measures and perhaps by a cautious step back when adjudicating on the domestic regulatory approaches applied in various states.[124]

While the WTO appears to be a powerful regulatory regime that has perhaps finally realized the limits of its competence, the BSP is a nascent regulatory regime with limited power and an unclear future. The biggest challenge is that of institutional failure. If not

[122] Isaac, Grant E. (2002) *Agricultural Biotechnology and Transatlantic Trade: Regulatory Barriers to GM Crops.* Oxon, UK: CAB International Publishers.
[123] Perdikis, N. and Kerr, W.A. (1999) Can Consumer-based Demands for Protection be incorporated in the WTO? – The Case of Genetically Modified Foods, *Canadian Journal of Agricultural Economics*, 47 (4): 457-465.
[124] See *WTO Appellate Body Implementation Decision: Shrimp–Turtle*, 22 October 2001.

ratified by a sufficient number of signatories the protocol will expire and fail to become a true regulatory regime governing the transboundary movement of living modified organisms.

There are important reasons signatories may fail to ratify the BSP domestically. Signatories may be dissatisfied with the trajectory of the regime in the first instance – the fact that it is a process-based, transaction-based regime requiring significant state-to-state interaction in the AIA procedure while remaining quite ambiguous on how to actually demonstrate to the Party of Import that the LMO intended for trade does not pose an environmental biodiversity threat. The inclusion of human health and socio-economic risks essentially means that under the BSP signatories have significant scope to impose unilateral barriers for reasons that may, in fact, have nothing to do with protecting environmental biodiversity. This problem is exacerbated by the apparent lack of recourse to challenge a trade barrier that the Party of Export might not agree with. Even if there is satisfaction with the trajectory of the BSP, signatories may be dissatisfied with the negotiation of the provisional measures. They may be concerned that issues of mandatory labelling or liability and redress add yet further sources of ambiguity rather than clarity to this regulatory regime. Finally, the BSP may become a victim of obsolescence. There are significant delays associated with the negotiation of the provisional agreements, the domestic ratification process and the transposition of the BSP's regulatory principles and procedures into relevant domestic regulations. In the meantime, continued technological progress may ensure that the BSP and its provisions prove ultimately to be outdated.

II.E. Conclusions

From the examination of the institutional development, current structure and operation, and the apparent future status of the WTO and the BSP regulatory regimes for biotech products, several conclusions may be drawn.

From an institutional perspective, the two regulatory regimes are significantly different (table 6). The WTO has emerged from a narrow original mandate of enhancing market access for traded products, supported by a traditional range of interests including exporting countries and firms engaged in export activities. The fundamental aim has been to develop rules adhering to the baseline principle of non-discrimination and to identify legitimate violations of this principle given sufficient evidence. The BSP has emerged from a much different institutional setting. It holds a very wide mandate – consistent with the Convention on Biological Diversity – to promote conservation and sustainable development through mechanisms to minimize the risks biotech products pose to environmental biodiversity. Along with this wider mandate (beyond trade liberalization) comes a wider set of interests than the set of interests related to the institutional development of the WTO.

From these different institutional backgrounds, different risk analysis trajectories have emerged. The WTO deals with biotech products on a product basis. That is, the focus is on the products created through the use of the techniques and procedures of modern biotechnology rather than on the use of biotechnology per se. According to such an approach, some products may be considered substantially equivalent to or "like" conventional products because the end use is the same, despite the fact that different production and process methods may have been used. Further, in meeting the baseline PND or allowing for the various permissible violations, the trade rules adopt a commercial approval structure such that a biotech product once approved is approved everywhere and every time. This is of course in contrast to the regulatory approach under the BSP, which adopts a process- or technology-based focus such that it is the use of modern biotechnology per se that incurs regulatory oversight regardless of any determinations of substantial equivalence or like products. Essentially, this means that

biotech products under the BSP are considered to be in a perpetual state of novelty and there is no granting of "like product" status. According to the AIA principle, the Party of Import is entitled to perform a risk assessment on such novel biotech products, taking into consideration risks to environmental biodiversity as well as human health risks and socio-economic impacts. In this sense, the BSP approval approach is transaction-based, where each signatory is allowed to perform a risk assessment on a case-by-case basis. That is, there is no granting of national treatment or most-favoured-nation status under the BSP.

Further, within their divergent trajectories, the WTO and the BSP use the Risk Analysis Framework in different ways. According to the WTO approach, with its links to various international scientific organizations, science is limited to natural-science determinations of hazard or risk. When the issue is environmental safety, then only environmental biodiversity risks are considered, not human health risks. Further, socio-economic risks are not part of the risk assessment process. At the risk management stage, where the goal is reducing and preventing actual risks only, science essentially *makes* the regulatory decision. In summary, the traditional trade approach attempts to disentangle trade barriers erected because of safety reasons from those erected for non-safety reasons. The former are subject to a scientific justification for the safety measure. In the event of a justification, it is legitimate for a country to impose a unilateral safety barrier to particular imported products. The latter, non-safety measures, are subject to the traditional trade principles of non-discrimination. In the event that a country imposes a trade barrier against a certain product, this barrier must be equally enforced across all similar or "like" products, both domestic and foreign. In contrast, risk assessments under the BSP broaden the definition of science to include both natural science and social science. The result is a broadening of risk beyond just environmental biodiversity risk to include risk to human health as well as socio-economic risk. Accordingly, at the risk management stage, science *informs* but does not *decide* regulatory matters where the goal is not only to reduce and prevent actual risks but to also manage risk perceptions, regardless of the scientific justification for those perceptions. In short, the BSP regulatory regime may be

characterized as blurring the distinction between science and other legitimate factors (socio-economic considerations) in the Risk Analysis Framework.

Beyond comparing the two distinct regulatory trajectories it is also useful to consider the potential for regulatory integration of the two regimes. The WTO is a multilateral trade organization with links to various international scientific organizations that deal with the issues of safety and science. It has a dispute settlement mechanism designed to deal with disagreements between Members over interpretations of the many trade provisions. Further, the Committee on Trade and the Environment (CTE) of the WTO recognizes potential conflicts between trade liberalization objectives and environmental protection objectives and aims to clearly identify the role of the WTO in such conflicts and, by default, those roles that the WTO cannot play. In contrast, the BSP is a multilateral environmental agreement without links to a trade organization – despite its obvious implications for trade – and without a clear mechanism to settle a dispute in the event that a Party of Export disagrees with a unilateral trade barrier imposed by the Party of Import.

In conclusion, the WTO and the BSP regulatory regimes are much different and achieving convergence between them is a formidable task. The product-based WTO aims to establish a clear, consistent, predictable and stable regulatory approach. Commercial benefits of this approach include predictable market access opportunities, subject to the relevant requirements; non-commercial benefits include public confidence in the stability and stringency of the regulatory approach. It is often argued, however, that in pursuit of its market access mandate, the WTO places too much emphasis upon scientific rationality and not enough emphasis on social responsiveness. In contrast, it may be argued that the BSP offers the mechanisms by which signatories can achieve social responsiveness. Yet the protocol is unclear and unpredictable; its many exemptions and provisional articles create an unstable regulatory approach, which not only has adverse effects upon commercial opportunities but also could negatively affect public perceptions of the regulatory system.[125]

[125] Public confidence may be negatively affected by a regulatory regime that appears to change frequently perhaps indicating that regulators lack control over the technology.

	WTO Regulatory Regime	*BSP Regulatory Regime*
Background		
Mandate	Narrow: trade	Wide: MEA
Principle	PND	AIA
Regulatory Trajectory		
Focus	Product focus: Substantial equivalence & novelty	Process focus: Process- or technology-based
Approval	Commercial-based: PND or permissible violations Risks: scientifically justified environmental (IPPC) and human health (SPS Agreement)	Transaction-based: no PND Risks: environmental, human health and socio-economic
RAF	Science makes regulatory decision Science is natural science Actual risks only	Science only informs regulatory decision Science includes natural and social Actual and perceived risks
Regulatory Integration		
Links	Multi-multilateral: links with SPS, TBT Agreement and IPPC	Uni-multilateral: no links (except in Labelling Art. 18(3); and Public Awareness and Participation Art 23)
Dispute Settlement	WTO DSM IPPC DSM	No DSM although compliance is provisional under Article 34; separate from CBD Article 27 on dispute settlement.
Membership	States	States and non-state actors

Table 6: Comparison of the WTO and the BSP Regulatory Regimes

III. Legal Implications

III. A. The Legal Relationship Between The WTO & The BSP: Which Prevails?

As illustrated, the WTO and BSP are highly divergent regulatory regimes. Given this divergence, and the potential for BSP-related measures to contravene WTO rules, what is likely to occur in the event of a clash? Which rules, if any, will take precedence?

As a general principle of international law, when two treaties in the same subject area conflict, the latter treaty prevails in the event of a dispute between two states that are parties to both instruments. While this rule appears to be relatively straightforward, it hides a much more complex set of issues. Writing in 1973, Sinclair commented:

> With the post-war growth in international co-operation, accompanied by a massive increase in the numbers and range of international agreements of a law-making character, the problem of incidental conflict between successive treaties has become more acute.[126]

The International Law Commission wrestled with this problem in the course of its work on treaties. The result of its deliberations was Article 30 of the Vienna Convention on the Law of Treaties 1969 which states:

> 1. Subject to Article 103 of the Charter of the United Nations, the rights and obligations of States parties to successive treaties relating to the same subject-matter shall be determined in accordance with the following paragraphs.
>
> 2. When a treaty specifies that it is subject to, or that it is not to be considered as incompatible with, an earlier or later treaty, the provisions of that other treaty prevail.
>
> 3. When all the parties to the earlier treaty are parties also to the later treaty but the earlier treaty is not terminated or suspended in operation under article 59, the earlier

[126] Sinclair, Ian (1973) *The Vienna Convention on the Law of Treaties*, 1st Ed. Manchester: University Press, at 62.

treaty applies only to the extent that its provisions are compatible with those of the latter treaty.

4. When the parties to the later treaty do not include all the parties to the earlier one:

(a) as between States parties to both treaties the same rule applies as in paragraph 3;

(b) as between a State party to both treaties and a State party to only one of the treaties, the treaty to which both States are parties governs their mutual rights and obligations.

It is important to note, however, that the rules in Article 30 were clearly designed to be of a residuary nature.[127] In other words, they will only operate in situations where the competing treaties in question are silent in relation to the issue of priority. It should also be noted that not all situations where the text of two treaties in the same area diverge are regarded as incompatibilities. This divergence is particularly prevalent in situations where a regional regime and a universal regime operate in the same general subject area.[128]

With respect to the potential incompatibility of WTO rules and those contained in the BSP, however, these general rules of international law are unhelpful. Caldwell notes:

> The major difficulty associated with relying on the hierarchical treaty argument is that the later-in-time provision of the Vienna Convention will not adequately serve the GATT/WTO regime or future MEAs. For example, the GATT/WTO regime has a tradition of negotiating additional agreements in new areas of trade liberalization over the course of several years. The latest adoption of the Uruguay Round Final Act clearly places the GATT/WTO regime as the later-in-time treaty in relation to many of the current MEAs. Similarly the negotiation of future MEAs may result in their achieving priority over the GATT/WTO regime. The final result would be a patchwork of differing

---

[127] Ibid., at 66. Art 30 (2) clearly envisions provisions in a treaty relating to its compatibility with other regimes.

[128] Sinclair, ibid., provides the example of the differences between the European Convention on Human Rights and the United Nations Human Rights Covenants.

> treaty priorities and minimal clarification of the relationship between the GATT/WTO regime and the MEAs.[129]

Given the radically different regulatory regimes outlined above, the two treaties cannot be said to be in the same subject area (although their spheres of operation will clearly overlap). Even if such a determination were to be made, the residuary character of the rules contained in Article 30 of the Vienna Convention on the Law of Treaties cannot be overlooked. The BSP is far from silent on its relationship with other regimes, although an analysis of these provisions provides little assistance in answering the question of whether it takes priority over WTO rules.

The Preamble to the BSP contains two contradictory statements that attempt to outline the relationship between the BSP and other international agreements. Initially, the Preamble states "this Protocol shall not be interpreted as implying a change in the rights and obligations of a Party under any existing international agreement."[130] However, the next paragraph continues:

> Understanding that the above recital is not intended to subordinate this Protocol to other international agreements.[131]

While the Preamble to a convention is not of the same legal force as the main body of the instrument, it is, nevertheless, a significant aid to interpretation:

> The object and purpose of a treaty [according to the International Law Commission] are primarily to be gathered from the text of the Treaty and particularly from the Preamble.[132]

The main text of the BSP contains similarly contradictory statements. Article 2 allows parties to take action on biosafety that is more protective than that envisaged by the protocol, *subject* to

---

[129] Caldwell, Douglas (1998) Multilateral Environmental Agreements and the GATT/WTO Regime. Washington D.C.: US National Wildlife Federation, available at http://www.wtowatch.org/library/index.cfm
[130] *Cartagena Protocol on Biosafety 1999*, at Preamble. For full text see http://www.biodiv.org.
[131] Ibid.
[132] Sinclair, supra, note 126 at 75 (citing Jacobs)

the proviso that such measures will be "consistent with the Parties' other obligations under international law."[133] However, Article 26 subsequently authorizes parties to "take into account socio-economic considerations arising from the impact of LMOs on … biological diversity."[134] Socio-economic considerations are regarded as extraneous by the WTO. Thus the relationship between the proviso in Article 2 and the authorization contained in Article 26 is at best ambiguous, and at worst, utterly contradictory. In their analysis of these contradictory aspects of the text of the BSP and their relationship with other international obligations (including WTO obligations) Hagen and Weiner conclude:

> In some significant instances the Protocol establishes rights and obligations that can be reasonably interpreted as contradictory, rather than merely counterbalancing. For example, it is difficult to see how international trade rights and obligations can remain unchanged as the Preamble states, if as the Preamble also states, the Protocol is not subordinate to WTO Agreements.[135]

Clearly, the question of the legal priority of the BSP over WTO agreements (or vice versa) is a complex issue that eludes simple explanation. However, as with most aspects of international law, the legal subtleties of a given situation are less significant than the political realities. Politically, WTO agreements (and the obligations therein) are generally taken more seriously by states[136] than obligations incurred under other instruments. A key factor in determining the likely future of the BSP therefore, is its likely treatment by the WTO should any compatibility issues be raised by aggrieved states. In order to provide an analysis of the likely outcome of such a dispute, a history of the treatment of environmental issues at the GATT/WTO must be undertaken.

III. B. Trade and Environment Jurisprudence at the WTO

[133] Supra, note 130.
[134] Id.

[135] Hagen, Paul and Weiner, John Barlow (2000) The Cartagena Protocol on Biosafety: New Rules for International Trade in Living Modified Organisms, *Georgetown International Environmental Law Review*, Spring, at 713.
[136] Many argue over exactly why the WTO is taken more seriously in political circles. For present purposes, the compulsory jurisdiction of its dispute settlement bodies will suffice.

Prior to 1991, the relationship between trade agreements and environmental protection was one that was paid little attention.[137] However, a decision of the GATT Tribunal[138] relating to an U.S. ban on Mexican tuna imports promptly brought the relationship to the forefront of academic, legal and political debate.

1. The Tuna–Dolphin Disputes

In the Eastern Tropical Pacific, dolphins and tuna swim together in large numbers. Dolphins swim closer to the surface while the tuna swim at lower levels below the dolphins. Tuna fishers soon realized that if dolphins could be corralled into a certain area, the tuna underneath would be easy to catch. By use of the so-called "purse-seine" technique, tuna fishers could catch large numbers of tuna by enticing (or often forcing) dolphins into the centre of a large net, and then closing the purse-like net around the dolphins. While many dolphins would escape, large numbers would be killed or maimed. These dolphins are termed "by catch" or "incidental kill".

a. Tuna–Dolphin I

In 1991 the U.S. Government placed a ban on the importation of tuna from Mexico under the auspices of the Marine Mammal Protection Act 1972.[139] The MMPA placed, *inter alia*, strict dolphin mortality limits on the U.S. domestic tuna fleet. Furthermore, the MMPA authorized the imposition of import embargoes on fish caught by nations that do not adequately provide for dolphin conservation. More specifically, the MMPA had five major requirements:

1) Adoption of a regulatory program similar to that of the United States.
2) A maximum incidental mortality rate of 1.25 times that of the U.S. tuna fleet.
3) Maximum mortality rates on certain dolphin species.
4) Monitoring of mortality rates by the Inter-American Tropical Tuna Commission.

---

[137] Thomas Schoenbaum refers to the pre-1991 study of "the relationship between the protection of the environment and international trade [as] an arcane specialty that attracted little attention."
See Schoenbaum, Thomas J., (1997) International Trade and Protection of the Environment: The Continuing Search for Reconciliation, 91 *A.J.I.L.*, at 268.

[138] *United States--Restrictions on Imports of Tuna* (1992) *30 ILM 159* (Hereinafter, Tuna–Dolphin I).

[139] *16 U.S.C. 1371*(a) (1988). (Hereinafter the MMPA)

5) Compliance with U.S. requests for cooperation on research.[140]

In response to the imposition of the import ban, Mexico requested that a GATT Dispute Resolution Panel be struck to adjudicate. The Panel began deliberations in February 1991 and circulated its decision on August 16, 1991.

Mexico alleged that the U.S. embargo contravened Article XI of the GATT and that it constituted a "quantitative restriction". Article XI (1) states:

> No prohibitions or restrictions other than duties, taxes or other charges, whether made effective through quotas, import or export licences or other measures, shall be instituted or maintained by any contracting party on the importation of any product of the territory of any other contracting party.

The United States argued, however, that the measure imposed under the MMPA constituted an "internal regulation", which met the requirement of the so-called national treatment provision contained in Article III (4) of the GATT in that a similar regulatory regime applied to U.S. domestic tuna fishers. Article III (4) states:

> The products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use.

In arriving at its decision, the Panel had to decide whether a measure that arguably came within the scope of the national treatment provision could nevertheless breach Article XI. The Panel concluded that it could. While this in itself was a noteworthy outcome, the significance of the

[140] For a more detailed analysis of the provisions of the MMPA and the Tuna–Dolphin dispute as a whole, see Spracker, Stanley M. & Lundsgaard, David C. (1993) Dolphins and Tuna: Renewed Attention on the Future of Free Trade and Protection of the Environment, 18 *Colum. J. Envtl. L.* 385.

Tuna–Dolphin I decision lies in the reasoning adopted by the Panel in reaching the aforementioned conclusion. As Spracker and Lundsgaard note:

> The Panel was thus immediately faced with a technical and thorny problem of treaty interpretation. On their face, neither Article III nor Article XI provides any clues as to how they are to be construed in conjunction. In resolving this difficulty, the Panel made a critical and significant distinction between regulation of a product as such, and regulation of the process by which a product is manufactured or created. According to the Panel, Article III only permits an importing country to regulate a product *qua* product and not to regulate the import of the product in order to influence the process by which the product is made. Therefore, Article III cannot be employed as a means of evading Article XI in order to regulate production methods that do not affect the character of the imported product.[141]

Although the Panel referred to several previous decisions as justification for the adoption of this product/process distinction, the authority for this crucial distinction remains somewhat unclear. Spracker and Lundsgaard are highly critical of the approach adopted by the Panel:

> This deployment of Dispute Resolution Panel precedent must be viewed as somewhat troubling. In neither of the Panel reports discussed by the Panel was the issue of the distinction between products and processes even remotely considered. As with the Panel's treatment of the Article III language, the persuasiveness of the precedent argument appeared to result more from judicious underscoring than from the legitimate import of the previous panel reports.[142]

As the method by which tuna were caught was now an extraneous consideration, the Panel concluded that the Mexican tuna was no different from American tuna, and that the U.S. embargo therefore contravened Article XI of the GATT.

[141] Ibid., at 395.
[142] Ibid.

In the event that the embargo constituted a "quantitative restriction", the United States further argued that the measures adopted under the MMPA were nevertheless justified under the GATT's so-called environmental exceptions, Articles XX (b) and (g). Article XX of the GATT allows for Member States to depart from adherence to some of the fundamental principles of the GATT in exceptional circumstances.[143] Resort to these exceptions is also limited by the *chapeau* (or introductory paragraph) of Article XX, which states:

> Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures.

The Article XX "environmental" exceptions refer to measures:

> (b) necessary to protect human, animal or plant life or health;
>
> (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.

