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碩士論文

WTO 爭端解決小組就 GMO 爭議之裁決分析-以 SPS Agreement 第 2.2 條、第 5.1 條及第 5.7 條之解釋及適用為主

An Analysis of the WTO Panel Ruling on GMO Dispute -- *Focusing on the Interpretation and Application of Articles 2.2, 5.1 and 5.7 of the SPS Agreement*

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Abstract

The transboundary movement of Genetic Modified Organisms (GMOs) has become a focal point of the international community. The management of and control over GMOs involves huge economic interests and the protection of the environment and public health. In 2003, the World Trade Organization (WTO), at the request of GMOs-producing countries, established a Panel to adjudicate the consistency of European Community State Members' restriction on trade of GMO products with the WTO rules. Given the high controversy and sensitivity of the dispute, the Panel had conducted a very lengthy deliberation and finally reached a conclusion in September of 2006. This Article aims to analyze the legal reasoning of the decision, focusing on how the tribunal interpreted and applied certain critical provisions governing the dispute. It is found that this ruling took a rigid stand on the justification of applying trade restrictions on GMOs, although the right of WTO members to protect national health has been fairly reaffirmed.

Keywords: GMOs, WTO, Panel Report, SPS Agreement, Scientific Evidence, Risk Assessment

摘要

基因改良（Genetic Modified Organisms (GMOs)）的蓬勃發展以及其跨國貿易的興盛，引發了世界貿易組織會員國間之貿易紛爭。GMOs 管制之複雜性在於其涉及龐大的經濟商機以及對環境及公共健康保護的公共利益，如何在貿易自由化以及此等非經濟的公共利益間取得平衡，乃近年來重要的國際貿易議題。西元 2003 年間，世界貿易組織在 GMOs 生產國之請求下，成立爭端解決小組（Panel）負責裁決有關歐洲共同體（European Community）及其會員國就基因改良產品所採取之影響貿易之管理措施是否符合世界貿易組織相關規定之爭端。由於該爭端之複雜性及高度爭議性，爭端解決小組進行了相當長的程序，費時三年多，始於西元 2006 年六月完成其報告。本文擬從本案之法律層面分析爭端解決小組之報告對於 GMOs 管制於世界貿易組織下之合法性，尤其側重於 WTO Agreement on the Application of Sanitary and Phytosanitary Measures 相關條文之解釋與適用。本文觀察到爭端解決小組雖然再次肯認會員國採取措施以保障環境及公共健康的權利，但其對於相關貿易限制措施之實施仍給予相當嚴格之檢視。

關鍵字：GMOs、世界貿易組織、爭端解決小組報告、SPS Agreement、風險評估（risk assessment）。

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I. INTRODUCTION

Genetic Modified Organisms (GMOs) are defined by the World Health Organization (WHO) as "organisms in which the genetic material (DNA) has been altered in a way that does not occur naturally."[1] The initial objective of developing GMOs was to improve crop production so as to increase the yields. Following decades of development, GMOs have been applied in a variety of ways, including for industrial or medical uses. Although GMOs have become increasingly popular in our daily life, there are also growing concerns on the safety and health of the organisms.

Given the limitation or the lack of definite scientific evidence over the safety of GMOs, countries adopt different approaches over the management of GMOs. The United States (U.S.), the largest producer of GM foods,[2] holds an open mind towards the production of GM foods[3] and enacts scant laws on the control of GMOs.[4] On

[1] *See* WHO, 20 questions on genetically modified foods, *available at* http://www.who.int/foodsafety/publications/biotech/20questions/en/ (last visited March 1, 2009).

[2] The U.S. accounted for fifty-four percent of global planted GM crops in 2006. *See* Debra M. Strauss, *Feast or Famine: The Impact of the WTO Decision Favoring the U.S. Biotechnology Industry in the EU Ban of Genetically Modified Foods*, 45 AM. BUS. L. J. 775, 778 (2008).

[3] For an examination of the U.S. pro-GMO policy, *see* Alison Peck, *The New Imperialism: Toward an Advocacy Strategy for GMO Accountability*, 21 GEO. INT'L ENVTL. L. REV. 37, 48-57 (2008).