The United States initially argued that their embargo was justified under Article XX (b) in that it related to the protection of animal life, albeit animal life outside U.S. jurisdiction. However, the Panel rejected this claim on the grounds that the measure could not be applied extra-jurisdictionally. Although Article XX (b) does not include such a restriction, the Panel:

> Chose to give the exception a narrow construction based primarily on concerns that a broad construction could be detrimental to the operation of the General Agreement. The Panel expressed the concern that if Article XX (b) were construed to allow contracting

[143] Including the "national treatment" clause in Article III and the "prohibition on quantitative restrictions" in Article XI. For the full text of Article XX see: http://www.ciesin.org/TG/PI/TRADE/gatttxt.html#art20

> parties to use trade sanctions to regulate health and safety in other jurisdictions, then "each contracting party could unilaterally determine the life or health protection policies from which other contracting parties could not deviate without jeopardizing their rights under the General Agreement."[144]

A similar fate befell the U.S. argument that its embargo was justified under Article XX (g), the Panel again finding that the measures employed could not be applied extra-jurisdictionally. This was despite the fact that the measures would not apply in the territory of another member state, but in areas beyond national jurisdiction. Spracker & Lundsgaard comment:

> The Panel's parallel interpretations of Articles XX (b) and XX(g) are unpersuasive. In both instances, the Panel relied primarily on a "slippery slope" argument that allowing extra-jurisdictional effect to the exceptions of Article XX would undermine and possibly even destroy the General Agreement.[145]

As with the Panel's interpretation of the relationship between Article III and Article XI, its analysis of the Article XX exceptions came under severe criticism:

> It was simply unnecessary for the Panel to decide that extra-jurisdictional health and safety laws and measures for the conservation of exhaustible natural resources were per se not covered by the Article XX exceptions. This decision by the Panel is likely to have grave and substantial implications for the regulation of the global commons. [146]

While Tuna–Dolphin I referred to the so-called primary embargo (i.e., an embargo on fish products from those countries whose fishing practices did not comply with the MMPA), there was a second Dispute Panel Hearing (Tuna–Dolphin II) brought by European nations affected by

---

[144] As quoted in Spracker & Lundsgaard, supra, note 140 at 398.
[145] Ibid., at 400.
[146] Ibid., at 401. For further criticism of the Panel's decision see William J. Snape III & Naomi B. Lefkovitz (1994) Searching for GATT's Environmental Miranda: Are "Process Standards" Getting "Due Process"? 27 *Cornell Int'l L.J.* 777, 782-90.

the intermediary nation embargo. The MMPA also authorized a ban on tuna products imported from states that sourced their tuna from states covered by the primary embargo.

b. Tuna–Dolphin II[147]

As with Tuna–Dolphin I, the Panel in Tuna–Dolphin II found that the intermediary nation embargo breached Article XI of the GATT. The Panel also concluded that Articles XX (b) and (g) did not apply but:

> could see no valid reason supporting the conclusion that the provisions of Article XX (g) apply only to ... the conservation of exhaustible natural resources located within the territory of the contracting party invoking the provision.[148]

The Panel concluded, however, that although a measure under Article XX (g) could apply extraterritorially, it could only apply to nationals and vessels of the state implementing the measure.[149]

While this interpretation appeared at least to entertain the possibility of measures being afforded protection under the Article XX exceptions, the Panel in Tuna–Dolphin II imposed an additional restriction holding that Articles XX (b) and (g) could not apply to environmental measures whose impact was achieved by forcing another Member State to change its policies. As with the conclusions reached by the Panel in Tuna–Dolphin I, this new limitation was roundly criticised.[150]

---

[147] *United States – Restrictions on Imports of Tuna: Report of the Panel* (1994) GATT Doc. DS29/R. (Hereinafter Tuna–Dolphin II).

[148] As quoted in Schoenbaum, supra, note 137 at 279.

[149] Schoenbaum, ibid., cites Cheyne as authority for the proposition that measures under Art XX can apply extraterritorially but not extra jurisdictionally. See, Ilona Cheyne (1995) Environmental Unilateralism and the WTO/GATT System, 24 *GA. J. INT'L & COMP. L.* 433, 453.

[150] For example, Howse & Trebilcock state that:

> This reasoning is based on a misunderstanding of Article XX; this Article does not create or destroy any acquired legal rights of Contracting Parties, but rather permits on a case-by-case basis exemptions from other GATT strictures, if a set of strict criteria are met.

In addition to their assertion that the Panel in Tuna–Dolphin II misunderstood Article XX, Howse & Trebilcock further assert that:

> In *dicta* the Panel took the view that not only the secondary embargo, but the primary embargo, could not be justified under Article XX, suggesting that it viewed the environmental impact of the

The decisions of the panels in the Tuna–Dolphin disputes raised serious questions as to the ability of states to further environmental objectives by the use of trade-related measures. In areas such as the conservation of whales and other endangered species, trade-related measures had been highly successful in achieving conservation goals.[151]

At the international level, the panel decisions raised similar questions as to the ability of MEAs to achieve their goals via the use of trade-related measures. A perceived chill came over negotiations as it was feared that MEA-related trade measures could be successfully overturned by GATT/WTO dispute resolution panels. Aside from the possibility of such institutional paralysis, the spectre of a genuine conflict between the rules of the multilateral trading system and international environmental law was now apparent.

2. The WTO Committee on Trade and the Environment

In partial response to the furor created by the Tuna–Dolphin disputes, the WTO established its Committee on Trade and Environment (the CTE) in January 1995. The CTE has a wide brief to examine 11 separate issues including, *inter alia*, MEAs, environmental taxes and trade, intellectual property rights and dispute settlement.[152] Item 1 of the CTE's work program is of particular significance:

> The relationship between the provisions of the multilateral trading system and trade measures for environmental purposes, including those pursuant to multilateral environmental agreements.[153]

---

primary embargo *as well* solely in terms of inducing policy changes in other countries. This assumption reveals an ignorance of economics.

See Howse & Trebilcock (1999) *The Regulation of International Trade*, 2nd Ed. London: Routledge, at 411.

[151] Particularly in relation to the International Moratorium on Commercial Whaling adopted by the International Whaling Commission in 1982. The threat of U.S. sanctions had been particularly successful in persuading nations such as Norway, Japan, Peru and Taiwan to change their policies, albeit temporarily in the case of Norway and Japan.

[152] For a detailed analysis of this work program see Charnovitz, Steve (1997) A Critical Guide to the WTO's Committee on Trade & the Environment, 14 *Ariz J of Int & Comp Law*, 341.

[153] The CTE was established by The Decision on Trade and Environment, 14 April 1994. For full text of this Decision see 33 I.L.M. 1267 (1994).

While the CTE has met more than 20 times since its inception, it is no closer than it was at inception to reaching a conclusion as to how to clarify the relationship between WTO rules and MEAs containing trade-related measures. At the Singapore Ministerial Meetings in 1996 the CTE issued its first major report,[154] detailing the work accomplished over the previous two years. Reaction to the Singapore Report was negative. Schoenbaum comments:

> The report of the Committee on Trade and Environment to the Singapore Conference does little to inspire confidence that the CTE will be able to formulate concrete recommendations for reconciling the important issues at stake. The forty-seven-page report is primarily a compilation of the debates within the CTE and the views of its members. There is very little analysis and evaluation and virtually no recommendations for specific actions. The report summarizes the result of two years of deliberations as follows: "Work in the WTO on contributing to build a constructive policy relationship between trade, environment and sustainable development needs to continue." Seen in its best light, the report is a balanced document that may provide a foundation for future progress.[155]

Charnovitz echoed these sentiments, noting:

> Initial hopes for the CTE were high. These hopes were dashed. When the CTE issued its report in November 1996, it became clear that two years of inter-governmental deliberations had yielded little output. In response, there is renewed interest in using regional fora [as opposed to the WTO] to address trade and environment links.[156]

While the CTE has continued to meet, its annual reports have shrunk to an average of three pages, and simply outline the issues that were discussed at the meetings held that particular year.[157]

---

[154] WTO Doc. WT/CTE/1 (Hereinafter Singapore Report).
[155] Schoenbaum, supra, note 137 at 270-271.
[156] Charnovitz, supra, note 152 at 342. Text in brackets inserted by this author.

[157] The CTE's annual report for 2001 was issued on 5 October 2001. It noted that the CTE had met three times in 2001. For full text see WTO Doc. WT/CTE/6.

While undoubtedly a disappointment, the work of the CTE should not be completely dismissed.[158] Much of the research material promulgated by the committee is of value, particularly the Matrix on Trade Measures Pursuant to Selected MEAs.[159] The CTE Matrix outlines the potential trade-distorting measures in 14 different MEAs.[160] Aside from the gathering of useful research, the CTE also provides a forum within which the trade and environment interface can be discussed in the context of MEAs. The CTE has also engaged in meaningful consultations with the secretariats of major MEAs.[161] What is apparent from a detailed reading of the CTE's minutes and reports is that although there is disagreement on how to tackle the WTO/MEA relationship, the actual scale of the problem is not regarded as insurmountable.

As the CTE wrestled with the complexities of the WTO/MEA interface, the WTO Dispute Resolution Body (DSB) was given a further opportunity to examine the Article XX exceptions in the context of the application of a U.S. conservation measure to foreign producers.

a. The Shrimp–Turtle Dispute

Sea turtles are listed as a highly endangered species under Appendix I of CITES.[162] The most significant threat to the species comes in the form of incidental capture and drowning caused by shrimp harvesting operations.[163] In response to domestic pressure, the United States mandated that all U.S. trawlers fishing in waters likely to contain sea turtles be equipped with Turtle

---

[158] With the benefit of hindsight it was unrealistic to expect a committee of the WTO to resolve the complex issues relating to the interface between MEAs and the multilateral trading system. Indeed, it is arguable that the WTO is simply not the forum within which these issues can, or should, be resolved.
[159] WTO Doc WT/CTE/W/160.Rev.1 (14 June 2001). (Hereinafter the CTE Matrix).
[160] Of the 238 MEAs currently in existence, 32 contain some form of trade-related measure. For a full list of those MEAs see CTE Matrix, ibid., at Annex.
[161] Including the Convention on Biological Diversity, CITES and the Montreal Protocol.
[162] For a general description of CITES, see Lyster, Simon (1995) *International Wildlife Law*, Cambridge: University of Cambridge.
[163] For a detailed discussion of the problems associated with shrimp harvesting and sea turtle mortality see Warnken, Jennifer (1998) Trade in the Environment: The Shrimp–Sea Turtle Case Before the WTO, *Colo. J.Int'l Envtl. L Y.B.*, 27.

Excluder Devices or TEDs.[164] In 1989 the United States attempted to extend this requirement to all shrimping vessels, irrespective of their country of origin.[165]

One of the most significant aspects of the legislation was the requirement that the importation of shrimp or shrimp products be prohibited from 1 May 1991 for those products harvested with fishing technology that could have a deleterious impact on the sea turtle population.[166] Countries adopting a regulatory regime reducing sea turtle mortality to a level similar to that of the U.S. fleet would be certified by the U.S. Government and escape the import ban.[167] Section 609 further required the President to:

> Initiate negotiations with foreign governments to develop bilateral and multilateral agreements for the protection of sea turtles.[168]

While this legislation initially applied only to Caribbean waters, following a successful series of lawsuits brought by environmental groups,[169] the U.S. Government was ordered (by the U.S. Court of International Trade) to:

> Prohibit not later than May 1, 1996 the importation of shrimp or products of shrimp wherever harvested in the wild with commercial fishing technology which may affect adversely species of sea turtles.[170]

In response to this widening of the application of the measures under Section 609, India, Malaysia, Pakistan and Thailand requested the WTO Dispute Settlement Body to strike a panel

---

[164] The TED essentially guides sea turtles out of the net while allowing for the retention of shrimp. Warnken, ibid., describes the TED as a device that serves as a "trapdoor". The United States Marine Fisheries Service developed the TED.
[165] Section 609 of Public Law 101-162, 16 U.S.C. 1537.
[166] Ibid., at Section 609(b)(1).
[167] Countries with fishing environments that posed no threat to sea turtles from shrimping (as certified by the U.S. Government) were similarly excluded from the import prohibition.
[168] Supra, note 165.
[169] See the three decisions in *Earth Island Institute et al. v Warren Christopher et al.*, at 913 F Supp 559 (CIT 1995); 922 F.Supp.616 (CIT 1996) and 942 F. Supp 597 (CIT 1996) respectively.
[170] Ibid., at 913 F Supp. 559 as quoted in Shaffer (1999) International Decision – Import Prohibition of Certain Shrimp and Shrimp Products, 93 *A.J.I.L* 507 at 508.

to determine whether the import ban under Section 609 violated GATT/WTO rules. The U.S. response was to argue that the measures to protect sea turtles were justified under the Article XX (b) and (g) exceptions.

b. The Initial Decision of the DSB Panel [171]

In May 1998 the DSB Panel handed down its decision,[172] which upheld the complaint made against the U.S. measure. In reaching this conclusion, the Panel adopted a highly controversial analysis of the role of the *chapeau* of Article XX. As noted previously, the *chapeau* states:

> Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade ….

While the arguments of the parties focused on the whether the U.S. embargo could be justified under Article XX (b) and (g), Howse notes:

> The Panel chose to pin its legal analysis exclusively on a consideration of whether the embargo satisfied the requirement of the *chapeau* of Article XX that measures justified under the Article do not constitute unjustified discrimination between countries where the same conditions prevail.[173]

The adoption of this approach ensured that the Panel did not examine the potential trade-distorting effects of the measures in question. Rather, their analysis of the role of the *chapeau* concentrated on the potential effects to the entire multilateral trading system if similar measures were allowed to become the norm. Essentially, the Panel viewed the *chapeau* as outlawing the use of an entire class of measures on the basis that they represent a hypothetical threat to the object and purpose of the multilateral trading system.

---

[171] For a superbly detailed analysis of this initial decision see, Robert Howse (1998) The Turtles Panel: Another Environmental Disaster in Geneva, 32 *Journal of World Trade*, 73.
[172] *Report of the Panel on United States – Import Prohibition of Certain Shrimp and Shrimp Products*, May 15, 1998, 37 *I.L.M.* at 832. (Hereinafter Shrimp–Turtle).
[173] Supra, note 171 at 78.

In describing such a finding as “extraordinary” and as being “without a clear textual basis”, Howse comments:

> Article XX of the GATT, by its very nature, has the effect of allowing, in individual cases, Members to take measures … which if generally permitted and widely resorted to, would largely defeat an open multilateral trading system. In light of this understanding of the relationship between Article XX and the GATT, and indeed the WTO system as a whole, it is erroneous for the Panel to have focused on the impacts on the system if such measures were to proliferate. … [I]t is precisely the case-by-case examination of claims for exceptions under Article XX that can assure that this proliferation does not occur.[174]

Armed with this approach to Article XX, the Panel concluded that the U.S. measures constituted an unjustified discrimination; the Panel therefore did not go on to examine specifically the measures in the light of paragraphs (b) and (g) of Article XX.

The Panel’s decision was widely condemned and cited as further evidence of the inability of the GATT/WTO system to permit the attainment of legitimate environmental goals by Member States. Howse concludes:

> If measures are a rational response to a pressing environmental problem, then the legitimacy – and therefore integrity – of the multilateral trading system may well be compromised by the failure to exempt them under Article XX, and this is surely the lesson from the disrepute brought on the system in the wake of the Tuna–Dolphin rulings.[175]

c. The Shrimp–Turtle Appellate Body Decision

[174] Ibid., at 85.
[175] Ibid., at 81.

The United States appealed the decision of the Panel. In October 1998 the Appellate Body issued its ruling,[176] confirming the decision of the Panel with respect to the U.S. measures, but on radically different grounds. The Appellate Body was highly critical of the methodology adopted by the Panel, particularly their approach to the *chapeau* of Article XX. In relation to the notion that certain classes of measure could by their very nature undermine the international trading system (and thus violate GATT/WTO Rules) the Appellate Body stated:

> Such an interpretation renders most, if not all, of the specific exceptions of Article XX inutile, a result abhorrent to the principles of interpretation we are bound to apply. We hold that [these] findings of the Panel, and the interpretative analysis embodied therein, constitute error in legal interpretation and accordingly reverse them. [177]

Having overturned the jurisprudential basis for the Panel's decision, the Appellate Body then completed an analysis of whether the U.S. measures could be justified under Article XX (g). In performing this analysis, the Appellate Body reaffirmed the approach it adopted in the Reformulated Gasoline case:

> The analysis is, in other words, two tiered: first, provisional justification by reason of characterization of the measure under XX (g); second, further appraisal of the same measure under the introductory clauses of Article XX. (The *chapeau*).[178]

With regard to the first limb of the test, the Appellate Body had to determine whether the measures in Section 609 related to the conservation of an exhaustible natural resource as stated in Article XX (g). The Appellate Body had little difficulty concluding that sea turtles constituted such a resource, and that the U.S. measure clearly related to their conservation:

---

[176] *Report of the Appellate Body in United States – Import Prohibition of Certain Shrimp and Shrimp Products*, October 12, 1998, (1998) 38 *I.L.M.* 121.

[177] Ibid., at Paragraph 121-122.

[178] *United States – Standards for Reformulated and Conventional Gasoline*, adopted 20 May 1996, WT/DS2/AB/R at 22. (Hereinafter Reformulated Gasoline).

> In our view, therefore, Section 609 is a measure relating to the conservation of an exhaustible natural resource within the meaning of Article XX (g) of the GATT 1994.[179]

The Appellate Body then turned to the second limb of the test, namely, whether the measure satisfied the requirements of the *chapeau*. After noting that the purpose of the *chapeau* is to prevent the abuse of the legal right of Members to invoke the exceptions,[180] the Appellate Body stated that those exceptions (contained in Article XX (a) through (j)) are of a limited and conditional nature. In essence:

> The *chapeau* of Article XX is, in fact, but one expression of the principle of good faith … [and] the task of interpreting and applying the *chapeau* is essentially the delicate one of locating and marking out a line of equilibrium between the right of a Member to invoke an exception under Article XX and the rights of other Members under varying substantive provisions (e.g. Article XI) of GATT 1994.[181]

Following these general pronouncements, the Appellate Body then examined whether the *application* of the U.S. measure constituted "a means of arbitrary or unjustifiable discrimination" or "a disguised restriction on international trade." The Appellate Body concluded that the application of Section 609 in fact constituted both unjustifiable and arbitrary discrimination, and thus could not be afforded the protection of the Article XX (g) exception.[182]

In reaching its conclusion that the application of Section 609 constituted "unjustifiable discrimination", four factors heavily influenced the Appellate Body. First, they noted:

---

[179] Supra, note 176 at Paragraph 142.
[180] Ibid., at Paragraph 151.

[181] Ibid., at Paragraph 158 to 159.
[182] Ibid., at Paragraph 184.

> The actual application of the measure … requires other WTO Members to adopt a regulatory program that is not merely comparable, but rather essentially the same, as that applied to the United States shrimp trawl vessels.[183]

The rigidity of this standard was found to be particularly problematic, as it refused to take into account other conservation measures which may have been just as effective as the use of TEDs.

Second, the Appellate Body noted:

> Shrimp caught using methods identical to those employed in the United States have been excluded from the United States market solely because they have been caught in waters of countries that have not been certified by the United States.[184]

In the opinion of the Appellate Body:

> The resulting situation is difficult to reconcile with the declared objective of … conserving sea turtles. This suggests … this measure is more concerned with effectively influencing WTO Members to adopt essentially the same comprehensive regulatory regime as applied by the United States.[185]

Third, the Appellate Body noted the failure of the United States:

> To engage the appellees in serious across-the-board negotiations with the objective of concluding bilateral or multilateral agreements for the protection and conservation of sea turtles, before enforcing the import prohibition.[186]

In its opinion, this failure was:

> Another aspect of the application of Section 609 that bears heavily in any appraisal of justifiable or unjustifiable discrimination.[187]

---

[183] Ibid., at Paragraph 163.
[184] Ibid., at Paragraph 165.
[185] Ibid. See also the previous discussion of Tuna – Dolphin II by Howse & Trebilcock, supra, note 150.
[186] Ibid., at Paragraph 166.
[187] Ibid.

Finally, the Appellate Body noted that this failure to negotiate contrasted sharply with the United States' successful negotiation of a regional international agreement[188] on this matter with other states:

> When considered in their cumulative effect … these differences in treatment constitute "unjustifiable discrimination" between exporting countries desiring certification in order to gain access to the United States shrimp market within the meaning of the *chapeau* of Article XX.[189]

Having concluded that the U.S. measure constituted "unjustifiable discrimination", the Appellate Body quickly found that the measure also constituted "arbitrary" discrimination. With respect to any form of certification under Section 609, the Appellate Body could find neither a predictable nor a transparent certification process:

> There is no formal opportunity for an applicant country to be heard, or to respond to any arguments made against it. Moreover, no formal written, reasoned decision … is rendered. The certification processes followed by the United States thus appear to be singularly informal and casual, and to be conducted in a manner such that these processes could result in the negation of rights of Members.[190]

The decision of the Appellate Body in Shrimp–Turtle marked a major turning point in Article XX jurisprudence, as it countenanced the theoretical possibility that a measure, if properly applied, could come within the Article XX exceptions. Such an outcome appeared impossible following the Tuna–Dolphin decisions, and the panel decision in Shrimp–Turtle. As if to emphasise this point, the Appellate Body noted:

> In reaching these conclusions, we wish to underscore what we have not decided in this appeal. We have not decided that the preservation and protection of the environment is of

[188] *The Inter-American Convention for the Protection and Conservation of Sea Turtles 1996.* (Hereinafter Inter-American Convention). Full text of the convention at: http://www.seaturtle.org/iac/
[189] Supra, note 176 at Paragraph 176.
[190] Ibid., at Paragraph 180 & 181.

> no significance to Members of the WTO. Clearly, it is. We have not decided that the sovereign nations that are Members of the WTO cannot adopt effective measures to protect endangered species, such as sea turtles. Clearly, they can and should. What we have decided in this appeal is simply this: although the measure of the United States … serves an environmental objective that is recognized as legitimate under paragraph (g) of Article XX of the GATT 1994, this measure has been applied by the United States in a manner which constitutes arbitrary and unjustifiable discrimination between Members of the WTO, contrary to the requirements of the *chapeau* of Article XX.[191]

d. The Shrimp–Turtle Implementation Decisions

On November 25, 1998 the U.S. Ambassador to the WTO informed the DSB that the United States would comply with the ruling of the Appellate Body.[192] In January 1999 the United States and other parties to the dispute agreed to a 13-month reasonable period of time for the United States to comply with recommendations and rulings of the DSB. In July 1999, the U.S. Department of State issued Revised Guidelines for the Implementation of Section 609 of Public Law 101-162,[193] designed to implement the recommendations and rulings of the DSB. In October 2000, Malaysia requested the DSB to establish a panel to:

> [F]ind that by not lifting the import prohibition and not taking the necessary measures to allow the importation of certain shrimp and shrimp products in an unrestrictive manner, the United States has failed to comply with the recommendations and rulings of the DSB.[194]

This request was granted by the DSB on October 23, 2000 and the matter was referred to the original Panel. The Panel decision was circulated on June 15, 2001.[195]

---

[191] Ibid., at Paragraphs 185 & 186.
[192] As quoted in Warnken, supra, note 163 at 38.
[193] For full text of the Revised Guidelines see *Federal Register* Vol. 64, No. 130, 8 July 1999, Public Notice 3086, pp 36946-36952. The Revised Guidelines are attached as an Annex to the DSB Panel Report on Shrimp–Turtle Implementation, *infra*, note 195 at Annex I.

[194] WT/DS58/17, 13 October 2000.
[195] *United States – Import Prohibition of Certain Shrimp and Shrimp Products*. Recourse to Article 25.1 by Malaysia. WT/DS58/RW 15 June 2001. (Hereinafter Shrimp–Turtle Implementation Panel Decision).

e. Shrimp–Turtle Implementation: Panel Decision

After reaffirming the determination of the original Panel that the U.S. measures violated Article XI, the crucial issue was whether the Revised Guidelines rendered the import prohibition as justifiable under Article XX. Adopting the two-step approach confirmed by the Appellate Body, the Panel first examined whether the implementing measure was provisionally justified under Article XX (g). The Panel concluded that it was, reaffirming the findings of both the original Panel and the Appellate Body in their earlier decisions. Having made this finding, the Panel moved to the key issue of whether that same measure was now justified under the *chapeau* to Article XX.

The Panel first examined whether the measure constituted "arbitrary or unjustifiable discrimination". The Panel began by addressing the issue of the duty to negotiate. Essentially, they had to determine whether U.S. efforts to conclude negotiations on an international agreement were sufficiently serious to avoid them being characterized as an abuse or misuse of the rights of the United States under Article XX.[196] In its arguments, the United States had argued that it had only to make good faith efforts to negotiate an agreement,[197] while Malaysia strenuously argued that an international agreement *must have been concluded* before the import prohibition could be imposed.[198] The Panel favoured the U.S. interpretation of the duty to negotiate, but noted:

> We reach the conclusion that the United States has an obligation to make serious good faith efforts to reach an agreement before resorting to the type of unilateral measure currently in place. We also consider that those efforts cannot be a "one-off" exercise. There must be a continuous process, including once a unilateral measure has been adopted pending the conclusion of an agreement.[199]

Having determined the scope of the duty to negotiate, the Panel then moved to assess the extent of the "serious good faith efforts" required in the context of this dispute. In short, the Panel

[196] See text accompanying notes 180 & 181.
[197] Supra, note 195 at Paragraph 3.106.
[198] Ibid., at Paragraph 3.104.
[199] Ibid., at Paragraph 5.67.

determined that the conclusion of the Inter-American Convention[200] provided a benchmark for "serious good faith efforts" relating to the conservation of sea turtles:

> The Inter-American Convention is evidence that it is feasible to negotiate a binding agreement imposing the adoption of measures comparable to those applied in the United States. Contrary to what the United States seems to claim, the conclusion of the Inter-American Convention demonstrates that the standard of serious good faith efforts imposed in relation to the negotiation of an international agreement in the field of protection and conservation of sea turtles may be quite demanding.[201]

The Panel then noted the efforts of the United States to pursue a regional agreement on sea turtle conservation, including its attendance at several symposia. Also of significance was the signing of a memorandum of understanding on the conservation of sea turtles by 24 states (including the United States and Malaysia) at a meeting in Kauantan Malaysia in July 2000. The Panel took particular notice of "the sustained pace of negotiations and the prospect of their conclusion in 2001"[202] and:

> [I]s of the view that the U.S. efforts since 1998 meet the standard established by the Appellate Body Report.[203]

However the Panel cautioned that:

> In a context such as this one where a multilateral agreement is clearly to be preferred and where measures such as that taken by the United States in this case may only be accepted under Article XX if they were allowed under an international agreement, or if they were taken further to the completion of serious good faith efforts to reach a multilateral agreement, the possibility to impose a unilateral measure to protect sea turtles under Section 609 is more to be seen, for the purposes of Article XX, as the possibility to adopt

[200] Supra, note 188.
[201] Supra, note 195.
[202] Ibid., at Paragraph 5.87.
[203] Ibid.

> a provisional measure allowed for emergency reasons than as a definitive "right" to take such a measure. The extent to which serious good faith efforts continue to be made may be reassessed at any time. For instance, steps which constituted good faith efforts at the beginning of a negotiation may fail to meet that test at a later stage.[204]

Having addressed the issue of the duty to negotiate, the Panel turned to the question of whether the Revised Guidelines addressed the finding of the Appellate Body that the *application* of the measures in the 1996 Guidelines constituted "arbitrary or unjustifiable discrimination". In short, the Panel concluded that the Revised Guidelines complied with the DSB rulings and recommendations, and were thus justified under Article XX.

In the light of the aforementioned analysis, the Panel concluded:

> Section 609 of Public Law 101-162, as implemented by the Revised Guidelines of July 1999 and as applied so far by the U.S. authorities, is justified under Article XX of the GATT 1994 as long as the conditions stated in the findings of this Report, in particular the ongoing serious good faith efforts to reach a multilateral agreement, remain satisfied.[205]

Dissatisfied, Malaysia appealed aspects of this decision to the Appellate Body of the DSB. The Appeal was heard on September 4, 2001 and the decision of the Appellate Body was circulated on October 22, 2001.

f. Shrimp–Turtle Implementation: Appellate Body Decision[206]

In its appeal, Malaysia argued that the Panel made errors in relation to, *inter alia*, three key issues. First, they argued that the Panel erred in finding that Shrimp–Turtle only imposed an obligation to negotiate and not an obligation to conclude an agreement. Second, they argued that the Panel erred in its finding that the Inter-American Convention constituted a "benchmark"

[204] Ibid., at Paragraph 5.88.
[205] Ibid., at Paragraph 6.1 (b).
[206] *United States – Import Prohibition of Certain Shrimp and Shrimp Products*. Recourse to Article 21,5 of the DSU by Malaysia. Appellate Body Decision WT/DS58/AB/RW 22 October 2001.

agreement.[207] Finally, they argued that the Panel erred in concluding that the Revised Guidelines were sufficiently flexible to meet the requirements of the *chapeau* of Article XX.[208]

In relation to the extent of the obligation to negotiate, the Appellate Body upheld the Panel's finding that what were required of the United States were "serious, good faith efforts" at negotiating an international agreement:

> Clearly, and "as far as possible", a multilateral approach is strongly preferred. Yet it is one thing to prefer a multilateral approach in the application of a measure that is provisionally justified under one of the subparagraphs of Article XX of the GATT 1994; it is another to require the conclusion of a multilateral agreement as a condition of avoiding "arbitrary or unjustifiable discrimination" under the *chapeau* of Article XX. We see, in this case, no such requirement.[209]

Regarding the complaint of Malaysia that the Panel erred in describing the Inter-American Convention as a "benchmark", the Appellate Body regretted the Panel's use of the term. However:

> The mere use by the Panel of the Inter-American Convention as a basis for comparison did not transform the Inter-American Convention into a "legal standard". Furthermore, although the Panel could have chosen a more appropriate word than "benchmark" to express its views, Malaysia is mistaken in equating the mere use of the word "benchmark", as it was used by the Panel, with the establishment of a legal standard.[210]

Finally, in relation to Malaysia's argument that the Revised Guidelines were too inflexible to meet the requirements of Article XX, the Appellate Body noted:

---

[207] Thus establishing the Inter-American Convention as a legal standard.
[208] Supra, note 206 at Paragraph 113.
[209] Ibid., at Paragraph 124.
[210] Ibid., at Paragraph 130.

> In our view, there is an important difference between conditioning market access on the adoption of essentially the same programme, and conditioning market access on the adoption of a programme comparable in effectiveness. Authorizing an importing Member to condition market access on exporting Members putting in place regulatory programmes comparable in effectiveness to that of the importing Member gives sufficient latitude to the exporting Member with respect to the programme it may adopt.[211]

Given this distinction, the Appellate Body concluded:

> The Panel correctly reasoned and concluded that conditioning market access on the adoption of a programme comparable in effectiveness allows for sufficient flexibility in the application of the measure so as to avoid "arbitrary or unjustifiable discrimination."[212]

The reports of the Panel and the Appellate Body in Shrimp–Turtle Implementation represent a milestone in the legal relationship between trade and the environment at the WTO. The Revised Guidelines are the first unilaterally imposed measures found to be justifiable under Article XX of the GATT/WTO. However, this outcome should *in no way* be viewed as an indication that unilateral environmental measures are now *as of right* justifiable under Article XX. The Appellate Body in Shrimp–Turtle stated that Article XX is to be interpreted on a case-by-case basis. Therefore, making *a priori* assumptions as to Article XX compatibility is a difficult and somewhat fruitless exercise. Furthermore, in its Shrimp–Turtle Implementation Decision the Appellate Body noted that in many instances the task of proving that a measure complies with the *chapeau* of Article XX will be a very difficult standard to meet. In order to comply with the recommendations and rulings of the DSB (and enjoy the protection of Article XX (g)), the United States had to amend its domestic legislation, attend regional symposia, and make significant progress towards the conclusion of a regional agreement on sea turtle conservation. The likelihood is that the vast majority of unilateral environmental measures brought before the

[211] Ibid., at Paragraph 143.
[212] Ibid.

WTO DSB in the future will not have achieved such a standard and will be found to be unjustifiable with regard to Article XX.

Clearly, the WTO DSB has become more receptive to environmental concerns since the dark days of Tuna–Dolphin I; however, it would be unwise to suggest that the trade and environment conflict at the WTO is over.

III. C. The Potential For a Clash Between GATT/WTO Rules and MEAs

In its Singapore Report,[213] the CTE noted:

> When account is taken of the limited number of MEAs that contain trade provisions, and the fact that no trade dispute has arisen over the use of those measures to date, some [Members] feel that there is no evidence of a real conflict between the WTO and MEAs.[214]

While this opinion was certainly not the unanimous view of the members of the CTE, it is clear that several of the most successful MEAs contain provisions that arguably contravene GATT/WTO rules and, despite these obvious inconsistencies, these regimes remain intact and unchallenged. To illustrate the inconsistencies, three MEAs will be examined briefly.

1. The Montreal Protocol[215]

The trade-related provisions of the Montreal Protocol are primarily contained in Article 4. The restrictions mainly relate to trade between parties and non-parties. Article 4 (4) states:

> By 1 January 1994, the Parties shall determine the feasibility of banning or restricting, from States not party to this Protocol, the import of products produced with, but not containing, controlled substances in Annex A. If determined feasible, the Parties shall …

---

[213] Supra, note 154.
[214] Ibid., at 5.
[215] *Montreal Protocol on Substances that Deplete the Ozone Layer 1987* (1987). For full text see 26 *I.L.M.* 1541.

> ban, within one year of the annex having become effective, the import of those products from any State not party to this Protocol.[216]

Article 4 implements a total import and export ban on selected ozone-depleting substances (ODS's) involving non-party states. Article 4.4 also envisions an eventual ban on imports from non-party states of products produced with, but not containing, ODS's. These measures would clearly be contrary to fundamental principles of the GATT/WTO, including Articles I, III and XI.[217] Indeed, in 1992 the GATT itself questioned the compatibility of Montreal Protocol rules with those of the organisation.[218]

It should also be noted that the term "non-party" also applies within the six sets of amendments to the protocol.[219] As a consequence of this plethora of amendments, measures adopted by one state under a particular amendment may apply to a signatory of an earlier amendment as a non-party. For example, if country X is a party to the Montreal Protocol 1987, but is not a party to the London Amendments 1990, then when trading with a country that is a party to the London Amendments, country X is regarded as a non-party in relation to the substances controlled by the London Amendments. Given these circumstances, the potential for trade disputes is undeniable.

However, the trade provisions have played a significant role in the success of the Montreal Protocol. One of the main reasons for the adoption of trade-related measures in achieving the goals of the protocol was to avoid the problem of "free riders". The ban on imports and exports of ODS's to and from non-parties was essential in ensuring wide-ranging membership. If only members to the protocol could engage in trade in such substances then membership was seen by many states as a necessity.[220]

---

[216] Ibid, at Article 4(4). Subsequent amendments have further expanded this ban to include ozone-depleting substances listed in Annexes B & C to the Protocol.
[217] For a superbly detailed analysis of the relationship between the Montreal Protocol and WTO rules see Brack, Duncan, *International Trade and the Montreal Protocol* (1996) *Passim.*
[218] GATT Secretariat, Report on Trade and the Environment (February 1992), at 8.
[219] Namely, the London (1990), Copenhagen (1992), Vienna (1995), Montreal (1997) and Beijing (1999) Amendments. Each set of amendments has either expanded the list of ODS's scheduled for phase-out, or accelerated the timetable for the phase-out of particular ODS's. For full text of these amendments see http://www.unep.ch/ozone
[220] The Montreal Protocol has been ratified by almost 170 countries, and of the main consumers of ODS's only one (Iraq) has not ratified.

Ironically, during the negotiations for the Montreal Protocol, the issue of GATT compatibility was raised. However, in 1986 this was not seen as a priority issue. It was generally assumed that even if the measures were inconsistent with GATT rules they would fall within the Article XX (b) and (g) exceptions.[221] Although consultations were held with GATT officials, no conclusions were reached.[222] Given the strict interpretation of the Article XX exceptions adopted by GATT/WTO panels, these assumptions are now far from legitimate.

2. The Basel Convention[223]

The Basel Convention was opened for signature in 1989, and entered into force in 1992. The principal objective of the convention was to regulate the transboundary movement of hazardous wastes in order to ensure their environmentally sound management. As Wirth notes:

> The core regulatory approach of the Convention is the establishment of a Prior Informed Consent regime. Accordingly, every Party to the Convention may choose to ban the importation of hazardous or other wastes.[224]

For those parties to the convention that choose not to ban imports of hazardous waste, a system of Prior Informed Consent (PIC) is established. Under the Basel PIC system, importing governments must be notified of, and consent to, shipments of hazardous wastes. For present purposes, however, the most significant aspects of the Basel Convention relate to the "limited ban" provision in Article 4(5)[225] and the Ban Amendment.[226]

Article 4(5) of the Basel Convention states:

---

[221] In part, this belief was encouraged by the lack of trade disputes involving the Convention on the International Trade in Endangered Species (CITES).
[222] For a comprehensive and authoritative analysis of all aspects of the Montreal Protocol, see Benedick, Richard, *Ozone Diplomacy* (1998) Cambridge: Harvard University Press.
[223] *Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal* (1989). For full text see 28 *I.L.M.* 649.
[224] Wirth, David A. (1998) Trade Implications of the Basel Convention Amendment Banning North-South Trade in Hazardous Wastes, 7 *RECIEL* 237 at 238.
[225] Supra, note 223 at Article 4(5).

> A Party shall not permit hazardous wastes or other wastes to be exported to a non-Party or to be imported from a non-Party.[227]

In relation to Article 4(5) Wirth comments:

> As a legal matter … the implementation of this provision by Parties to the Basel Convention might constitute a violation of Article I of the GATT (MFN clause) or contravene Article XI's prohibition on quantitative restrictions or both. If identical waste were generated and managed domestically but imports of that waste were prohibited, there might also be a violation … of the national treatment standard set out in GATT Article III.[228]

In 1995 at COP-3 (the third session of the Conference of the Parties), the Parties to the Basel Convention formally agreed[229] to amend the convention by inserting a new Article 4A banning all trade in hazardous wastes between OECD and non-OECD states.[230] The Ban Amendment was highly controversial and has yet to enter into force,[231] but was regarded by many environmentalists as a significant victory.[232] Prior to the adoption of the Ban Amendment the Basel Convention had been criticized as an instrument that:

---

[226] The Basel Ban was adopted as Decision II/12 at COP-2 in Geneva in 1994. However Decision III/I taken at COP-3 in 1995 formally accepted the ban as an amendment to the convention. For full text of the amendment and associated decisions see http://www.ban.org.

[227] Supra, note 223.

[228] Wirth, supra, note 224 at 241.

[229] Supra, note 226.

[230] The full text of Article 4 A reads:

1. Each Party listed in Annex VII shall prohibit all transboundary movements of hazardous wastes which are destined for operations according to Annex IV A, to States not listed in Annex VII.
2. Each Party listed in Annex VII shall phase out by 31 December 1997, and prohibit as of that date, all transboundary movements of hazardous wastes under Article 1(i)(a) of the Convention which are destined for operations according to Annex IV B to States not listed in Annex VII. Such transboundary movement shall not be prohibited unless the wastes in question are characterised as hazardous under the Convention.

Annex VII

Parties and other States which are members of OECD, EC, Liechtenstein.

[231] The Ban Amendment requires 62 ratifications to enter into force. As of 14 September 2001, 26 such ratifications had been received.

[232] For example, see Fogel, Cathy and Puckett, Jim (1994) A Victory For Environment and Justice: The Basel Ban and How It Happened. Greenpeace International, available at http://www.ban.org.

> [L]egitimizes a trade which cannot adequately be monitored or controlled, and leaves developing states in the third world vulnerable to unsafe disposal practices.[233]

As with the "limited ban" in Article 4(5) the Ban Amendment arguably breaches several GATT/WTO rules including Articles I, III and XI.[234]

3. CITES[235]

The Convention on the International Trade in Endangered Species (CITES) entered into force in 1975. As with the Basel Convention, CITES subjects the trade in certain species to a strict system of controls. The import, export, re-importation and introduction from the sea of CITES species is governed by a strict licensing system. Species listed under CITES fall into one of three appendices, which are set out in Article II of the convention:

1. Appendix I shall include all species threatened with extinction which are or may be affected by trade. Trade in specimens of these species must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances.
2. Appendix II shall include:

(a) all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival; and

(b) other species which must be subject to regulation in order that trade in specimens of certain species referred to in sub-paragraph (a) of this paragraph may be brought under effective control.

---

[233] Handl, Gunther (1989) *Proceedings of the 18th Annual Conference of the Canadian Council on International Law*, at 367. As cited in Birnie, Patricia and Boyle, Alan (1992) *International Law and The Environment*, 1st Ed. Oxford: Clarendon Press, at 341.

[234] Wirth, supra, note 224 at 245 comments:

> With respect to the GATT/WTO regime of rules, the implications of the Ban Amendment are few, if any, beyond those encountered with the parent Basel Convention.

[235] *Convention on the International Trade in Endangered Species 1973* (CITES). For full text see http://www.cites.org.

3. Appendix III shall include all species which any Party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the co-operation of other Parties in the control of trade.
4. The Parties shall not allow trade in specimens of species included in Appendices I, II and III except in accordance with the provisions of the present Convention.