[4] It is explained that the U.S. laws appear relatively lax in comparison to EU and international law on GMOs. *See* Debra M. Strauss, *The International Regulation of Genetically Modified Organisms: Importing Caution into the U.S. Food Supply*, 61 FOOD & DRUG L. J. 167, 176-89 (2006).

the contrary, European countries are generally skeptical to the safety of the products, adopting stricter regulations on the approval and marketing of the foods.[5]

The volcano of dispute finally erupted in 2003 as the World Trade Organization (WTO) started to adjudicate a trade dispute regarding the restriction on GMOs. The quarrel is among U.S., Canada, Argentina (hereinafter named the "Complaining Parties") and the European Communities ("EC") (the "Responding Party") on certain measures taken by the latter and its members. The U.S., Canada, and Argentina, in aggregate, account for 99% of the total production of GM foods.[6] GM food sales are forecasted to reach US$25 billion by 2010.[7] This figure reflects how huge economic interests would be generated in the production of GMOs, and may explain why these three countries were angered by the EC's trade measures. It is doubtless that the WTO Dispute Settlement Body's (the "DSB") ruling on this dispute will be highly significant and might have great influence not only on international trade but also on the protection of the environment and public health. How these competing interests will and shall be addressed under the WTO regime has become the toughest question for the panelists as it is mandated by the preamble of the Marrakesh Agreement

[5] *Id.*; *see also* Nick Covelli & Viktor Hohots, *The Health Regulation of Biotech Foods Under the WTO Agreements*, 6 J. IN'T ECON. L. 773, 773-74 (2003).

[6] Peter W. B. Phillips & W. A. Kerr, *Alternative Paradigms: The WTO versus the Biosafety Protocol for Trade in Genetically Modified Organisms*, 34 J. World Trade 63 (2000).

[7] *Id.*

Establishing the World Trade Organization explicitly requiring the sustainable development and protection and preservation of environment when pursing the expansion of international trade[8] and as these public policy motivated measures touch upon the most sensitive nerves on the international agreements, i.e. state sovereignty to pursue pubic interest.

The DSB Panel, at the request of the Complaining Parties, was established on August 29, 2003. On account of the complexity and intense controversy over the case, the Panel, not surprisingly, fell behind its schedule.[9] A final Panel decision was not circulated to the Members until September 29, 2006,[10] more than three years after the formation of the Panel.

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[8] According to the first paragraph of the preamble of the Marrakesh Agreement Establishing the World Trade Organization (the "*Marrakesh Agreement*"), the Parties to the Agreement, recognizing that their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and *expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment* and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development [emphasis added]. The legal texts of the Marrakesh Agreement is available on the website of WTO, http://www.wto.org/english/docs_e/legal_e/04-wto_e.htm (last visited on June 17, 2010).

[9] *See* Strauss, *supra* note 4, at 785-86.

[10] Panel Report, European Communities – Measures Affecting the Approval and Marketing of Biotech Products, WT/DS291/R, WT/DS292/R, & WT/DS293/R, para. 2.1 (Sept. 29, 2006) (adopted Nov. 21, 2006) [hereinafter *EC–Biotech Products*].

This dispute concerned two distinct matters: (1) the operation and application by the EC of its regime for approval of biotech products; and (2) certain measures adopted and maintained by EC Member States in prohibiting or restricting the marketing of biotech products.[11]

Although both issues are critical to the future of biotechnology industry, this Article will focus on the second issue in which the Panel provides a thorough analysis on the interpretation and application of the Agreement on Sanitary and Phytosanitary Measures (the "SPS Agreement"), especially Articles 2.2, 5.1 and 5.7 thereof. This GMO case was not the first decision that addressed the application of these provisions. Previous WTO Appellate Body Reports had tried to untangle the complicated relationship among these three provisions.[12] It was, however, worth observing whether the Panel would follow previous Appellate Body decisions or would provide a more convincing ruling on the issues under dispute.