The level of control exerted over the trade in a particular species is determined by its inclusion in one of the appendices. For example, those species listed in Appendix I are highly endangered and threatened with extinction.[236] No commercial trade is allowed in these species and non-commercial trade is only allowed in exceptional circumstances (e.g., for the purposes of scientific research).[237] Those species listed in Appendix II are not yet endangered, but may become so unless trade in them is strictly controlled. No import permit is required, but any export requires a permit.[238] If a member state already controls the trade in a certain species, but wishes to enlist the help of other CITES members in regulating that trade, a state may voluntarily list that species in Appendix III.[239]

As with the Montreal Protocol and the Basel Convention, CITES clearly has the potential to infringe GATT/WTO rules, particularly when trade bans are placed on non-member states. However as IISD notes:

> In the case of CITES, this issue is not as likely to give rise to challenge as it is in the case of other MEAs, such as the Basel Convention or the Montreal Protocol. Unlike these other agreements, practically all countries agree with the aims of CITES, the science is not in dispute, and the volume of trade is not significant.[240]

[236] For example, most species of elephant and whale are included in Appendix I.

[237] *CITES*, supra, note 235 at Article II (i).
[238] *CITES*, ibid., at Article IV.
[239] Due to the existence of a valuable illegal trade, Australia lists many species of indigenous parrot in Appendix III that would otherwise not be covered by CITES. The overall aim of voluntary listing in Appendix III is to prevent "unsustainable or illegal exploitation." See *CITES*, ibid., at Article II (iii).
[240] IISDnet, Trade and Investment Research Guide, CITES. See: http://iisd.ca/trade/cites.htm

While this may reflect the current political reality, the theoretical possibility remains that CITES rules infringe upon the basic tenets of GATT/WTO rules.

III.D. Will an MEA be Challenged at the WTO?

As has been shown, several of the most widely accepted MEAs[241] contain provisions that clearly contravene GATT/WTO rules. However, measures taken under the auspices of these instruments have never been challenged at the WTO. Indeed, despite the fact that the CTE Matrix identifies 32 MEAs that potentially infringe GATT/WTO rules, no MEA has ever been challenged.[242] There are several reasons such a challenge has not been forthcoming.

First, due to the large numbers of ratifications, most Members of the WTO are also party to these conventions. The CTE Matrix[243] notes that twenty-two WTO Members are not party to the Basel Convention. That figure drops to ten in relation to CITES, and only three Members of the WTO are not parties to the Montreal Protocol. The significance of these overlapping memberships is well summarized by Caldwell who notes:

> The unlikelihood of a country that has voluntarily joined the MEA and agreed to the trade measures of the agreement to later challenge its terms in the GATT/WTO regime forum. A party to the GATT/WTO regime who has become a party to the MEA, has essentially consensually waived their GATT/WTO rights in those areas in which the MEA applies.[244]

Clearly, the most likely avenue for challenge comes from non-parties to the MEA in question. As Caldwell notes, "the majority of trade restrictions in MEAs are specifically directed at non-parties."[245] While this is certainly the case in relation to the Basel Convention and the Montreal

[241] The Basel Convention has been ratified by 148 countries, 180 countries have ratified the Montreal Protocol, and 155 countries have ratified CITES.
[242] Supra, note 159. All of the high-profile environment disputes such as Tuna–Dolphin and Shrimp–Turtle occurred as a result of a unilateral action taken by a state under domestic legislative authority.
[243] Ibid., note 159.
[244] Caldwell, supra, note 129 at 11.
[245] Ibid.

Protocol, these instruments have not been challenged thus far. This leads to the second reason MEAs have not been challenged at the GATT/WTO.

The prospect of a successful challenge to an MEA within the GATT/WTO regime represents something of a "nightmare scenario" in international environmental law. If the WTO were to declare trade-related measures pursuant to an MEA as illegal, it would force many Member States to choose between obligations, thus pitching trade and environmental objectives into direct conflict. Ultimately, such a decision could give the appearance of the WTO asserting its superiority over 238 MEAs voluntarily entered into by (in some cases) the vast majority of states. A successful challenge, therefore, could open a veritable Pandora's box by setting a precedent by which all other MEAs could be undermined. In political terms, this is a very unpalatable option. The widespread concern expressed after Tuna–Dolphin I would pale into insignificance when compared to the outcry if an MEA were declared contrary to WTO Rules.

1. The BSP and a WTO Challenge?

Given the above analysis, at first glance it would appear unlikely that actions taken under the auspices of the BSP would be subject to a GATT/WTO challenge. None of the 32 MEAs containing trade-related measures has been challenged thus far, and some are approaching 30 years of operation (e.g., CITES). While the logic of this conclusion is appealing, there are several factors that differentiate the BSP from these other MEAs.

a. The BSP's Adoption of the Precautionary Principle and Its Focus on PPMs

Perhaps the greatest difference is the BSP's focus on process not product. The BSP aims to protect biodiversity by regulating the trade in products produced in a certain fashion (i.e., via techniques of genetic modification). The BSP, while not entirely unique in focusing on the method of production,[246] is the only instrument that envisages trade-related measures as part of its operational procedures. As noted above, measures that focus on the method by which a product is derived are without question contrary to fundamental GATT/WTO provisions.

In many respects the BSP resembles the Basel Convention, in that it establishes a system designed to ensure consensual trade in LMOs (the Advance Informed Agreement system).[247] Of greatest significance however is Article 2(4) that allows signatories to the protocol to:

> [T]ake more protective actions for the conservation and sustainable use of biological diversity than that called for in the Protocol, provided that such action is consistent with the objective and the provisions of the Protocol and is in accordance with that Party's other international law obligations.[248]

Of similar significance is the BSP's adoption of the precautionary principle,[249] which in the view of some of the BSP's critics:

> Permits a country to take action to protect itself – by barring import of a genetically modified organism – even if there is lack of scientific certainty that it is dangerous.[250]

Clearly Article 2(4), when examined in conjunction with the precautionary principle, entertains the possibility of an outright ban on the importation of LMOs being an appropriate course of action. This conclusion is one shared by Hagen and Weiner, who conclude:

> At a minimum, it would appear that a Party to the Protocol may be able legitimately to refuse the import of a particular genetically modified seed based on concerns that the seed may affect the livelihood of domestic agricultural interests.[251]

---

[246] See for example, *The Wellington Convention on Driftnet Fishing*, which prohibits the catching of tuna by a certain technique in an area of the South Pacific covered by the convention. For full text of the convention see: www.oceanlaw.net/texts/wellington.htm

[247] The AIA procedure is outlined in Articles 8, 10 & 12 of the BSP.

[248] *BSP*, supra, note 130 at Article 2 (4).

[249] *BSP*, ibid., at Article 10. Article 10(6) states:

> Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of the living modified organism in question as referred to in paragraph 3 above, in order to avoid or minimize such potential adverse effects.

[250] Cooper, Helene & Kilman, Scott (2000) Trade Rules on Biocrops, *Wall St Journal* Jan 31, at A8. As quoted in Weston, Cliff, Chilling of the Corn: Agricultural Biotechnology in the Face of US Patent Law and the Cartagena Protocol, 4 *J of Small & Emerging Bus. L.* 377 at note 211.

Critics simply view such provisions as allowing:

> The Protocol … [to] expand opportunities for economic interest groups to erect trade barriers to competing agricultural products under the guise of environmental protection.[252]

Again, however, the argument can be raised that the Basel Convention, the Montreal Protocol and CITES contravene arguably more fundamental tenets of GATT/WTO rules than the product/process distinction crafted by the Tribunal in Tuna–Dolphin I.[253]

If this is the case, why is it possible that the BSP will be treated differently? The answer may well lie in the controversial nature of the BSP and its less than universal support.

b. The Level of Support for the BSP

At the Cartagena meeting in February 1999, the Executive Director of the United Nations Environment Programme stated:

> We need a widely accepted Protocol that protects the environment, strengthens the capacity of developing countries to ensure Biosafety, complements existing national regulations, and promotes public confidence in biotechnology and the benefits it can offer.[254]

In the eyes of many U.S. commentators this was not achieved:

> The Protocol threatens to injure world trade, and by extension, U.S. economic interests. Its labeling requirement, in tandem with consumer fear, encourages GMO market failure.

---

[251] Hagen & Weiner, supra, note 135 at 708.
[252] Adler, Jonathon (2000) More Sorry Than Safe: Assessing the Precautionary Principle and the Proposed International Biosafety Protocol, 35 *Tex. Int'l L. J* at 202.
[253] Namely, Articles I, III and XI.
[254] Topfler, Klaus as quoted in Adler (2000) The Cartagena Protocol and Biological Diversity: Biosafe or Bio-sorry, *Georgetown Environmental Law Review*, Spring, 761.

> Finally, the Protocol abets protectionism through the erection of trade barriers not reasonably grounded in science.[255]

While negative opinions on the BSP are widely held,[256] they are not universal. Steve Charnovitz, a leading scholar in the trade and environment debate notes:

> The Biosafety Protocol is significant because it establishes new environmental rules that cut through some of the uncertainty. …. [B]y achieving a treaty that appears to balance trade and environmental concerns, the governments have taken an important step to head off GM related disputes that could undermine the WTO.[257]

While scholarly opinions may diverge, the reality is that the world's largest producer of biotechnology (the United States) is not in a position to become a party to the BSP, as it has not ratified the Convention on Biological Diversity. The likelihood of the United States ever becoming a party to the BSP is remote. Given the huge investment in biotechnology by U.S. corporations, having the United States as a non-party raises the possibility of a WTO challenge to any measures implemented under the auspices of the BSP. Charnovitz dismisses such a possibility in general terms, noting:

> The drafters sought to make the Biosafety Protocol compatible with the SPS. Action taken pursuant to the Protocol **may** become an international standard privileged under the SPS. Disputes about a national measure taken pursuant to the Biosafety Protocol could, of course, be brought to the WTO. But there is no reason to think that a WTO panel would rule against an import ban or label that meets the terms of the Protocol.[258]

---

[255] Weston, supra, note 245 at 387.
[256] Similar sentiments are echoed by Adler, supra, notes 252 and 254. Weston, ibid., also cites *Wall Street Journal* (2000) Fear of the Future: The Logic Behind the Biosafety Protocol is Flawed, Editorial, *Wall St Journal European Edition*, February 11. A Canadian perspective in a similar vein can be found in Milloy, Steven (2000) Unreasonable Precautions: Opponents are Increasingly Using the Precautionary Principle as an Argument to Block the Use of Modern Technology, *National Post*, February 7.
[257] Charnovitz, Steve (2000) The Supervision of Health and Biosafety Regulation by World Trade Rules, *Tulane Environmental Law Journal*, Summer, 271 at 301-2.
[258] Ibid., at 300. (Emphasis added). The compatibility (or lack thereof) of the BSP with the SPS is discussed, supra, at Part II.C.2.a. of this document.

However, Charnovitz was writing prior to the election of the Bush Administration in the United States. Given the abrupt abandonment of the Kyoto Protocol by the United States,[259] it simply cannot be guaranteed that the United States would not challenge a measure that could damage its economic interests. If the world's largest emitter of greenhouse gases can abandon the major MEA designed to tackle climate change, it is not unreasonable to conclude that it would have little compunction in challenging the BSP.

Furthermore, it is not only the United States that is unlikely to become a party to the BSP. As of October 31, 2001 only 7 nations had ratified the BSP,[260] which requires 50 ratifications to enter into force.[261] The BSP currently only has 106 signatories. Clearly, the BSP enjoys less support than the Basel Convention, the Montreal Protocol and CITES, which renders it more vulnerable to challenge given the larger number of non-parties.

The BSP is also unlike these trade-related MEAs in several key areas. First, the volumes of trade affected are likely to be larger, and the science is currently unclear. Second, the commercial consequences of the BSP are likely to be much higher than in the case of endangered species and hazardous wastes. Finally, there is a relative lack of consensus regarding the safety of GMOs[262] when compared with the desirability of the protection of endangered species or the elimination of unlawful trade in hazardous wastes.

III.E. Conclusions

General principles of international law provide little assistance in determining whether the WTO agreements or the BSP would prevail in the event of a dispute. In the absence of such an answer, an analysis of the treatment of environmental matters at the WTO has revealed certain insights. Although the WTO DSB has taken steps to repair the damage caused by the Tuna–Dolphin and Shrimp–Turtle Panels, there is as yet no resolution to

[259] See, Phillipson, Martin (2001) The US Withdrawal from the Kyoto Protocol, forthcoming in *The Irish Jurist*, December.
[260] Namely: Bulgaria, Norway, Trinidad and Tobago, The Czech Republic, St Kitts & Nevis, Lesotho, and Fiji.
[261] *BSP*, supra, note 130 at Article 37.
[262] See Perdikis, N. and Kerr, W.A. (1999) Can Consumer-based Demands for Protection be incorporated in the WTO? – The Case of Genetically Modified Foods, *Canadian Journal of Agricultural Economics*, 47 (4): 457-465.

the trade and environment debate at the WTO. The decisions in Shrimp–Turtle Implementation also do little to alter the fact that PPMs will remain generally unacceptable to the DSB and that the Article XX exceptions will be successfully invoked on a highly infrequent basis.

The CTE and the DSB assert that their preferred solution to the trade and environment conflict is the negotiation of binding and widely ratified MEAs. At this stage, the BSP cannot be described (for the reasons outlined above) as such a regime. While the international community appears to tolerate the trade-distorting provisions of regimes such as the Montreal Protocol, CITES and the Basel Convention by ratifying them in large numbers, the BSP will not achieve the same level of support in its current form. As a general proposition, a challenge to an MEA at the WTO DSB appears unlikely. However, the BSP may yet prove to be the exception to such a rule.

IV. ECONOMIC IMPLICATIONS

IV.A. An Economic Approach to Comparing the WTO and the BSP

As pointed out above, the World Trade Organization and the Biosafety Protocol are based on very different regulatory principles and have, more fundamentally, entirely different institutional focuses. The focus of the WTO is to provide a transparent and predictable set of rules for international trade. The objective is to reduce, for firms that wish to engage in international commerce, the risks that arise from the ability of governments to use trade barriers to protect domestic firms from foreign competition. The assumptions that underlie the WTO are: (1) international trade is welfare enhancing and should, therefore, be promoted and (2) at times, governments may face political pressure that is sometimes difficult or impossible to ignore from commercial vested interests seeking protection from foreign competition. Hence, while membership in the WTO commits governments to an open trading system, it recognizes that governments may need to ignore their commitments under certain circumstances. The history of the GATT, and subsequently the WTO, can be seen as a process of ongoing negotiations to define when the broad commitments to an open trading system may be ignored without sanction and to raise the cost of choosing to break the broad commitments when an exception does not apply.

The Biosafety Protocol has as its primary focus the protection of the natural environment – although, as suggested above, the definition of "natural environment" is very broad and includes human health and the economic well-being of certain groups. In the Biosafety Protocol, governments have a responsibility to behave proactively to prevent potential market failures that might arise from transboundary shipments of LMOs. The protocol allows governments to meet this responsibility through the use of trade barriers, if necessary.

From the perspective of the Members of the WTO, the imposition of trade barriers by governments should, in the first instance, always be viewed with suspicion. There are heavy burdens of proof, such as scientific justifications, for governments that wish to avail themselves of exemptions to the broad commitments to trade liberalization. From

the BSP perspective, governments are seen as guardians of the natural environment (and according to some have a responsibility to err on the side of caution). No consideration is given to the possibility that governments may be motivated not only by the wish to prevent potential market failure from an unanticipated environmental risk, but also by a desire to extend protection to vested domestic commercial interests.

The WTO approach sees science as a means to thwart governments' non-genuine attempts to exploit exemptions to their broad commitments to trade liberalization. In theory, science depoliticizes the decision process pertaining to the imposition of trade barriers. In the case of the Biosafety Protocol, science is perceived as being not sufficiently precise or developed to be allowed to override political judgment in cases relating to the protection of the natural environment. Of course, the opening of decisions relating to the imposition of trade barriers to political judgment allows for the possibility of other (protectionist) influences. This is, of course, exactly what the WTO was established to prevent (or a least minimize).

In part, the difference in approach can be explained by the economic models that motivate the institutions. Part of the problem with the WTO is that the economic model that was the basis of the GATT at its inception more than fifty years ago has not been updated to reflect either changing economic reality or advances in the science of economics itself. It is instructive to examine the model that has underlain the GATT, and subsequently the WTO, since its inception.

For simplicity we will assume that there are only the two countries depicted in figure 1. The importing country allows products to enter into its customs territory without impediment. Prior to the advent of biotechnology, both countries produce and consume non-GM products. In the exporting country, supply is depicted by S0. At any price above the point where S0 crosses the domestic demand curve D, the country will have product surplus to domestic demand that is available for export (i.e., at any price above this point the quantity available for export is the horizontal distance between S0 and D. This export supply is depicted as Sx0 in the international market. In a similar fashion, in the

importing country, at any price below the intersection of the domestic supply curve, S, and the domestic demand curve, D, consumers will be willing to purchase a greater quantity than domestic firms are willing to supply. Imports can be used to make up this shortfall. The willingness to import at different prices is depicted by the import demand function, Dm, in the international market. The quantity traded will be determined by the equilibrium in the international market, Qt0. The equilibrium price will be Pw0 in both the importer's and exporter's markets.[263] At Pw0, the importing country chooses to import Q2 minus Q1 (which equals Qt0).

[263] Ignoring any transportation and transaction costs for simplicity.

Figure 1: Insert Here

PowerPoint File: Graphs for Isaac-Phillipson-Kerr.ppt

The benefits accruing to society from a market are normally measured by economists using the concept of consumer and producer surplus.[264] For the importing country, the consumer surplus arising from the market as portrayed is area $a + b$. The producer surplus is comprised of area $g + c$. Hence, the "total welfare" arising from the market is area $a + b + g + c$.

Now assume that the exporting country depicted in figure 1 can avail itself of a new biotechnology in its production of the product depicted in this market – it experiences a technological change. Assume for the moment that the biotechnology has no effect on the final product.[265] Further, assume that consumers also accept that there is no difference between GM and non-GM products.[266] Assume further that the technology cannot be used in the importing country, either because it is not applicable to local agronomic conditions or the importing country has chosen to ban the technology's use for domestic production.

The reason producers adopt the new technology in the exporting country is that it increases efficiency (it lowers the supply cost) and the domestic supply curve shifts out to S1. In turn, this also shifts the export supply function from Sx0 to Sx1 in the international market. At Pw0 there is now excess supply in the international market, and price falls to Pw1. The quantity traded increases from Qt0 to Qt1, meaning imports increase from Q2 minus Q1 to Q4 minus Q3.

In this case – given the strong assumptions that neither is the product different nor is the perception of the product among consumers different – the technological change is unambiguously welfare enhancing for the importing country.[267] At Pw1 the total

[264] For an accessible discussion of consumer and producer surplus see Gaisford, J.D. and Kerr, W.A. (2001) *Economic Analysis for International Trade Negotiations – The WTO and Agricultural Trade*. Cheltenham: Edward Elgar.

[265] Of course, as discussed above, this assumption is very contentious. For the moment we accept the assumption because it reflects the general WTO stand on PPMs.

[266] Again, a contentious assumption that we will relax in what follows.

[267] It is also welfare enhancing for the exporting country and, hence, welfare enhancing internationally. This can be seen in the increase in total welfare (the sum of producer and consumer surplus in the

consumer surplus in the importing country is area *a* + *b* + *c* + *d* + *e* + *f*. The total producer surplus is now area *g*. Hence, total welfare after the technological change is *a* + *b* +*c* + *d* + *e* + *f* +*g* which is greater than the original, pre-technological change total welfare of *a* + *b* + *c* + *g* by area *d* + *e* + *f*.

Under this model, which underpins the WTO, consumers are unambiguous winners from having free trade – their surplus increases by area *c* + *d* + *e* + *f*. Hence, consumers will never have an incentive to ask for protection. Commercial interests – producers – are, however, losers as a result of the open trade policy. They suffer from a price decline in the products they sell – Pw0 to Pw1 – leading to a loss in producer surplus of area *c*. Producers thus have a direct interest in lobbying the government for protection. As the number of producers (relative to consumers) tends to be small their individual losses may be large. The fact that producers are small in number lowers the organizational cost of putting together a lobbying effort to obtain protection from governments. Producers may also be regionally concentrated, leading to politicians from the region being particularly dependent for support on the industry suffering from foreign competition. In contrast, while consumers have more to gain collectively than producers lose, their individual losses arising from protectionism tend to be small (so the effort they are willing to expend individually to keep their gains is also small). The fact that they are large in number also increases the organizational costs of putting in place a lobbying effort. Further, consumers tend to be geographically dispersed. As a result, governments are far more likely to be effectively lobbied for protection. This is the model upon which the GATT and subsequently the WTO are built. The entire institutional structure of the WTO is organized to limit the ability of governments to find ways to provide protection to producers. No other seekers of protection are predicted, nor allowed for.