The interpretation of Articles 2.2, 5.1 and 5.7 of the SPS Agreement is crucial because these three articles form the core rights and obligations of Members to take a SPS measure. Article 2.2 requires SPS measures, among other requirements, be taken based on scientific principles and is not maintained without sufficient scientific

[11] *Id*. para. 2.1.

[12] *See e.g.*, *Japan–Apples*, *infra* note 75, *EC-Tariff Preferences*, *infra* note 80, *EC–Hormones*, *infra* note 18, *Japan-Agriculture II*, *infra* note 87.

evidence, except as provided for in paragraph 7 of Article 5 of the SPS Agreement. Article 5.1 requires a measure to be based on an assessment. Article 5.7 provides SPS measures a Member may adopt in case where relevant scientific is insufficient and the requirement thereof. The relationship of the application of Articles 2.2, 5.1 and 5.7 determine the scope of the rights on Members to take SPS measures, in other words, it addresses to what extent of right the Member is accorded to adopt necessary measures to address its public interest concerns. To address this issue, this Article is aimed to clarify the nature of the Article 5.7 of the SPS Agreement, is it a right or an exception from Articles 2.2 and 5.1? This issue is not only of substantively significanct but also procedurally crucial because also affects the distribution of burden of proof when Article 5.7 is invoked. After addressing this fundamental issue, we would like to focus on the interpretation of the threshold element of the Article 5.7 regarding the determination of sufficiency of scientific evidence, including but not limited to (a) relevance of appropriate level of sanitary or phytosanitary protection with the risk assessment and (b) time at which the sufficiency of relevant scientific evidence to be assessed. Lastly, we would like also to draw the attention to the review of order of these three articles and to explore what the implication is behind such order and how this might affect the implementation of recommendation where a disputed measure found inconsistent with Article 5.7 of the SPS Agreement.

In addition, we also like to address another fundamental issue regarding the definition of the SPS measure and the appropriate scope of the SPS Agreement as it determines the applicability of the SPS Agreement to the present dispute on GMOs regulations.

Given the nine measures in dispute were all based on the same Directive of the EC, there is no need to review all of these measures for the purpose of the legal discussion of aforementioned provisions of the SPS Agreement. This Article therefore selects the measure taken by Austria on T25 maize (thereinafter the "*Austria-T25*") as a model to discuss relevant issues.

Before going into examination of the measures at issue and the focus on the SPS Agreement, this Article, will first take an overview of the relevant rules of the WTO covered agreements with the regulations on the GMOs. To have a better understanding of the GMOs regulations under the WTO regime, it is necessary to have an overview first of what the relevant WTO covered agreements are and how these rules interact with each other before going to review and analyze how WTO Panel interpret a specific agreement of WTO covered agreements. In part III, this Article will introduce the safeguard measure at issue. Part IV reviews the Panel's decision on whether the measure at issue should be covered by the SPS Agreement. Part V examines the relationship among relevant SPS Agreement provisions. This Article then proceeds to analyze the consistency of the disputed measure with the SPS

Agreement in light of the Panel's ruling in Part VI. The analysis includes the legal interpretation of the applicable provisions and how the Panel applied them to this instant case. The last part offers a conclusion. In addition, following the Panel's decision, a dispute between U.S., Canada and EC concerning the continued suspension of obligations in the EC-Hormones Dispute (hereinafter "*United States – Continued Suspension of Obligations in the EC – Hormones Dispute*") was brought to the WTO DSB. In that case, Articles 5.2 and 5.7 of the SPS Agreement remain the core issues under dispute. The decisions of the Panel and the Appellate Body thereof shed some lights on how the Panel report of the present case influence on the subsequent decisions of the WTO DSB. Therefore, in this Article, we will refer to them where relevant and appropriate.