If the new technology is not agronomically suitable for producers in the importing country, then the producers face a natural decline in their relative competitiveness. Their loss is area *c*. If, on the other hand, as is the case across jurisdictions for biotechnology,

---

international market). Of course, this is the justification for having a liberal trade regime that underlies the WTO, at least in partial equilibrium analysis – see Gaisford, J.D. and Kerr, W.A. (2001) *Economic Analysis*

the reason that producers in the importing country cannot use the technology is a regulatory prohibition on its use, then the producers in the importing country are denied benefits of the new technology at the same time as their competitors in the exporting country, which has licensed the technology, are receiving the benefit.[268] They will feel particularly aggrieved and can be expected to strongly put the case that they are suffering "unfair" competition. Their complaint may strike a sympathetic chord among domestic politicians. This is clearly the case in the North American–EU dispute over beef produced using hormones where, while producers were not the primary group asking for protection, they certainly felt that they would suffer from "unfair" competition from North American cattle producers who are allowed to use growth hormones. In North America, the issue of beef hormones is often portrayed as being simply a reflection of producer protectionism in the EU – with the underlying consumer concerns being dismissed as a "smoke screen" to allow the EU Commission to satisfy the demands of their producers.[269]

The framers of the GATT/WTO were particularly wary of protectionist arguments being brought forward when the relative competitiveness of producers is deteriorating. Competitive advantage is comprised of two components: (1) lower resource costs and (2) a lower-cost regulatory environment. The traditional example is wage costs. A country may have a low-wage (resource-cost) advantage in the production of labour-intensive products and become an exporter of those goods to a high-wage-cost country – this is traditional *comparative* advantage based on relative resource costs. For social reasons, however, a society may impose a high minimum wage, reducing artificially the competitiveness of its labour-intensive sector. In such a case, the producers of labour-intensive goods within an importing country will lose in an open trading regime and will have an incentive to ask for protection. The GATT/WTO does not allow such "self-

---

for International Trade Negotiations – The WTO and Agricultural Trade. Cheltenham: Edward Elgar.

[268] To keep things simple, assume that the contentious science underlying one jurisdiction's willingness to license the technology while another does not relates only to the production practice and not the final product. In other words, while biotechnology has been used in production, there is no health or environmental risk associated with the imported product. Cotton textiles produced using biotech cotton plants might be an example.

[269] Kerr, W.A. and J.E. Hobbs (2000) *The WTO and the Dispute Over Beef Produced Using Growth Hormones*, CATRN Paper 2000-07, Canadian Agrifood Trade Research Network, http://www.eru.ulaval.ca/catrn/beef.pdf.

imposed" increases in the costs associated with the regulatory environment of domestic firms to be a justification for the putting in place of trade barriers.

This possibility of internal pressure is at the heart of the WTO Members' insistence on product attributes, rather than PPMs, being the basis for the erection of trade barriers. If production technologies could be used as the basis for trade barriers, it would be easy to argue that, for example, textiles produced using low-tech hand looms in developing countries were competing "unfairly" with textiles produced on high-tech mechanical looms used in high-wage-cost countries – particularly if low-tech looms were banned domestically because of self-imposed work safety or environmental reasons. Such justifications are open to capture by both the owners of costly technology or unions representing the workers that work in such industries in developed countries.

Fear of this justification of protectionism is the basis of developing countries' resistance to having labour standards and environmental standards included in the WTO or other trade agreements. They argue that societies at different levels of development have different priorities, and they may wish to impose lower-cost labour standards or environmental standards that reflect the preferences of their societies. It becomes part of their competitive advantage. They tend to see such standards solely as a means to extend protection to producers in developed countries thus denying developing countries the right to use trade as an engine of growth and sustainable development over the long run.

The problem with this argument is that those concerned with the labour or environmental standards under which the products they purchase are produced are not producers, but consumers in developed countries. Of course, just as in the beef hormone case, domestic vested commercial interests such as the owners of plant and equipment and labour unions operating in the higher-cost environment imposed by developed countries stand to benefit from protectionist measures imposed for reasons of labour or environmental standards. They can be expected to join consumers on the protectionist bandwagon. This is antipathetic to the long-standing WTO focus which fails to recognize, for the reasons outlined above, that other groups in society would lobby their governments for

protection.[270] The failure to deal with this problem at the WTO is manifesting itself in a myriad of issues – animal welfare standards, leg-hold traps, the Tuna–Dolphin case discussed above, eco-labelling, child labour and so forth. It is also the root of some of the problems arising from attempts devise an international regulatory regime for the products of biotechnology.

To see the problem, let us return to the model that underpins the WTO. The "neoclassical" model upon which the simplified trade model presented above is based has as a fundamental proposition that consumers have perfect and costless information. This means that if there were some problem with a product (i.e., an unacceptable health risk, environmental risk, or ethical concern) they would automatically know about it and simply not buy it. If they had perfect, costless information they could always recognize, for example, a GM product and simply choose not to buy it if they had concerns regarding it. This is a very strong assumption that has to be relaxed to deal with the problem of trade in the products of biotechnology. Of course, this assumption falls neatly into the product-attribute focus of the WTO. In a simple world where process attributes are not important, consumers can easily discern the differences in goods by considering product attributes. Of course, the WTO does recognize that product attributes are not easily detectable in some cases and allows for labelling.

Assume now that consumers do not have perfect, costless information regarding some characteristic of a product that they are interested in purchasing. For example, a consumer may not be able to tell if he or she is buying a product produced using biotechnology. The GM product can be identical in appearance to a non-GM product. This inability to differentiate would be the situation in the open import market case examined in figure 1. If imported GM products and domestic non-GM products are not kept separate in the market, then a consumer does not know what he or she is purchasing. This case can be further examined using figure 2, which shows the same importing country as was depicted in figure 1. To simplify the presentation, we do not show the

[270] Perdikis, N. and Kerr, W.A. (1999) Can Consumer-based Demands for Protection be incorporated in the WTO? – The Case of Genetically Modified Foods, *Canadian Journal of Agricultural Economics*, 47 (4):

international market or the exporter. Prior to the licensing of biotechnology for production in the exporting country, both the importer and the exporter produce the same non-GM product. The products are not differentiated in the importer's market as they are "like" products and consumers do not know if they are buying the imported or the domestic product. The international price is Pw0, domestic producers supply Q1, and Q2 minus Q1 product is imported. Consumer surplus is $a + b + c + d$ and producer surplus is $e + j$, giving a total welfare of $a + b + c + d + e + j$.

457-465.

Figure 2: Insert Here

PowerPoint File: Graphs for Isaac-Phillipson-Kerr.ppt

Assume now that, as in the case above, producers in the exporting country switch over to producing GM products and there is no import barrier in the importing country. If consumers have no reservations regarding the biotechnology the demand curve will remain at D0, the technological change will increase supply in the international market, price will fall and a new equilibrium will be reached, exactly as in figure 1. If, however, some consumers have reservations regarding GM products – they consider them inferior – they will be willing to pay less for them. In other words, they will buy a given quantity only at a lower price; their individual demand will shift inward for GM products relative to non-GM products. In an extreme case, they would not buy any GM product even if it were free – they would have no demand for GM products.

The problem for these consumers is that they cannot tell whether they are consuming GM or non-GM products. Looked at another way, it would be extremely costly for consumers to either acquire the knowledge and equipment to test the products on offer or to pay others to do it (i.e., the assumption of perfect, costless information is violated).[271] As they make their consumption decisions, consumers who consider GM products to be inferior will now have to weigh the probability that they will actually purchase and consume a GM product. The higher the perceived probability, the lower average cost they will be willing to pay for the products on offer. As the individual demand curves of those who consider GM products inferior – from now on *Group Y* consumers – shift in, the aggregate demand curve (the sum of individual demand curves) in figure 2 will also shift inward. For this shift to occur, it is not necessary for all consumers to consider GM products to be inferior. Many consumers may be indifferent between GM and non-GM products. We designate them *Group Z* consumers in what follows. The degree to which the aggregate demand shifts inward will depend on the proportion of consumers in Group Y and the degree to which they consider GM products inferior. Note, this problem is analogous to the well-known "lemons" problem in economics developed by Nobel prize

[271] In some cases tests may not exist or it may not be possible to detect whether biotechnology was used in production by examining the final product (i.e., the cost of information is effectively infinite).

winner George Akerlof.[272] Gaisford et al. explore the analogy more fully for the case of biotechnology.[273] In this case, GM products are analogous to inferior "lemons" in the used car market.

In figure 2, the demand curve shifts from D0 to D2 as a result of Group Y consumers' decline in demand. The market moves to a new equilibrium at Pw2 with domestic producers supplying Q5 and imports equaling Q6 minus Q5. Note, Pw2 will be lower than Pw1 in figure 1 because the decrease in demand in the importer's market acts to reduce import demand in the international market, putting downward pressure on price in addition to the pressure that results from the increased efficiency of the new technology. This decrease is important only in that this will mean that the decline in producer surplus will be greater than in the case discussed in figure 1 and producers can be expected to lobby even harder for protection.

The major change with this type of import market, however, is that the change in consumer surplus is no longer unambiguously positive as was the case in figure 1. Further, the gain in total welfare is also no longer unambiguously positive. In the case of consumers, there are now two effects. Consumers benefit from a positive price effect – price has fallen from Pw0 to Pw2 – giving an increase in consumer surplus of area $e + f + g$. On the other hand, consumer surplus is reduced due to the adverse quality effect – area $a + d$. As some consumers will have lost, they now have an incentive to ask for protection – something for which the strict model upon which the WTO is based does not allow. If area $a + d$ is larger than area $e + f + g$, then consumers can suffer a net loss. Of course, determining the relative size of these gains and losses is complex and open to dispute within the economics profession. In the case of biotechnology, politicians in the EU are clearly feeling pressure from consumers who, for whatever reason, feel they fall into Group Y.

[272] Akerlof, G.A. (1970) The Market for Lemons: Quality Uncertainty and the Market Mechanism, *Quarterly Journal of Economics*, 84: 488-500.
[273] Gaisford, J.D., J.E. Hobbs, W.A. Kerr, N. Perdikis and M.D. Plunkett (2001) *The Economics of Biotechnology*. Cheltenham: Edward Elgar.

In terms of total welfare, prior to the technological change it was $a + b + c + d + e + j$. After the change it is $b + c + e + f + g + j$. As areas *b*, *c*, *e*, and *j* are common to both the before and after case, the determination of whether there is a net gain or loss depends on the relative sizes of the gains (area $f + g$) versus the losses (area $a + d$). If total welfare declines from the opening of trade, $-(a + d) > (f + g)$, then governments have a genuine public policy question to consider.

We will consider the relative merits of policy responses later in the paper. First, let us consider the way in which the WTO would handle this problem. In the case of consumers considering GM products to be inferior because they pose a risk to human health, the appropriate protection mechanism would be the SPS Agreement. If there is insufficient science to determine if the product constitutes a public health risk, then the importing country is allowed to impose an import ban until such time as sufficient science exists to determine clearly if there is a public health risk. If the Codex then decides that there is a public health risk, the importing country can keep its import ban. If the Codex, however, decides that the human health risk is at an acceptable level, then the importing country must lift its ban on imports. In essence, the WTO is treating the consumer question as if consumers now have perfect, costless information supplied by the scientific experts. As a result, demand remains at D0 and we end up at the case depicted in figure 1, with consumers unambiguous winners due to the positive price effect. If there are further calls for protection, they must be coming from producer interests and trade barriers should not be allowed.

This scenario, however, is based on strong assumptions. The first is that consumers are objecting to the GM product only because of human health risks. Of course, even if their health concerns are totally allayed by the Codex experts' pronouncements, consumers may have environmental or ethical reasons for objecting to GM products. Leaving these objections aside for the moment, there is also the strong assumption that consumers are willing to passively accept the judgment of the Codex experts. They are assumed to accept the same levels of human health risk as the Codex experts, they are assumed to

accept the science that the experts' judgment is based upon, and they are assumed to accept the scientists as credible experts. If any of these assumptions does not hold in the case of some consumers, then they will still consider GM products inferior and Group Y consumers will continue to exist. The unfettered importation of the GM product could still be welfare decreasing.

In the case of GM products, there has been considerable discussion of the general breakdown in confidence in food safety systems, the science that underlies them, and the scientists in charge of public policy in these areas. This has increased in the wake of the Bovine Spongiform Encephalopathy (BSE) – mad cow disease – crisis in the UK as well as the dioxin scandal in Belgium and a number of well-publicized cases of *E. coli*, samonella and lysteria poisoning.[274] In short, many consumers feel they are faced with large costs in determining the safety of the food they buy because it is costly for them to personally evaluate food safety systems, the available science and the credentials and ability of the scientists. In the case of biotechnology, this problem has been exacerbated because much of the research is done in the private sector by scientists paid by those investing in biotechnology.

In part, this lack of confidence seems to be the central problem in the case of beef produced using hormones. Despite the considerable scientific evidence indicating that there is no human health risk, some European Union consumers have made strong representations that they do not want beef produced using hormones in their markets. This pressure (along with that from farmers denied access to the technology and budgetary concerns relating to the Common Agricultural Policy's surplus beef disposal scheme) has led the EU to accept retaliation rather than acquiesce to a WTO panel ruling suggesting that there was no scientific basis for the import ban on beef produced using growth hormones.[275] While accepting retaliation is a country's right under the WTO, it is

[274] Gaisford, J.D., J.E. Hobbs, W.A. Kerr, N. Perdikis and M.D. Plunkett (2001) *The Economics of Biotechnology*. Cheltenham: Edward Elgar.

[275] Kerr, W.A. and J.E. Hobbs (2000) *The WTO and the Dispute Over Beef Produced Using Growth Hormones*, CATRN Paper 2000-07, Canadian Agrifood Trade Research Network, http://www.eru.ulaval.ca/catrn/beef.pdf.

the last refuge for countries that feel it is necessary to impose trade barriers in the face of strong domestic pressure. Accepting retaliation also signals that a political compromise in the WTO has broken down and there needs to be renegotiation. It has often been suggested that the beef hormone case is simply the biotechnology case writ small.

The approach of the Biosafety Protocol to the problem of human health[276] is different from that of the WTO. It assumes, instead of a market failure caused by costly information, that there is an entirely different market failure.[277] There is no recourse in the BSP to Codex or to other organizations charged with establishing international standards. If a country has a concern with a GM product, this means that there is a negative externality not captured by the market. If we return to figure 2, concerns with the GM product mean that the D0 market demand curve overestimates the value of the product to the consumer because it does not account for an unknown health cost. The true cost is reflected in demand curve D2. This shift affects all consumers; the extent of the shift will be determined by (1) the degree to which the true cost is underestimated for the GM product, (2) the probability of choosing a GM product, and (3) the relationship between health risk and consumption (e.g., rising with increased consumption or based on only a single threshold of ingestion). Again, in this illustration imports can enter the country freely and domestic non-GM products and imported GM products are not kept separate.

Again, the place to start is prior to the technological change. Both the exporter and the importer produce non-GM products, the price is Pw0, domestic production is Q1, and imports are Q2 minus Q1. Consumer surplus is $a + b + c + d$ and producer surplus is $e + j$, giving a total welfare of $a + b + c + d + e + j$. The biotechnology leads to an increase in technological efficiency, an increase in the export supply in the international market and a fall in price. In this case, Pw2 is exactly analogous to Pw1 in figure 1 because the market demand curve does not shift. Domestic producers supply Q5 and imports are Q8 minus Q5. As the market demand curve does not reflect the negative externality of the

[276] Leaving aside the troubling question of why human health concerns are included in the Biosafety Protocol when it is difficult to see how human health affects biodiversity.

possible human health risk, it overestimates consumer benefits and total welfare. Working off the true demand curve, consumers still receive a positive price benefit of $e + f + g$ but there is also a loss in consumer surplus of $a + d + h + i$.[278] Again, there is no unambiguous result for consumer surplus. If $a + d + h + i$ is larger than $e + f + g$ then consumers lose from the technological change. The inclusion of the precautionary principle in the BSP, which allows politics rather than science to be the basis of judgment, always allows a country to assume that consumers lose if it wishes and, hence, to put up trade barriers to imports of GM products. Without deference to scientific experts, no limits are put on the degree of scientific evidence required. As a result, lack of scientific evidence can always be used to justify the prohibition of imports, even if the pressure for protection comes from other sources – be they consumers with ethical objections to biotechnology or traditional commercial interests. As discussed above, the WTO makes few provisions for consumers who have concerns with PPMs. The BSP rules would allow those concerns to be taken into account through abuse of the precautionary principle. The EU has, of course, asked that the SPS Agreement be renegotiated to take account of consumer concerns but its requests have fallen on "deaf ears".[279] The BSP provisions look like a means to escape WTO disciplines and it is not surprising that the EU has announced that its GM trade policy will be guided by the BSP. The inclusion of "economic considerations" in the BSP tends to confirm these suspicions among those who wish to export GM products to the EU – as "economic considerations" can be interpreted as old fashioned protectionism related to commercial interests' attempts to prevent the loss of area *e* in figure 2, particularly as EU producers are denied the benefits of the technology. Of course the latter situation raises "red flags" among exporters and at the WTO.

The problem with the ambiguities in the BSP's decision making process is that importers would be able to use them at will. This does not mean that they will use them all the time.

---

[277] A market failure that can be corrected by putting trust in scientific experts and science-based systems.
[278] The determination of welfare is further complicated by the fact that any consumption in excess of Q6 is given a value by consumers greater than its true worth as shown by D2. We abstract from this welfare complication in what follows, as examining consumer surplus will be sufficient to make our point.
[279] Kerr, W.A. (1999a) International Trade in Transgenic Food Products: A New Focus for Agricultural Disputes, *The World Economy*, 22 (2): 245-259.

From the point of view of firms investing in biotechnology and wishing to export, this continued uncertainty is an untenable position. There is no transparency to the system at all, making investments contingent on access to international markets very risky. This degree of risk will consequently reduce the level of investment in biotechnology and reduce the benefits that can be expected to flow from the new technology. The precautionary principle embedded in the BSP looks only at potential costs and not at potential benefits forgone – or, more formally, it always assumes that the costs will exceed the benefits. From the point of view of firms wishing to engage in international trade in the products of biotechnology, having the BSP regulate this trade essentially negates all the progress the GATT/WTO has made over the last fifty-plus years.

If we move beyond risks to human health, two further concerns of consumers remain. These can be loosely categorized as ethical concerns and environmental concerns.[280] Ethical concerns relating to biotechnology can arise for a large number of reasons – from philosophical objections to manipulation of genes as "messing with God's work", to religious conundrums for Jews and Muslims relating to the insertion of pork genes into other organisms when their religion forbids the consumption of pork, to concerns with the power that multinational biotechnology firms may have over essential commodities.[281] These issues can be summarized as "consumers' right to know" (CRTK) issues. In the case of biotechnology, the issues relate to the processes used in production.

As discussed above, the WTO does not deal directly with this form of consumer concern. It deals with it only within the traditional, narrow WTO mandate relating to whether the product which results from the use of biotechnology is a "like product" or not, a determination made strictly in terms of the characteristics of the final product. If it is an "unlike product" in terms of product characteristics then labelling is permitted. If it is a "like product" then no restrictions on imports are allowed. This focus has led the debate down the road of attempting to determine whether the use of biotechnology alters the

[280] Gaisford, J.D., J.E. Hobbs, W.A. Kerr, N. Perdikis and M.D. Plunkett (2001) *The Economics of Biotechnology*. Cheltenham: Edward Elgar.

final product or not. However this debate turns out, it will mean drawing an arbitrary "line in the sand" regarding what is novel and what is not. This will leave some dissatisfied.

Returning to figure 2 may shed some light on the problem. Again, we have the situation where prior to the biotechnological innovation both countries produce non-GM products and there is an open trading regime. The international equilibrium price is Pw0, domestic firms supply Q1, and the country imports Q2 minus Q1. Consumer surplus is area $a + b + c + d$ and producer surplus is $e + j$, giving a total welfare of $a + b + c + d + e + j$. Subsequently, there is a biotechnology innovation that is licensed in the exporting country but not in the importing country. Remember there are no health or environmental risks associated with this product. The reason for the domestic refusal to license production is ethical. The adoption of the technological change in the exporting country shifts the supply curve out, increasing export supply and putting downward pressure on price. The arrival of GM products in the importer's market, however, means that an inferior product for some consumers – again Group Y – has arrived in the marketplace. As domestic non-GM products and imported GM products are not separated in the market, consumers cannot tell them apart. It does not matter whether the final product is changed or not if consumers have an ethical objection to biotechnology – they suffer the loss in either situation and can make a case for the consumers' right to know because they are negatively affected. The demand curve shifts in from D0 to D2 and the net effect on consumers and total welfare is ambiguous – for consumers it depends on the relative size of $e + f + g$ (the positive price effect) and $-(a + d)$ (the negative quality effect). For total welfare it depends on the relative size of $f + g$ (the gain) versus $-(a + d)$ (the loss). The importing country has a case for taking action if it believes the welfare loss is greater than the gain (i.e., there is a net loss).