Part of this Article is based on an previous draft of this Article, which was co-authored by Hui-chih Chen, the author of this Article, and Associate Professor of Law, Kuei-Jung Ni of Institute of Technology Law, National Chiao Tung University and was published in the Journal of International Biotechnology Law, Volume 6 (2) (2009). The main difference and development of this Article from its aforementioned version is the further analysis of the implication of the Panel's approach of interpretation of Articles 2.2, 5.1 and 5.7 of the SPS Agreement, including (1) the newly-added Section II discussing the rules under WTO regime

relevant to the GMOs regulations, especially the appropriate ambit of SPS Agreement; (2) the newly-added Section IV(D) further elaborating on implication of the broad interpretation of SPS measure by the Panel in *EC-Biotech Products*; (3) the newly-added Section V(C) discussing the implication and reviewing the Panel's approach of the relationship among Articles 2.2, 5.1 and 5.7 of the SPS Agreement.

II. RULES UNDER WTO LAW REGIME RELEVANT TO GMOS REGULATIONS

In addition to the most generally applicable General Agreement on Tariffs and Trade 1994 (the "*GATT 1994*"), SPS Agreement and Agreement on Technical Barriers to Trade (the "TBT Agreement") are the other two WTO covered agreement relevant to the GMO disputes. The SPS Agreement and TBT Agreement, though prominent in an era where non-tariffs trade barriers become the signal for many trade disputes,[13] the clarification on the interpretation and application thereof are in extreme need.

Non-tariffs trade barriers on trade have become the core issue of trade regulations for WTO members. WTO, with its primary goal to facilitate the free trade, has transferred its focus from reduction of tariffs to non-tariffs barriers as the tariff reduction of its members are on track while difference and disagreements of WTO members on their non-tariffs measures which are designed to address specific

[13] There are 37 cases citing SPS Agreement and 41 cases citing TBT Agreement as one of the legal bases of the complainant under the WTO dispute settlement mechanism. To be more specifically, during the past two years (for the purpose of this argument, means the period from June 2008 to June 2010), there are six cases citing SPS Agreement as one of the legal bases of the complainant (they are DS 384, DS 386, DS 389, DS 391, DS 392 and DS 406) and there are seven cases citing TBT Agreement (they are DS 381, DS 384, DS 386, DS 389, DS 400, DS 401 and DS 406) among the 34 cases in aggregate according to the information of disputes provided by the WTO website, available at http://www.wto.org/english/tratop_e/dispu_e/dispu_status_e.htm (last visited on June 17, 2010).

risks (such as health protection, environmental protections etc.), arises,[14] which resulted in the negotiation and enactment of the SPS Agreement and the TBT Agreement in the Uruguay round of trade negotiations.

The primary issue confronted by every panel is whether SPS Agreement applies in a case where SPS Agreement, TBT Agreement and GATT 1994 might be involved. This issue determines not only which agreement shall apply but further has implication on the level of the deference the respondent member is given in taking the specific non-tariff trade measure. To address this issue, this paper will first examine the inter-relationship between these three agreements according to the provisions thereof, then going further to give a close look at the legitimate purposes and the elements of the SPS measure, TBT measure the general exception measures under GATT respectively, concluded by the implication of the scope of the application of the SPS Agreement.

A. INTER-RELATIONSHIP BETWEEN SPS AGREEMENT, TBT AGREEMENT AND GATT 1994

TBT Agreement applies to where SPS Agreement does not apply according to Article 1.5 of the TBT Agreement, which provides that the provisions of this

[14] *See* MARK A. POLLACK & GREGORY C. SHAFFER, WHEN COOPERATION FAILS, THE INTERNATIONAL LAW AND POLITICS OF GENETICALLY MODIFIED FOODS, 146 (2009).

Agreement (i.e. the TBT Agreement) do not apply to sanitary and phytosanitary measures as defined in Annex A of the Agreement on the Application of Sanitary and Phytosanitary Measures. However, Article 1.5 of the TBT Agreement is not as clear as it looks like, especially in the circumstances where both SPS objective and non-SPS objective are embodied in a single measure. Panel in the *EC-Biotech Products* encountered the issue that whether a law, or a requirement contained therein, may be deemed to embody an SPS measure as well as a non-SPS measure.[15] This issue is especially significant in the implementation of recommendation.[16] If yes, then such single act, which is found inconsistent with SPS Agreement but consistent with TBT Agreement, might be maintained under the TBT Agreement while the responding member is still obliged to bring the underlying measure into consistency with the SPS Agreement. On the contrary, if the answer is no, then such single act, once found inconsistent with the SPS Agreement, might not be maintained anymore in order to be consistent with SPS Agreement even if it is possibly TBT consistent.

The Panel, after conducting its analysis by using a hypothetical example, found that

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[15] Panel Report, *EC-Biotech Products*, *supra* note 10, paras. 7.150-7.174.

[16] EC in the *EC-Biotech Products* also pointed out the significance of this issue from the perspective of the implementation of recommendation, *see* Panel Report, *EC-Biotech Products*, *supra* note 10, para. 7.153.

> we consider that to the extent the requirement in the consolidated law is applied for one of the purposes enumerated in Annex A(1), it may be properly viewed as a measure which falls to be assessed under the *SPS Agreement*; to the extent it is applied for a purpose which is not covered by Annex A(1), it may be viewed as a separate measure which falls to be assessed under a WTO agreement other than the *SPS Agreement*. It is important to stress, however, that our view is premised on the circumstance that the requirement at issue could be split up into two separate requirements which would be identical to the requirement at issue, and which would have an autonomous raison d'être, *i.e.*, a different purpose which would provide an independent basis for imposing the requirement.[17]

Under the Panel's approach, the application of the TBT Agreement and the SPS Agreement to a disputed measure would be not necessarily exclusive. Without further commenting on the Panel's opinion on this issue, we would like to make a remark that the ambit of SPS Agreement against TBT Agreement still matters even after *EC-Biotech Products*. Under such approach of the Panel, the significance of Article 1.5 of the TBT Agreement would lie on the prevention of duplicate application of the requirement of TBT Agreement and SPS Agreement where these two agreements are overlapped (Article 1.5 of the TBT Agreement would be meaningless

[17] *Id*.. para. 7.165.

where TBT Agreement and SPS Agreement do not overlap because in such circumstances, these two agreements do not concurrently apply). The broader the purposes of the SPS measure are construed, the greater chances the TBT Agreement and the SPS Agreement will overlap. To the extent of the overlap of these two agreements, SPS Agreement will still exclude the application of TBT Agreement, which manifests the importance the appropriate ambit of SPS Agreement.

The relationship between SPS Agreement and GATT 1994 is provided in the SPS Agreement and further elaborated by the Panel in the *EC Measures Concerning Meat and Meat Product (Hormones)* (the "*EC Hormones*")[18] which clarified the independent application of the SPS Agreement without a requirement of the existence of a GATT 1994 violation first and the sequence of review of a specific measure's compliance with SPS Agreement and GATT respectively.[19]

The last paragraph of the preamble of the SPS Agreement first address this issue by stating that "Members *Desiring* therefore to elaborate rules for the application of

[18] *See* Panel Report-*EC-Hormones*, WT/DS48/R/CAN, paras. 8.34-8.44, circulated to all Members on August 18, 1997 and was then appealed by the EC on September 24, 1997. The Appellate Body report thereof, WT/DS26/AB/R, WT/DS48/AB/R, was circulated to Members on January 16, 1998 and adopted February 13, 1998 [hereinafter *EC-Hormones*]. Although the Panel Report of *EC-Hormones* was appealed subsequently, the Panel's analysis on the relationship between the SPS Agreement and GATT 1994 was not appealed. Therefore, for the purpose of this issue, the Panel Report is still referable.

[19] *Id*., *para* 8.44.

the provisions of GATT 1994 which relate to the use of sanitary or phytosanitary measures, in particular the provisions of Article XX(b)." Article 2.4 of the SPS Agreement provides the assumption of conformity with GATT 1994 for SPS measures consistent with SPS Agreement[20]. Article 3.2 thereof provides that Sanitary or phytosanitary measures which conform to international standards, guidelines or recommendations shall be deemed to be necessary to protect human, animal or plant life or health, *and presumed to* be consistent with the relevant provisions of this Agreement *and of* GATT 1994 [emphasis added].