The WTO does not recognize this potential loss. In reality, the WTO Members' position is that they believe it is far more likely that the real motivation for putting in place

[281] See Gaisford, J.D., J.E. Hobbs, W.A. Kerr, N. Perdikis and M.D. Plunkett (2001) *The Economics of Biotechnology* (Cheltenham: Edward Elgar) for an informative discussion of the ethical issues surrounding

protection is the pressure put on domestic politicians by those who wish to prevent the loss of area *e* rather than any real concern relating to the loss of *a* + *d*. Their collective experience of the WTO strongly suggests that if you allow "loopholes" in trade law, protectionist interests will find ways to exploit them. Of course, it is true that if countries were to put trade restrictions in place to prevent the loss of *a* + *d*, then *e* would also not be lost to commercial interests. Given the inherent difficulties of measuring *a* and *d*, WTO Members have, thus far, decided that the risk of CRTK issues being captured by those wishing to retain the benefits of *e* outweigh any potential losses suffered by consumers in Group Y in the importing country. The EU's attempts to have negotiations re-opened to include consumer issues have been rebuffed. In the case of biotechnology, the number of Group Y consumers and the depth of their ethical concerns appear to be far greater in the European Union than in the countries that have extensively licensed biotechnology. Hence, while it serves the short-run interests of biotechnology exporters to ignore the issue, it seems that the long-run viability of the WTO requires that the Members deal with the issue.

Simply trying to ignore the issue of ethical concerns does not solve the real problem EU politicians have to deal with in terms of Group Y consumers. The problem of Group Y consumers, as suggested above, encompasses a wide range of issues in developed economies – animal welfare, leg-hold traps, child labour and so on. Over future issues, it may well be Group Y consumers in Canada or the United States that ask for protection, which will be denied by the WTO. To say these issues cannot be ignored in no way discounts the real concerns of WTO Members regarding the proclivity of commercial vested interests to exploit them to their own advantage. Of course, a labelling policy does not necessarily mean that protection will be extended to those who have a vested interest in retaining the benefits associated with area *e*, but it opens the door to costly labelling and label verification systems that can provide protection to domestic producers.

The TBT Agreement attempts to deal with the issue of abuse of labelling regimes. The intent of the labelling clause was probably "strong". It was that the costs to exporters of

---

biotechnology.

putting labelling systems in place should not exceed the benefits consumers receive from having a labelling scheme. This clearly reflects the traditional WTO suspicion of mechanisms that can be used to interfere with international trade flows – particularly non-tariff barriers. According to Gaisford et al. (2001):

> Given the "soft" wording in the TBT Agreement that only requires that the cost of implementing the standard must be proportional to the purpose of the standard – the latter not being definable in economic terms – no judgments will be forthcoming (p. 207).

Hence, it would appear that labelling requirements are virtually wide open for abuse and open to capture by those wishing to obtain protection for their interests in area *e*.

At the moment, there appears to be tacit recognition that Group Y consumer issues have the potential to severely damage or destroy the WTO. This is why no GM challenges have been brought to the WTO – the spectre of a large economy such as the EU choosing to ignore a WTO judgment against its import policies pertaining to GM products in direct conflict with the United States, and the U.S. retaliation against a very large value of exports from the EU, is the worst nightmare of those who believe that strong rules of trade are required for global prosperity.[282]

The BSP implicitly, although not explicitly, accepts the consumers' right to know through its mandatory labelling policy; although the issue of whether labelling is mandatory on the final packaging the consumer sees is not clear, what is clear is that the intent is to provide the capacity to relay information about imported products to consumers. The labelling is process-based and thus avoids the WTO distinction between product- and process-based attributes. In the BSP, the issue of novelty does not arise as all products are considered GM, based on the use of biotechnology in their production.

[282] It is ironic that those who oppose globalization, and the WTO's role in it, are probably also those who tend to support changes to the WTO to include CRTK. If they really wanted to thwart globalization, then opposing CRTK at the WTO could bring forth the confrontation that could precipitate the demise of the WTO.

In a public policy sense, the BSP totally ignores any trade-off between gains and losses. In terms of figure 2, by specifying mandatory labelling without any criteria, the protocol implicitly makes the assumption that, in total welfare terms, area $a + b$ (the loss from the introduction of GM products into the market) will always be greater than area $f + g$.

Of course, labelling does not mean that protection is automatically extended to those who have a vested interest in retaining the benefits of *e*, but it opens the door for abuse of labelling systems. As labelling is mandatory, even the weak TBT constraint that "the cost of implementing the standard must be proportional to the purpose of the standard" does not exist. Issues surrounding labelling policies will be dealt with at greater length later in the next section.

Finally, we turn to issues pertaining to the environment. In terms of biotechnology, environmental issues are dealt with at the WTO through the International Plant Protection Convention (IPPC). These issues are under the mandate of the SPS Agreement and, hence, relate only to issues of human health. If the IPPC determined that a GM product presented an environmental hazard with human health implications – for example, if importation of the GM product had adverse effects on a predator of malaria-carrying mosquitoes – the importing country could put in place a prohibition on imports. Putting this in the context of figure 2, the welfare gain from importing the GM product is area $f + g + h + i$. If the hazard were strictly tied to the consumers of the biotechnology product, then the market demand curve D0 would not reflect the true cost. The demand curve reflecting the true social cost would be represented by some lower demand curve, say D2, and the government could compare gains and losses in determining whether or not to act.

However, such an analysis probably does not reflect reality. It is hard to conceive of an environmental risk created by the import of a GM product that would be contained solely within the product's direct market – remember this is not a direct risk arising from the consumption of the GM product but rather some environmental risk that has human health consequences. Thus, the health risk is likely to affect a wide range of consumers

who do not directly consume the GM product. Hence, in a modeling sense, it is more accurate to suggest that there is a cost associated with the environmental risk which cannot be shown on figure 2. We designate this cost to have a value of *z*.[283] As the demand curve has not shifted in figure 2, the public policy decision then is whether *z* is greater than $f + g + h + i$. The choice remains with the government of the importing country.

One suspects, however, that the environmental concerns among the citizenry[284] of importing countries relate to much wider issues pertaining to the natural environment. These perceived risks may often be speculative but worries about speculative risks still reduce consumers' utility – that is, they impose costs on consumers. Again, we define these costs as *z*. Again, the trade policy decision of the government is whether *z* is greater than area $f + g + h + i$ in figure 2.

In terms of whether a country can impose trade barriers in response to a broadly based environmental threat, the WTO has consistently said that it does not have competence in this area, nor does it want it.[285] It suggests that these types of questions need to be addressed by a multilateral environmental agreement. Implicitly, however, the WTO would probably suggest that the solution to the issue should not be found in trade measures but rather that the problem should be handled by dealing directly with the environmental externality. Trade remedies are almost always inferior to policies targeted directly to remove the environmental externality.[286]

[283] Such multi-market effects are somewhat antipathetic to the WTO's approach, which likes to contain discussions and analysis to "like product" markets. In antidumping cases there have been extensive disagreements, for example, about whether producers of beef cattle produce a "like product" to beef. See Kerr (1987) for a discussion of "like products".

[284] Up until now we have tended to lump those with an interest in the environment in with consumers. As environmental problems are likely to transcend the direct market for the GM product and not necessarily entail its consumption, the term *citizen* is deliberately used to differentiate those with concerns from those whose consumption is reflected on the demand curve in a market such as that depicted in figure 2.

[285] Kerr, W.A. (2001) The World Trade Organization and the Environment, in H.J. Michelmann, J. Rude, J. Stabler and G. Storey (eds) *Globalization and Agricultural Trade Policy*. Boulder: Lynn Rienner, pp. 53-65.

The problem with relying on MEAs to solve the problem is political. Governments have been unwilling to give MEAs enforcement powers or dispute settlement mechanisms. Hence, if two countries that are parties to an MEA have a disagreement over a GM product and one country imposes trade barriers to keep the product out of its market, whether or not the MEA has provisions for trade measures, the dispute is likely to end up at the WTO. This could either be because the MEA has no provision for trade remedies or because it has no dispute mechanism. The absence of clarity regarding the dominance of one international agreement over another discussed in the previous section further complicates the issue. The WTO can make rulings only on the basis of its existing mandate. If the precedent of the Tuna–Dolphin case is any indication, then the WTO would have to fall back on the TBT Agreement and would be caught in the usual problem of process versus product attributes. If the risk to the environment was process based, then labelling could not be justified. If there was no human health risk, a ban would not be allowed.

Even if the importing country won the case on the basis that the end product was different as a result of its genetic modification, only labelling could be justified. This does not seem sufficient because, if a true ecological risk existed, labelled imports would still represent an environmental risk. It seems clear, however, that the negative impacts tuna fishing methods have on dolphins had no bearing on the judgment in the Tuna–Dolphin case.

If a true ecological risk existed (i.e., if z were greater than $f + g + h + i$ in figure 2), a country would want the right to protect itself. Although there is no precedent, if a country went to the IPPC and received confirmation that there was a scientific justification for the perception of the ecological risk, even if the exporting country did not agree with the IPPC, then the importing country's ban on imports could be upheld under an Article

[286] Kerr, W.A. (2001) The World Trade Organization and the Environment, in H.J. Michelmann, J. Rude, J. Stabler and G. Storey (eds) *Globalization and Agricultural Trade Policy*. Boulder: Lynn Rienner, pp. 53-65.

XX(b) exemption.[287] Of course, all of this is prefaced on the dispute having evolved to the WTO either because of an unresolvable dispute at an MEA, or because an MEA did not exist to deal with the problem. If at all possible, the WTO wants such ecological issues dealt with by MEAs.

The BSP is an MEA that has been put in place to deal with a broad ecological issue – biodiversity. The BSP explicitly allows trade barriers to be put in place if there is a risk to the natural environment from the transboundary movement of LMOs. As long as countries agree about the risk there is no problem – trade barriers can be applied. The problem arises if there is a dispute. The BSP has no dispute settlement mechanism.

A disagreement could arise over the importing country's justification for managing the risk. There is no recourse to an international standards organization such as the IPPC in the BSP. Further, the precautionary principle applies, but is not defined. As a result, countries can apply a domestically defined precautionary principle. In the EU's case, for example, this allows non-scientific factors to be part of the decision – and allows the importer to always claim a large value for *z* if it is facing political pressure for protection. This leaves import policy wide open to the influence of those who wish to protect their acquisition of the benefits associated with area *e* in figure 2 and, hence, is unlikely to be acceptable to exporters. Currently, the only way to settle such a dispute is to take it to the WTO. The difficulties with using the WTO to solve these disputes have been discussed above.

One of the major difficulties with the existing system is that it does not allow for an explicit trade-off between benefits and costs. The risk procedures, particularly the precautionary principle applied by the EU, examine only risks – or potential costs. This biases the decision process. New technology imparts benefits as well as imposing costs. In cases where gathering sufficient scientific evidence regarding risks may take decades, the benefits forgone may be very large – for both society and those engaged in the

[287] Article XX (b) allows trade barriers to be put in place "to protect human, animal or plant life or health." It is interesting, however, that the U.S. chose not to use this route in the Tuna–Dolphin case.

research, development and production of biotechnology. Even in the case of the Codex, which until now has largely had to deal with questions of short duration (e.g., if I eat this tomato will I be sick by dinner time?) the human health questions now being asked by consumers relate to long-term effects (e.g., if I eat these GM tomatoes over 20 years will there be a build-up of some pathogen to toxic levels?). There may be no easy way to speed up the evaluation process but banning the use of the product for such a long period may also incur considerable costs in terms of benefits forgone. Similar long-term questions surround the environmental aspects of GM products. Decision processes that consider only costs without examining potential benefits, and which can be used to impose trade restrictions, will in the long run discourage investment in biotechnology and reduce global welfare.

In the end, what can be said about the WTO and the BSP as potential regulators of the products of biotechnology? Each reflects the bias of its political compromise. While the justification for trade barriers in the WTO is based on scientific principles, it fails to recognize that there may be other legitimate reasons for asking for protection aside from those of traditional commercial vested interests. As a result, the bias of the WTO is that it sees as its primary mission prevention of the capture of any mechanism that can be used to impose trade barriers by commercial vested interests (i.e., those that receive the benefits in area *e* in figure 2). This has been the primary mission since the GATT's inception. The Members are currently willing to overlook the losses of others who may be negatively affected by an open trading system if the primary mission can be accomplished.

The apparent bias of the BSP is that it wants to ensure that the potential losses associated with trade in biotechnology are not underestimated – in the case of human health, area $a + d + h + i$ in figure 2; for ethical concerns, area $a + d$; and for the environment, the value of z. To accomplish this, any constraints on political considerations in the decision to impose trade barriers (such as scientific justification) have been removed. No consideration of the threat of capture by commercial vested interests is included. The BSP is younger than the WTO, and its bias is probably understandable given the

Members of the WTO's unwillingness to address the issues raised by those who have concerns with biotechnology – whether related to human health, the environment or ethics. The proponents of the BSP are likely Group Y consumers or environmentalists worried about the size of *z*. Governments, however, were ultimately responsible for negotiating the BSP, and to allow it to have so many provisions that directly conflict with WTO commitments seems a prescription for future conflicts.[288]

IV.B. Comparison of Policy Instruments

There are three import policies made available to importing countries by both the WTO and the BSP. These are: (1) unlabelled import of GM products, (2) labelled import of GM products; and (3) an import ban. Explorations of the relative efficacy of the three policies have already been undertaken by Gaisford and Kerr[289] and Gaisford and Lau[290] and we will follow their approach in what follows. We will first compare an import ban on GM products with unlabelled imports of GM products. Figure 3, which depicts an importing country and follows from figure 2 in the previous section, will assist in making the comparison.

[288] Phillips, P.W.B. and Kerr, W. A. (2000) Alternative Paradigms – The WTO Versus the Biosafety Protocol for Trade in Genetically Modified Organisms, *Journal of World Trade*, 34 (4): 63-75.
[289] Gaisford, J.D. and Kerr, W.A. (2001) *Economic Analysis for International Trade Negotiations – The WTO and Agricultural Trade.* Cheltenham: Edward Elgar.
[290] Gaisford, J.D. and Lau, C. (2001) The Case For and Against Embargoes on Products of Biotechnology, *The Estey Centre Journal of International Law and Trade Policy*, 1 (1): 83-98.

Figure 3: Insert Here

PowerPoint File: Graphs for Isaac-Phillipson-Kerr.ppt

As in figure 2, the pre-technological-change market is comprised solely of non-GM products that are priced in the international market at Pw0. At Pw0, domestic producers supply Q1, and Q2 minus Q1 is imported. Consumer surplus is area $a + l + b + c + d + e + f$ and producer surplus is area $g + k$. Total welfare is $a + l + b + c + d + e + f + g + k$.

As in the previous section, assume that a new biotechnology to produce the same crop is licensed in exporting countries, but not in the importing country depicted in figure 3. Further assume that the GM crop entirely replaces non-GM production in the exporters' markets.[291] The technological change increases supplies available for export, driving prices down in the international market and leading to an increase in imports. However, if some consumers consider GM products inferior (Group Y), the demand curve will shift inward to D2. There is a positive price effect leading to an increase in welfare of $h + i + j$ but a decline in welfare of $a + c + e + f$. If $a + c + e + f > h + i + j$ then the country may want to consider an alternative import policy.

An import ban is the first policy alternative considered. An import ban closes the market to imports, moving the economy to a position of self-sufficiency. As imports of GM products no longer take place, the adverse quality effect does not arise and the relevant demand curve remains D0. The import embargo price is PE and the quantity produced and consumed domestically is QE.

The import embargo leads to a decrease in consumer surplus of area $b + c + d + e + f$ and an increase in producer surplus of $b + c$, leaving an unambiguous total welfare loss of area $d + e + f$. Hence, the embargo leaves the importing country worse off than it was in the absence of the technological change.

We can now directly compare the unlabelled import policy to the import embargo. Remember that the importing country may be worse off from allowing unlabelled imports if $a + c + e + f > h + i + j$. Thus the net welfare loss is $(h + i + j) - (a + c + e + f)$. In the

import ban case the welfare loss is $-(d + e + f)$. Hence, the unlabelled import policy is superior to the import ban if area $d + h + i + j > a + c$.[292] Of course, the import ban would be superior if $a + c > d + h + i + j$.

Figure 4 can be used to assess mandatory labelling of GM imports relative to an import ban. The starting point is the same – a period prior to the advent of the biotechnology in the exporting country. As there are no GM products, the left-hand non-GM market is the relevant market to examine. D0 represents domestic demand. Again, the international price for non-GM goods produced in either country is Pw0, domestic production is Q1, and imports equal Q2 minus Q1. Consumer surplus is $l + m + a + b + c + d + e + f + g + h + i$ and producer surplus is j, giving total welfare of $l + m + a + b + c + d + e + f + g + h + i + j$.

[291] This strong assumption is not needed if GM and non-GM crops are not segregated and identified in the exporting countries because, as importers cannot tell if the crop is GM or not, they will have to assume that all export shipments contain GM material. Hence, the assumption is only made for expositional purposes.
[292] Note, this is true because area $e + f$ is a loss incurred no matter which policy is put in place.

Figure 4: Insert Here

PowerPoint File: Graphs for Isaac-Phillipson-Kerr.ppt

If the new biotechnology is adopted in the exporting country and the importing country responds with an import ban, the price again rises to PE and the quantity produced and consumed domestically is QE. Total welfare is now $l + m + a + b + e + j$ (equivalent to $l + a + b + c + g + k$ in figure 3). The welfare loss associated with the import ban is $c + d + f + g + h + i$ (equivalent to $d + e + f$ in figure 3).

A mandatory labelling policy leads to what Gaisford and Lau[293] have termed a "separating equilibrium"[294] whereby consumers are now able to distinguish (separate) GM products from non-GM products when they make a purchase. Consumers in the importing country now have a choice of purchasing GM products in the segregated GM market (depicted in the right-hand panel of figure 4) or to continue to purchase domestically produced non-GM products in the same market (depicted in the left-hand panel, figure 4). The price in the GM market, PGM, is lower than the pre-technological-change price, Pw0, reflecting the technological cost advantage of GM production, but it is not as low as previous importing prices due to the costs of labelling and segregating now borne by the exporter.[295] Group Z consumers, who do not consider GM products inferior to non-GM products, will shift to the cheaper GM market. This shift of Group Z consumers leads to a decline in demand in the non-GM market leading to a shift inward of that demand curve. Group Y consumers now have a choice between lower-priced GM products and higher-priced non-GM products. The larger the gap between the non-GM and the GM price, the larger the number of Group Y consumers who will choose to purchase GM products (because the price differential is greater than the degree to which they consider GM crops to be inferior). In figure 4, D3 represents the demand curve for non-GM products given that the price of GM products is PGM, while D4 is the demand for GM products when the non-GM price is PNGM.

In the separating equilibrium, QNGM non-GM product is produced and consumed domestically at price PNGM, and QGM of imported GM product is consumed at price

[293] Gaisford, J.D. and Lau, C. (2001) The Case For and Against Embargoes on Products of Biotechnology, *The Estey Centre Journal of International Law and Trade Policy*, 1 (1): 83-98.
[294] As opposed to the "pooled" equilibrium that arises with unlabelled imports where consumers cannot distinguish (separate) GM from non-GM products when they make a purchase.

PGM. In this case the total welfare is $l + a + c + j$ (in the non-GM market) + k (in the GM market). PNGM exceeds PGM due to the perceived quality difference.

To assess the welfare effects of the labelling policy, start on demand curve D0 and increase the price to PNGM. The loss of consumer surplus is $e + f + g + h + i$, representing the adverse price effect on consumers.[296] Part of this, e, is transferred to producers, so the welfare loss due to the adverse price effect is $f + g + h + i$. Turning now to the GM market, with the price at PNGM in the non-GM market, the relevant demand curve is D4 and there is a gain of k – a beneficial new-product effect. Hence, whether total welfare in the importer's market rises or falls depends on the relative sizes of k and $-(f + g + h + i)$. If $k > -(f + g + h + i)$ then total welfare in the importing country rises. On the other hand, if the adverse price effect $-(f + g + h + i)$ is greater than the positive new-product effect, k, then total welfare falls.