Based on the above provisions, the Panel in the *EC-Hormones* found that "to presume that one set of obligations (*in casu* GATT) is met because another set of obligations (*in casu* the SPS Agreement) has been fulfilled, seems to imply that the latter set of obligations imposes at least as many as, and probably more obligations than, the former."[21] After finding that "many provisions of the SPS Agreement imposed substantive obligations which go significantly beyond and are additional to the requirements for invocation of Article XX(b)" of GATT, the Panel came to the conclusion that "while both agreements (i.e. SPS Agreement and GATT 1994) may

[20] Article 2.4 of the SPS Agreement provides that that that Sanitary or phytosanitary measures which conform to the relevant provisions of this Agreement shall be presumed to be in accordance with the obligations of the Members under the provisions of GATT 1994 which relate to the use of sanitary or phytosanitary measures, in particular the provisions of Article XX(b).

[21] Paragraph 8.43 of Panel Report-*EC-Hormones*, *supra* note 18.

apply in a given factual situation, the foregoing provision (i.e. Article 3.2 of the SPS Agreement) nonetheless establishes the SPS Agreement as an agreement which imposes obligations which are different from those imposed by GATT." [22] Considering that SPS Agreement specifically addresses the measure in dispute (i.e. a SPS measure) and that in any event the Panel would need to examine the consistency of the measure in dispute with the SPS Agreement since no assumption of consistency with SPS Agreement is provided if the measure is found consistent with GATT 1994 while the other way round does, the Panel concluded that it shall first examine the measure under the SPS Agreement as it is the most efficient manner.[23]

Unlike SPS Agreement's explicit reference to the GATT 1994, let alone the further assumption of the consistency with the GATT 1994, TBT Agreement does not set forth its relationship with the GATT 1994. Nonetheless, the Panel of the European Communities-Trade Description of Sardines (the "*EC-Sardines*")[24] further illustrated the order of review of TBT Agreement and GATT 1994 based on the "specialty" of the TBT Agreement compared to the generality of the GATT 1994.

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[22] *Id.*

[23] Paragraph 8.45 of Panel Report-EC-Hormones, *supra* note 18.

[24] Panel Report, European Communities- Trade Description of Sardines, WT/DS 231/R circulated to Members on May 29, 2002 and was subsequently appealed by EC on June 28, 2002. The Appellate Body report was circulated to Members on September 26, 2002 and adopted by DSB on October 23, 2002 [hereinafter *EC-Sardines*].

The panel recalled the Appellate Body in *EC — Bananas III*, which suggested that "where two agreements apply simultaneously, a panel should normally consider the more specific agreement before the more general agreement."[25] Considering that "the TBT Agreement deals 'specifically, and in detail' with technical regulations", the Panel reached the conclusion that "if the EC Regulation is a technical regulation, then the analysis under the TBT Agreement would precede any examination under the GATT 1994."[26]

In summary, TBT Agreement applies to where SPS Agreement does not apply but these two agreements might apply to a single measure concurrently but separately where such measure encompasses both SPS objective and TBT objectives. With respect to their relationship with the GATT, a SPS-Agreement consistent SPS measure is assumed to be consistent with GATT and for the purpose of efficiency, the analysis under SPS Agreement shall go first than the same under GATT. The analysis under TBT Agreement shall also be precedent to the same under GATT because TBT Agreement is special to the GATT.

B. THE LEGITIMATE PURPOSE AND THE KEY ELEMENTS OF THE SPS AGREEMENT, TBT AGREEMENT AND GENERAL EXCEPTION UNDER GATT 1994 RESPECTIVELY

[25] *Id.* para. 7.15.

[26] *Id.* para. 7.16.

After analysis of the relationship between the SPS Agreement, TBT Agreement and GATT based on the texts thereof and the elaboration of the Panels in prior disputes, in order to fully understand the application of these three agreements, it is necessary to take a close look at the content of thereof, especially the legitimate purposes and the key elements thereof, which form the boundary of these three agreements respectively and might further shed some lights on the determination of the appropriate scope of the SPS Agreement as discussed in subsection C hereof below.