We can now use figure 4 to compare the import ban with the policy of requiring the mandatory labelling of imported products. The final price in the case of the import ban is PE in the non-GM market while the price in the labelling case is PNGM. This lower price leads to a lower welfare loss in the non-GM market. The welfare loss in the labelling case is $f + g + h + i$ while in the import ban case it is $f + g + h + i + c + d$. Hence, the import ban is unambiguously inferior to mandatory labelling in the non-GM market by area $c + d$. Further, there is the positive new-product effect equal to k in the GM market that does not arise in the case of the import ban. Thus the mandatory labelling policy is unambiguously superior to the import ban by $c + d + k$. This is a strong result.

Other insights can be gleaned from figure 4. Consumers' right to know is often taken to mean that consumers will have a choice of products. Labelling is the method suggested to satisfy the CRTK. In figure 4, the lower the cost of imported GM products (i.e., the greater the price differential between PGM and PNGM), the further D3 shifts to the right. This is because the price differential pulls more and more Group Y consumers into the

[295] Note PGM must be less than the non-GM price – PNGM – or no one would purchase the GM product.

GM market as the price gain increasingly offsets additional marginal consumers' perceptions of the degree of GM inferiority. If the GM price is sufficiently low, D3 will shift far enough that it cuts the price axis on the GM market at a point below where the supply curve cuts the price axis. At this point, all domestic producers, who are only allowed to produce non-GM products, will have left the market. The only product in the market will be imported GM. The remaining Group Y consumers, who would not voluntarily switch to GM products, will have achieved their CRTK goal but will not have a choice. Ironically, it is these remaining Group Y consumers who have the strongest preferences for non-GM products (i.e., they consider GM products the most inferior, otherwise they would have switched to GM products due to the price differential) that will have lost their choice. They can be expected to lobby for an import ban because it will still allow them to have access to non-GM products even if the choice is limited for all other consumers. Given that they have the strongest objection to GM products, one might expect them to be members of activist groups.

It is interesting that until the point where all domestic suppliers of non-GM products exit the market, the lower the price of GM products, the better it is for those who have a strong preference for non-GM products. This is because the lower the price for GM products, the further the demand curve D3 shifts inward dragging the non-GM price down with it.

It should be noted, however, that while the import ban is inferior to mandatory labelling in providing total welfare, vested commercial interests will gain greater rents from an import ban than from a policy of mandatory labelling. In figure 4, producer surplus in the case of the mandatory labelling policy is $j + e$ while in the case of an import ban it is $j + e + a + b$, or superior by area $a + b$. If commercial interests have input into the policy formulation process, they can be expected to lobby for an import ban. This also may explain what are sometimes considered "unholy" alliances between producer groups and radical consumer groups who wish to have GM-products banned.

---

[296] Gaisford, J.D. and Lau, C. (2001) The Case For and Against Embargoes on Products of Biotechnology, *The Estey Centre Journal of International Law and Trade Policy*, 1 (1): 83-98.

Vested commercial interests also have an incentive to attempt to increase the cost for exporters of implementing a mandatory labelling regime. The higher the cost of the labelling scheme, the higher will be PGM – meaning fewer Group Y consumers will move from the non-GM market to the GM market and D3 will remain closer to D0. This raises PNGM and acts to increase producer surplus. This analysis suggests that the TBT provisions relating to the cost of implementing labelling schemes relative to the benefits they provide to consumers might be strengthened.

If an import ban is always inferior to mandatory labelling, what does this result imply for SPS Agreement import bans in cases of human health risks? Let us assume that a country was not allowed to have an import ban in the case of a genuine human health risk – a certainty. If this were the case in figure 4, if all consumers believed there was a significant health risk there would be no Group Z consumers. All consumers would be in Group Y. If the health risk was a certainty, all consumers would have a strong preference against the dangerous GM product and the demand curve would remain at D0. The labelling result would yield the same result as the import ban. Even if some consumers did not receive the information or would not believe it when they should, as long as they were few, D4 would cut the price access below PGM and there would be no GM products in the market. An import ban might be justified on the grounds that allowing free choice puts some “non-rational” consumers at risk. Economics has little to say about non-rational consumers.

If the health risk is not certain, then an argument can be made for a labelling policy on CRTK grounds. If it can be argued that consumers have a right to know because product information provides them the option of avoiding a product they perceive as more risky than domestic regulators perceive it to be, then the same argument can be made regarding allowing individuals the right to know and choose products where they believe there is less risk than do the domestic regulators. A similar argument can be made for labelling when no risk exists, because some individuals may in fact have an ethically based preference in favour of GM products.

Some further insights can be gleaned from figure 4. Thus far we have assumed that none of the costs of labelling and segregation are borne by the suppliers of non-GM products. Kerr[297] has argued that segregation costs are likely to fall disproportionally on the producers of non-GM products. Requiring the labelling of GM products is relatively simple for the producers of those products. They must label them and put in place systems that trace them along the supply chain but they do not have to put in place systems to prove that there has been no mixing of GM and non-GM products. Consumers do not care if products labelled GM are tainted with non-GM products. On the other hand, consumers will be concerned if products without the GM label contain GM material. Thus, firms that wish to sell products not labelled GM will have to put in place very expensive monitoring and segregation systems to ensure that their products are not contaminated with GM product.[298]

If the producers of non-GM products bear the costs of segregation, then the supply curve in the non-GM market in figure 4 shifts upward. This increases the non-GM price, PNGM, as well as the spread between PGM and PNGM. This will encourage more Group Y consumers to move to the GM market. The result is reduced welfare in the non-GM market and increased welfare in the GM market. If the supply shift is sufficiently large the price in the non-GM market may end up higher than with the import ban. In some cases it is even possible that the welfare loss would be higher with mandatory labelling.[299]

[297] Kerr, W.A. (1999b) Genetically Modified Organisms, Consumer Scepticism and Trade Law: Implications for the Organisation of International Supply Chains, *Supply Chain Management*, 4 (2): 67-74.
[298] Of course, it might be possible to attempt to force producers of GM products to ensure that none of their product escapes their supply chains. Given that producers of GM products have little incentive to do this there would have to be extensive monitoring of GM supply chains. This would still not be sufficient, however, to eliminate the costs of having segregated and secure supply chains for non-GM products as, ultimately, it is the sellers of non-GM products who will be blamed by consumers if the products they sell are tainted with GM products. Having both systems attempting to ensure that the non-GM system is not tainted would seem likely to be a wasteful duplication of effort.
[299] Gaisford, J.D. and Lau, C. (2001) The Case For and Against Embargoes on Products of Biotechnology, *The Estey Centre Journal of International Law and Trade Policy*, 1 (1): 83-98.

It is also possible that the exporting country may have some suppliers who wish to provide non-GM products for the importer's market if there is a mandatory labelling policy. The rise in the non-GM price from Pw0 to PNGM in figure 4 as a result of the labelling scheme could provide the incentive. Hence, some non-GM products could be expected to be available for import, albeit at a price higher than Pw0, reflecting the costs of segregating and certifying the product GM-free. According to Gaisford and Lau,[300] the likely availability of non-GM imports at a price below PE:

> … provides a strong argument for the continued dominance of mandatory licensing [labelling in our terms] even when the GMF [GM in our terms] market bears some of the supply chain separation costs associated with labelling policy (p. 98).

In terms of the effect on the exporter, they can be no worse off with a labelling policy than an import ban. An import ban means that product must be moved to the next best importing market. If the exporter can continue to export to the importer after assuming the costs of labelling and segregation, then it is better off than with the import ban. If the costs of segregating are such that the exporter is shut out of the importer's market, then the exporter is no worse off than if there is an import ban. Hence, the exporter would always prefer a labelling policy over an import ban. Even if the labelling policy means the exporter is shut out of the market today, this policy leaves open the possibility of exporting in the future if production costs or the costs of labelling can be reduced. An import ban does not provide this option.

The economic analysis thus suggests that the situation where an importing country has the option of implementing a mandatory labelling policy has much to recommend it. Of course this conclusion does not apply to environmental hazards, which extend beyond the imported product's market. These costs, *z*, cannot be prevented by labelling, and the

[300] Gaisford, J.D. and Lau, C. (2001) The Case For and Against Embargoes on Products of Biotechnology, *The Estey Centre Journal of International Law and Trade Policy*, 1 (1): 83-98.

correct policy option is to compare the value of *z* with the value of the welfare loss arising from the import ban (e.g., area $c + d + f + g + h + i$ in figure 4).

V. CONCLUSIONS: THE WAY FORWARD FOR CANADIAN TRADE POLICY

From an institutional perspective there are significant differences between the regulatory regimes of the World Trade Organization and the Biosafety Protocol, differences that are more likely to produce conflict than lead to the emergence of an internationally consistent regulatory regime for biotech products. In fact, from a legal perspective, the divergence is significant enough to create the possibility of a trade challenge to a multilateral environmental agreement. From an economic perspective, the regulatory disequilibrium and regulatory regionalism created by the emergence of these two conflicting regimes create welfare losses. The objective of this final section is to conclude the study by considering the way forward for Canadian biotechnology trade policy.

Canada is in a unique position with respect to the two regulatory regimes. It is a Member of the WTO and not only a signatory to the BSP but also host to the Secretariat of the Convention on Biological Diversity.[301] Of course, as a WTO Member, Canada must continue to respect the rights and obligations outlined under the various WTO agreements. Yet as a signatory to the BSP Canada must also – according to the Vienna Convention – comply with the "object and purpose" of the protocol even though it has not yet been ratified. As Canada tries to meet its obligations under both regimes, several problems emerge. How can Canada simultaneously comply with the product-based focus of the WTO and the process-based focus of the BSP? An important constraint is associated with regulatory resources. Pursuing both regulatory trajectories at the same time would require a significant amount of resources, and the level of resources dedicated to the traditional product-based focus in Canada is already under criticism.[302] Strictly from a government resource perspective it seems prudent for Canada to work towards a

[301] Located at the World Trade Centre, Montreal, Quebec, Canada.

reconciliation – if possible – between the two regimes. This need would be exacerbated in the event of a conflict between the two regimes. In such a case, Canada would have to choose which organization and which approach are more beneficial to follow: either the science-based, product focus of the WTO or the process- or technology-based focus of the BSP, which relies less on scientific justifications. A conflict like this would have symbolic repercussions; the international trade regime v. Mother Earth. Perhaps the most prudent approach for Canadian trade policy is to work to prevent such a conflict in the first place.

As the champion of the BSP, the first thing Canada must do is advocate limiting the protocol to the protection of conservation and sustainable development from the risks posed by living modified organisms only. Such a goal is entirely consistent with the overall objective of the protocol to develop an international regulatory floor for biotech products.[303] Limiting the protocol in this way would mean references to human health and socio-economic risks would be abandoned. The full weight of influence of the protocol must be brought to bear on the risks to environmental biodiversity and not be obfuscated by secondary concerns such as human health risks, which may in fact be better addressed elsewhere. Further, other issues such as socio-economic impacts, labelling and liability must be considered only in the context of environmental protection. For instance, labelling would be only an instrument used by those in the Party of Export to alert those in the Party of Import of the potential risk from the transboundary movement of a living modified organism; it would not be a consumer tool used to meet the consumers' right to know, as this issue has nothing to do with the protection of environmental biodiversity. Similarly, liability would refer only to the unintended release of an LMO in the Party of Import and not to the unintended presence of GMO material (adventitious contamination) in products destined for the market in the Party of Import.

---

[302] See Royal Society of Canada's Expert Panel on the Future of Foods from Biotechnology (http://www.rsc.ca/foodbiotechnology/GMreportEN.pdf)

[303] *BSP* Preamble: *Recalling* also decision II/5 of 17 November 1995 of the Conference of the Parties to the Convention to develop a Protocol on biosafety, specifically focusing on transboundary movement of any living modified organism resulting from modern biotechnology that may have adverse effect on the sustainable use of biological diversity ….

The latter is, again, an issue that has nothing to do with protecting environmental biodiversity.

Once the BSP has been refocused on environmental protection only, the Advance Informed Agreement (AIA) procedure must be more clearly specified to reduce ambiguity and to inject certainty and predictability into the procedure. This is not to suggest that the regulatory hurdles under the AIA procedure should be set low. In fact, to protect environmental biodiversity the regulatory floor may be set quite high, as long as it is operational and stable. Further, the regulations must focus on *actual* risk to environmental biodiversity and resist the pressures to regulate based on domestic risk perceptions. Actual environmental risks may be identified in two ways. One, the International Plant Protection Convention may have developed a phytosanitary standard for the particular LMO intended for environmental release. If no such standard exists, then the risk assessment conducted by the Party of Import as a step in the AIA procedure must be congruent with the scientific standards-setting approach supported by the IPPC. If the Party of Import could demonstrate an actual risk from the environmental release of a particular LMO, then the Party of Import would be free to take unilateral action to ban the importation of the LMO and this ban would be completely trade compliant under Article XX(b) of the WTO. That is, through the regulatory regime of the BSP, a Party of Import could establish a fully trade-compliant environmental protection measure.

This is an entirely desirable result with a win-win trade and environment outcome. The environmental benefit would be the establishment of a first-best regulatory floor, ensuring that biodiversity protection is the primary objective of a well-supported international protocol. The trade benefit would be the establishment of an agreement much like the SPS Agreement that identifies when countries may unilaterally impose trade barriers provided they have a scientific justification to do so. Furthermore, the Committee on Trade and the Environment of the WTO has recently argued that it would support such revisions to the BSP because it believes that an MEA is, in fact, the best

place to establish first-best policies for environmental protection.[304] Additionally, this approach avoids having the WTO decide which environmental protection regulatory approaches are the most trade compliant, as this task would reside with the more credible BSP.

If Canada does not champion the BSP and refocus the protocol to reflect these changes the potential benefits will be lost, conflicts between the two regimes will arise, and the demise of the BSP is sure to follow.

Even if changes are made to build a more effective BSP that is focused on minimizing the risks to environmental biodiversity from the transboundary movement of living modified organisms and more congruent with the international trade regime, an important trade policy issue remains: the consumers' right to know about the process by which a product was produced. In the case discussed in this research project, this refers to the right to know about the use of modern biotechnology techniques. However, this trade policy issue is in fact much broader than biotechnology and would also encompass the consumers' right to know about animal welfare (e.g., leg-hold traps, free-range chickens, etc.) or labour practices (e.g., child labour).

This trade policy issue emerges because in its attempts to encourage stable and predictable market access rules, the WTO has essentially drawn a line between safety-related measures (for which there are opportunities for Members to unilaterally ban trade in violation of the principle of non-discrimination) and non-safety-related measures (for which there are no legitimate grounds for a trade ban in violation of the PND). The problem is that according to this division, trade barriers that meet consumer demands for protectionism but are not supported with a scientific justification are non-compliant with the WTO even though they may be politically necessary in the domestic market.

---

[304] World Trade Organization (1999) Trade and the Environment: Special Studies 4. Geneva. The Appellate Body and the CTE have also made numerous such pronouncements of a more general nature. See, for example, the comments of the Appellate Body in Shrimp–Turtle Implementation, supra, note 206 at Paragraph 5.88 :

> In a context such as this, a multilateral agreement is clearly to be preferred.

The WTO has gone to great lengths to avoid dealing with the problems of social protectionism, but all that has happened is that the "social protectionists" have sought to attain the right to ban on non-safety, process grounds through other regulatory regimes. The result has been the emergence of regimes that are in conflict with the international trading system – such as the BSP! In this sense, it is time for the WTO to deal with such issues head-on.

The standard response from the Committee on Trade and the Environment and from recent dispute settlement panels at the WTO is that while such issues are relevant, they are perfect candidates for a market-oriented, voluntary labelling program such as an eco-label or a humane-label. The rationale is as follows. If consumer demand for the ability to avoid a certain process or production method in favour of alternative methods is truly strong, then the first-best policy is to encourage those firms employing the alternative methods to use a voluntary label to identify their products in the marketplace and capture this demand. Of course, there would have to be considerable research concerning which is the best labelling mechanism to use (first-party, second-party, or third-party);[305] however, the CTE argues that shifting the solution of this trade policy problem from a regulatory measure (a mandatory labelling strategy) to a voluntary, market-oriented measure is the most effective method for dealing with the non-safety process concerns that consumers may have in a manner congruent with the international trading system.[306]

Recent research that is worth further consideration suggests that the issue of process concerns unsubstantiated by scientific risk assessments should be dealt with through a separate agreement in the WTO that defers to a new international expert organization.[307]

---

[305] For a discussion on eco-labels see Isaac, G.E. and Woolcock, S.B. (1999a) Green Labels: Consumer Interests and Transatlantic Trade Tensions in Eco-labelling. Research Project for the Consumers International project "Support to Consumer Organisations in Promoting Sustainable Consumption".
[306] World Trade Organization (1999) Trade and the Environment: Special Studies 4. Geneva.
[307] Perdikis, N., Kerr, W.A. and Hobbs, J.E. (1999) Can WTO/GATT Agreements on Sanitary and Phytosanitary Measures and Technical Barriers to Trade be Renegotiated to Accommodate Agricultural Biotechnology? Paper presented at the NE-167 1999 conference "Transitions in Agbiotech: Economics of Strategy and Policy", Washington D.C., 24-25 June.

Successful negotiations to create such an agreement and corresponding organization would essentially internalize the problem of non-safety process concerns in the international trading system.

VI. REFERENCES

AgraFood Biotech (1999) No. 19: 8 December. London: AgraEurope Ltd.

Akerlof, G.A. (1970) The Market for Lemons: Quality Uncertainty and the Market Mechanism, *Quarterly Journal of Economics*, 84: 488-500.

Caldwell, D.J. (1998) The WTO Beef Hormone Ruling: An Analysis. Washington, DC: Community Nutrition Institute.

Cartagena Protocol on Biosafety to the Convention on Biological Diversity: Text and Annexes (2000) Montreal, Canada: The Secretariat of the Convention on Biological Diversity, (http://www.biodiv.org)

Codex Alimentarius Commission (CAC) (1999) Report of the 27th Session of the Codex Committee on Food Labelling Ottawa, Canada, 27-30 April. ALINORM 99/22A. Rome: FAO.

Codex Alimentarius Commission (CAC) (1997) Codex Alimentarius Commission Procedural Manual, 10th Edition. Articles 1(a) – (e). Rome: FAO.

Codex Alimentarius Commission (CAC) (1996) Report of the Twelfth Session of the Codex Committee on General Principles, Paris, France, 23-26 November. ALINORM 97/33. Rome: FAO.

Codex Alimentarius Commission (CAC) (1995) Report of the 21st Session, Rome, 3-7 July. ALINORM 95/37 Appendix 2. Rome: FAO.

Codex Executive Committee (CEC) (1996) Risk Analysis in Codex Work: Progress Report for Consideration of the 43rd Session of the Codex Executive Committee, Geneva, 4-7 June. CX/EXEC 96/43/6. Rome: FAO.

Codex Secretariat (1999) Report of the 14th Session of the Codex Committee on General Principles, Paris, 13-19 April. CX/GP 99/7. Rome: FAO.

Codex Secretariat (1993) Codex Medium-Term Programme of Work 1993-98 Codex. ALINORM 93/40 Paragraphs 75-79, App. III. Rome: FAO.

Consumers' International CI (1999a) Statement of Julian Edwards, Director General of Consumers International, to the CCFL, 28 April, Ottawa. www.oneworld.org/consumers//campaigns/food/codex/julian0499.html.

Food and Agricultural Organisation (FAO) (1998) Understanding the Codex Alimentarius: Origins of the Codex Alimentarius (www.fao.org/docrep/w9114e/W9114e01htm).

Food and Agricultural Organisation (FAO)/World Health Organisation (WHO) (1995) Expert Consultation on the Application of Risk Analysis to Food Standards Issues. WHO/FNU/FOS 95.3, 13-17 March.

Food and Agricultural Organisation (FAO)/World Health Organisation (WHO) (1950) Report of the First Meeting of the Joint FAO/WHO Expert Committee on Nutrition, 1950.

Frawley, J.P. (1987) Codex Alimentarius – Food Safety – Pesticides. *Food Drug Cosmetic L.J.* 42:168.

Gaisford, J.D., Hobbs, J.E., Kerr, W.A., Perdikis, N. and Plunkett, M.D. (2001) *The Economics of Biotechnology*. Cheltenham: Edward Elgar.

Gaisford, J.D. and Kerr, W.A. (2001) *Economic Analysis for International Trade Negotiations – The WTO and Agricultural Trade*. Cheltenham: Edward Elgar.

Gaisford, J.D. and Lau, C. (2001) The Case For and Against Embargoes on Products of Biotechnology, *The Estey Centre Journal of International Law and Trade Policy*, 1 (1): 83-98.