1. The legitimate purposes

According to Annex A of the SPS Agreement, *Sanitary or phytosanitary measure* means any measure applied

(a) to protect animal or plant life or health within the territory of the Member from risks arising from the entry, establishment or spread of pests, diseases, disease-carrying organisms or disease-causing organisms;

(b) to protect human or animal life or health within the territory of the Member from risks arising from additives, contaminants, toxins or disease-causing organisms in foods, beverages or feedstuffs;

(c) to protect human life or health within the territory of the Member from risks arising from diseases carried by animals, plants or products thereof, or from the entry, establishment or spread of pests; or

(d) to prevent or limit other damage within the territory of the Member from the entry, establishment or spread of pests.

> Sanitary or phytosanitary measures include all relevant laws, decrees, regulations, requirements and procedures including, *inter alia*, end product criteria; processes and production methods; testing, inspection, certification and approval procedures; quarantine treatments including relevant requirements associated with the transport of animals or plants, or with the materials necessary for their survival during transport; provisions on relevant statistical methods, sampling procedures and methods of risk assessment; and packaging and labelling requirements *directly* related to food safety. [emphasis added]

In summary, the legitimate interests to be protect by SPS measure include (1) human life or health, (2) animal life or health, (3) plant life or health and (4) prevention of other damage against the risks of (1) from the entry, establishment or spread of pests, diseases, disease-carrying organisms or disease-causing organisms; (2) additives, contaminants, toxins or disease-causing organisms in foods, beverages or feedstuffs, as applicable.

The legitimate purposes of the technical regulations under TBT Agreement is provided in Article 2.2 thereof, which stipulates that

> Members shall ensure that technical regulations are not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade. For this purpose, technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create. Such legitimate objectives are, *inter alia:*national security requirements; the prevention of deceptive practices; protection of human health or safety, animal or plant life or health, or the

environment. In assessing such risks, relevant elements of consideration are, *inter alia:* available scientific and technical information, related processing technology or intended end-uses of products.

Compared to the close-ended list of the legitimate purposes of the SPS measures under the SPS Agreement, the legitimate purposes of technical regulations under the TBT agreement are in an illustrative and open-ended list, which is manifested by the language "inter alia." In addition, as far as the regulations on GMOs are concerned, the illustrative examples of the legitimate purposes includes not only protection of human health or safety, animal or plant life or health (which are almost the same as the same under the SPS Agreement), but also "the environment", which is not explicitly referred to in the SPS Agreement.

Article XX of the GATT, titled as General Exceptions, lists out ten legitimate purposes for the Members to take the exceptional measures. As far as regulations on the GMO is concerned, the most relevant general exception provided under Article XX of the GATT is paragraph (b) thereto, which permits Members to take measures that are "necessary to protect human, animal or plant life or health," which can be also found under the SPS Agreement. In addition, under paragraph (a) thereof, measures "necessary to protect public morals" are also permitted, which might come into play in the GMO resistant battle, where the ideology toward GMO is different in different

countries.[27]

It is worth noting that due to special design for the provision structure under the SPS Agreement, the broader interpretation of the legitimate purposes of the SPS measures does not put the responding party (i.e. the Member taking SPS measures) in a better position. The provision structure under the SPS Agreement is that only those falling within the definition of the SPS measure will be subject to the SPS Agreement.[28] The legitimate purposes of the SPS measures forms part of the definition of the SPS measure as defined under Annex A of the SPS Agreement. Therefore, under the SPS Agreement, a broad interpretation of the legitimate purposes of the SPS measures will subject more measures to the scrutiny with the SPS Agreement, which are more stringent than the TBT Agreement as discussed in the following section. On the contrary, the legitimate purposes under the TBT Agreement and the GATT for the technical regulations and exceptional measures works as one of the element of the legality of the measure at issue[29] instead of

[27] *See* Brian Wynne, *Creating Public Alienation: Expert Cultures of Risk and Ethics on GMOs*, 10(4) SCIENCE AS CULTURE 445 (2001).