Gilpin, R. (2000) *Global Political Economy*. Princeton University Press.

Gordon, D.V., Hannesson, R. and Kerr, W.A. (2001) Of Fish and Whales: The Credibility of Threats in International Trade Disputes, *Journal of Policy Modeling*, 23 (1): 83-98.

Grimwade, N. (1996) *International Trade Policy: A Contemporary Analysis.* London: Routledge.

Ho, M.-W. (2000) *Genetic Engineering: Dream or Nightmare?* Continuum Press.

Horton, L. (1997) International Harmonisation of Food and Veterinary Medicine Regulation. *Fundamentals of Law and Regulation*, pp. 381-483.

Houston, D.L. (1987) Codex Alimentarius Commission: 25 Years of Fair Trade and Consumer Protection 42 *Food Drug Cosmetic L.J.* 42: 163-64.

IISD (International Institute for Sustainable Development) (2000) Report of the Resumed Session of the Extraordinary Meeting of the Conference of the Parties for the Adoption of the Protocol on Biosafety to the Convention on Biological Diversity: 24-28 January 2000. *Earth Negotiations Bulletin* 9(137) (www.iisd.ca/biodiv/)

Isaac, G.E. (2002) *Agricultural Biotechnology and Transatlantic Trade: Regulatory Barriers to GM Crops*. Oxon, UK: CAB International Publishers.

Isaac, G.E. (2001a) International Trade and Citizen Engagement: Transparency and Participation in Canada's Trade Negotiation Process. Estey Centre for Law and Economics in International Trade. For Department of Foreign Affairs and International Trade (DFAIT), Government of Canada.

Isaac, G.E. and Kerr, W.A. (2001b) GMOs and International Trade. Paper presented at the Canadian Bar Association Annual Conference, Saskatoon, Canada, 14 August.

Isaac, G.E. and Phillips, P.W.B. (1999a) The Biosafety Protocol and International Trade in Transgenic Canola: An Economic Assessment of the Impact on Canada. Paper presented at the NE-167 1999 conference "Transitions in Agbiotech: Economics of Strategy and Policy", Washington D.C., 24-25 June.

Isaac, G.E. and Woolcock, S. B. (1999b) Food Safety and Trade Policy: Agricultural Biotechnology Issues. London: Consumers' Association.

Isaac, G.E. and Woolcock, S.B. (1999c) Green Labels: Consumer Interests and Transatlantic Trade Tensions in Ecolabelling. Research Project for the Consumers International project "Support to Consumer Organisations in Promoting Sustainable Consumption".

Jovanovic, M.N. (1998) *International Economic Integration: Limits and Prospects.* London: Routledge.

Kerr, W.A. (2001) The World Trade Organization and the Environment, in H.J. Michelmann, J. Rude, J. Stabler and G. Storey (eds) *Globalization and Agricultural Trade Policy*. Boulder: Lynn Rienner, pp. 53-65.

Kerr, W.A. and Hobbs, J.E. (2000) *The WTO and the Dispute Over Beef Produced Using Growth Hormones*, CATRN Paper 2000-07, Canadian Agrifood Trade Research Network, http://www.eru.ulaval.ca/catrn/beef.pdf.

Kerr, W.A. (1999a) International Trade in Transgenic Food Products: A New Focus for Agricultural Disputes, *The World Economy*, 22 (2): 245-259.

Kerr, W.A. (1999b) Genetically Modified Organisms, Consumer Scepticism and Trade Law: Implications for the Organisation of International Supply Chains, *Supply Chain Management*, 4 (2): 67-74.

Kerr, W. (1987) The Recent Findings of the Canadian Import Tribunal Regarding Beef Originating in the European Community, *Journal of World Trade Law* 21 (5): 55-65.

Kerr, W.A. and Perdikis, N. (1995) *The Economics of International Business*. London: Chapman and Hall.

Lipsey, R.G. (1988) Sovereignty: Culturally, Economically and Socially. In: Crispo, J. (ed.) *Free Trade – The Real Story*. Toronto: Gage, pp. 148 – 160.

McHughen, A. (2000) *Pandora's Picnic Basket.* Oxford University Press.

Mulongoy, K. (1997) Different Perspectives on the International Biosafety Protocol. *Biotechnology and Development Monitor* 30. The Hague, Netherlands.

National Academy of Sciences (NAS) Committee on the Institutional Means for Assessment of Risks to Public Health, Commission of Life Sciences (1983) Risk Assessment in the Federal Government: Managing the Process. Washington D.C.: National Research Council, National Academy Press.

Organization for Economic Cooperation and Development (1997) Processes and Production Methods (PPMs): Conceptual Framework and Considerations on the Use of PPM-Based Trade Measures. OECD/GD(97)/37. Paris.

Perdikis, N. and Kerr, W.A. (1999) Can Consumer-based Demands for Protection be Incorporated in the WTO? – The Case of Genetically Modified Foods, *Canadian Journal of Agricultural Economics*, 47 (4): 457-465.

Perdikis, N., Kerr, W.A. and Hobbs, J.E. (1999) Can WTO/GATT Agreements on Sanitary and Phyto-Sanitary Measures and Technical Barriers to Trade be Renegotiated to Accommodate Agricultural Biotechnology? Paper presented at the NE-167 1999 conference "Transitions in Agbiotech: Economics of Strategy and Policy", Washington D.C., 24-25 June.

Phillips, P.W.B. and Kerr, W. A. (2000) Alternative Paradigms – The WTO Versus the Biosafety Protocol for trade in Genetically Modified Organisms, *Journal of World Trade*, 34 (4): 63-75

Phillips, P.W.B. (1991) *Wheat, Europe and the GATT.* London: Pinter Publishers.

Roberts, D., Josling, T., and Orden, D. (1999) A Framework for Analyzing Technical Trade Barriers in Agricultural Markets. Market and Economics Division, Economic Research Service, US Department of Agriculture. Technical Bulletin No. 1876.

Royal Society of Canada's Expert Panel on the Future of Foods from Biotechnology (http://www.rsc.ca/foodbiotechnology/GMreportEN.pdf)

Strange, S. (1988) *States and Markets.* London: Pinter Publishers.

Swanson, T. (1997) *Global Action for Biodiversity*. London: Earthscan Publications Ltd.

World Health Organisation (WHO)/Food and Agriculture Organisation (FAO) (1991) Strategies for Assessing the Safety of Foods Produced Through Biotechnology.

World Trade Organization (1999) Trade and the Environment: Special Studies 4. Geneva.

World Trade Organization (1995) *Regionalism and the World Trading System*. Geneva: WTO Secretariat.

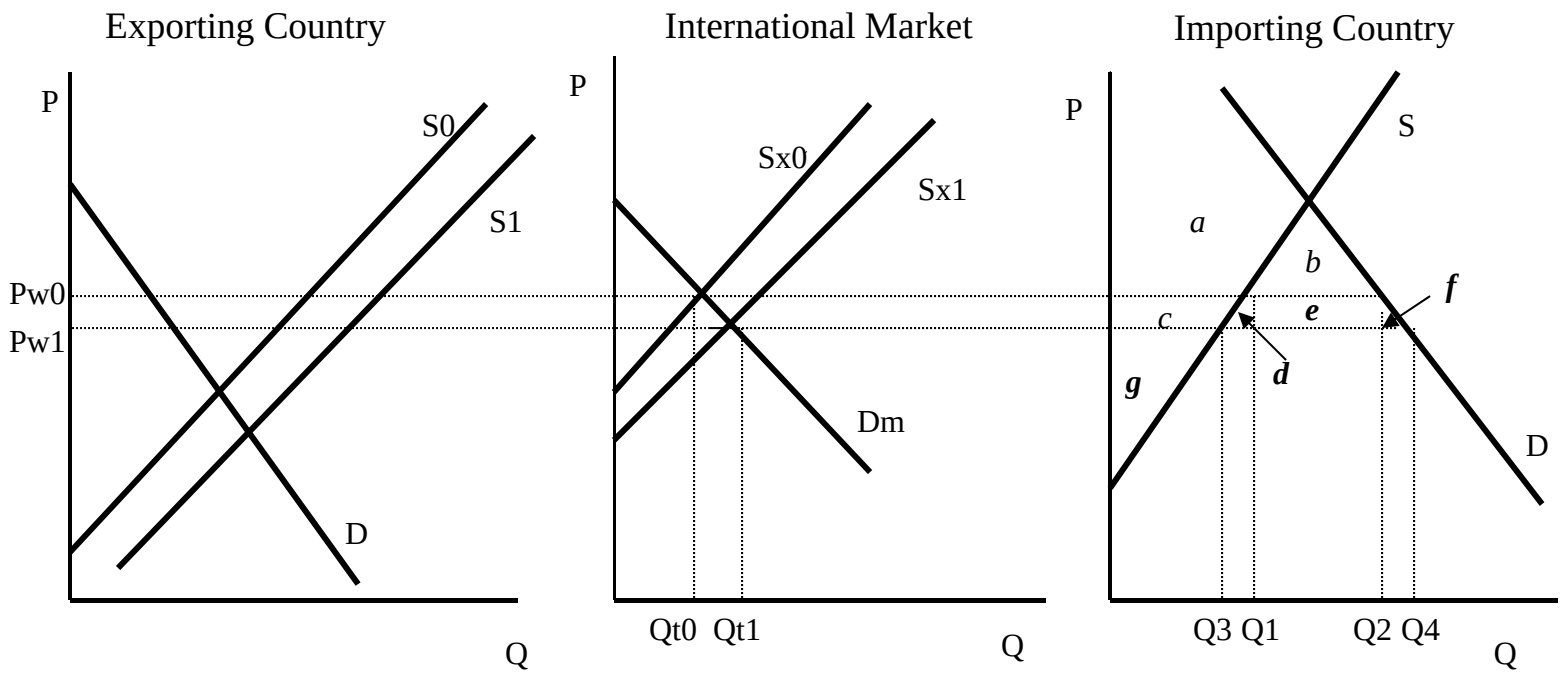

FIGURE 1: Technological Change and International Trade

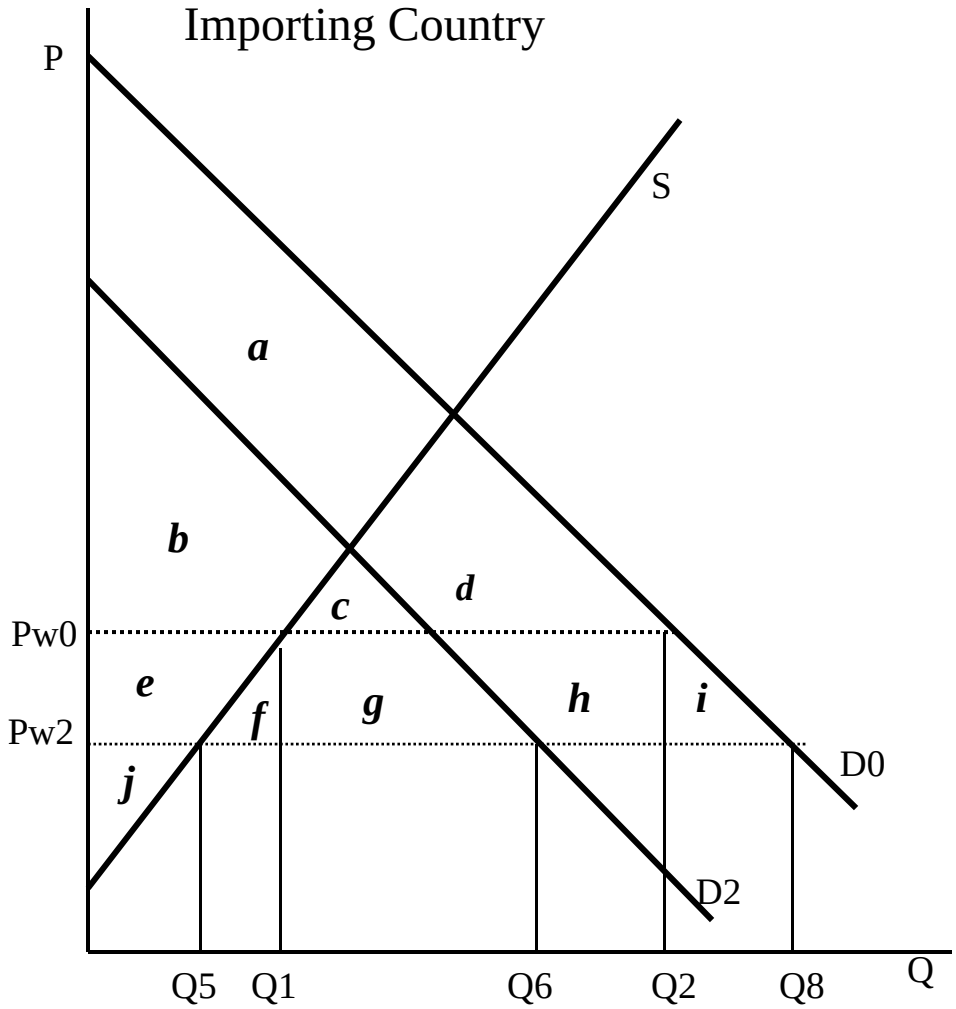

FIGURE 2: Biotechnology and the Consumer

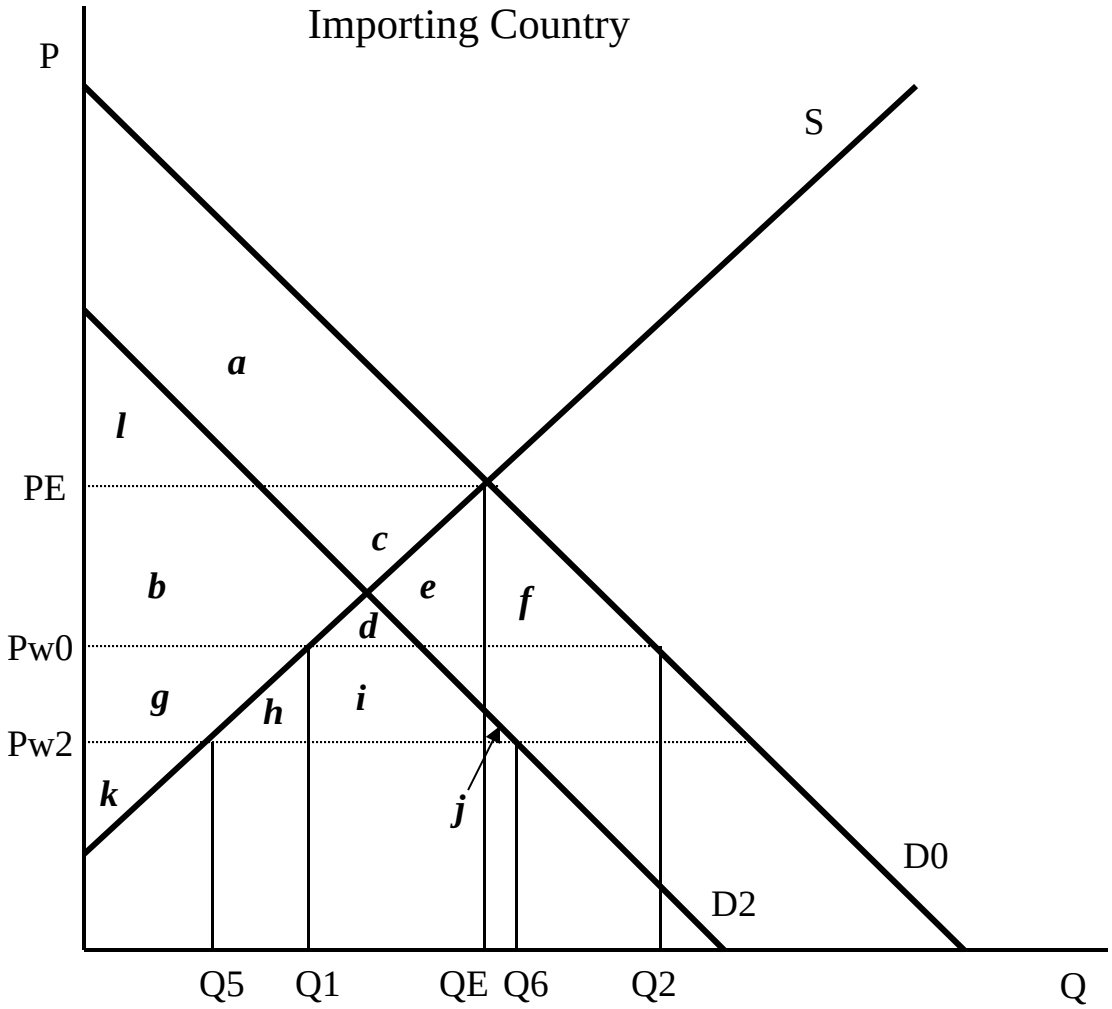

FIGURE 3: An Import Ban Versus Free Imports of GM Products

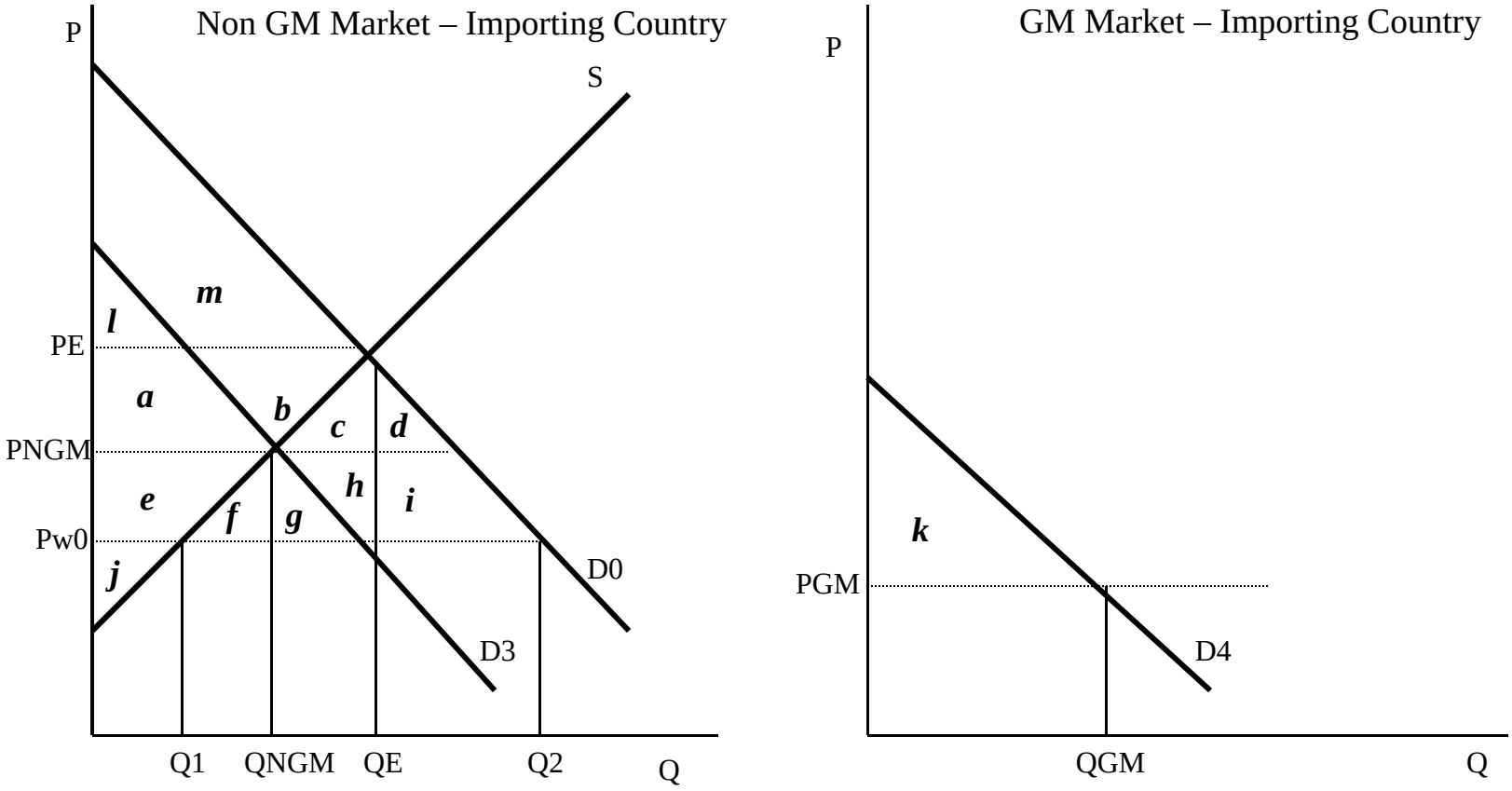

FIGURE 4: Import Ban Versus Labelled GM Imports