[28] According to Article 1.1 of the SPS Agreement, SPS Agreement applies to all sanitary and phytosanitary measures which may, directly or indirectly, affect international trade. Such measures shall be developed and applied in accordance with the provisions of this Agreement. Therefore, measures satisfying the two elements: (1) falling within the definition of sanitary and phytosanitary measures; (2) which may, directly or indirectly, affect international trade.

[29] *See* Article 2.2 of the TBT Agreement as quoted above.

determining the nature (such as whether such measure constitutes a technical regulation etc.). The broader interpretation of the legitimate purposes under these two agreements, the easier the Members taking the measure in dispute might overcome the challenges against it.

2. The key elements

Articles 2 and 5 are the core provisions of the SPS Agreement, and have become the hot issues in the SPS Agreement related disputes.[30] Article 2 requires a SPS measure to be (1) "necessary" for the protection of human, animal or plant life or health; (2) based on scientific principles and is not maintained without scientific evidence unless otherwise permitted under Article 5.7; (3) not constituting arbitrary or unjustifiable discrimination or disguised restriction on international trade. Article 5 further provides the assessment of risk and determination of the appropriate level of sanitary or phytosanitary protection.

In the case of TBT Agreement, Article 2 thereof is the most crucial provision, which was cited in the request for consultation in 37 cases, among the 41 cases citing TBT Agreement. Article 2 of the TBT Agreement requires, among others, national treatment and most-favored-nations treatment, no more trade-restrictive than

[30] According to the statistic information provided on the WTO website, among the 37 cases citing SPS Agreement in the request for consultations, 28 cases involve Articles 2 and 5 thereof. The importance of these two provisions is evident.

necessary, harmonization and transparency.[31]

Among these statutory requirements under the SPS Agreement and TBT Agreement, the main difference between them in the requirement of scientific evidence, which constitutes a stringent requirement for the Members taking SPS measures, especially where the scientific evidence is not sufficient. Article 2.2 of the SPS Agreement requires all SPS measures are based on scientific principles and is not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5 thereof. On the contrary, TBT Agreement does not require technical measures to be based on the science while scientific information may be one of the elements to be taken into consideration when assessing risks according to Article 2.2 of the TBT Agreement.[32]

3. The appropriate ambit of SPS Agreement

The implication of a broad interpretation of the SPS measure, which will in turn result in the broad application of the SPS Agreement, is that more SPS measure will

[31] For more details, please refer to Article 2 of the TBT Agreement. The full text of the TBT Agreement is available on the website of the WTO, http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf (last visited on June 19, 2010).

[32] Christiane Wolff, Regulating Trade in GMOs: Biotechnology and the WTO, TRADING IN GENES: DEVELOPMENT PERSPECTIVES ON BIOTECHNOLOGY, TRADE AND SUSTAINABILITY 217, 220 (edited by Melendez-Oriz, Ricardo & Sanchez, Vicente, 2003). Article 2.2 of the TBT Agreement "…In assessing such risks, relevant elements of consideration are, *inter alia*: available scientific and technical information, related processing technology or intended end-uses of products."

be subject to the stricter scrutiny of scientific evidence requirement under the SPS Agreement than the same under the TBT Agreement.

Motaal suggests a limited ambit of the SPS Agreement based on legitimate purposes and more stringent scientific requirement of the SPS Agreement than the same of TBT Agreement and Article XX of the GATT, and the negotiating history of the SPS Agreement, which according to Motaal, focusing on risks associated with agricultural products that are imported into a country but may carry with them pests or diseases.[33]

Peel, inspired by the environmental regimes' awareness and instruction to act with caution in the face of scientific uncertainty when requiring for reliance on scientific information, also argues for a limited application of SPS Agreement which requires regulations bear a "rational relationship" to scientific evidence and risk assessments.[34] Peel further pointed out that "the broader scope, under environmental regimes, for precautionary action in conditions of scientific uncertainty (and not just in situations of 'insufficiency' of scientific evidence regarding risks) may in turn reflect states' acknowledge of the different nature of available scientific knowledge

[33] *See* Doaa Abdel Motaal, *The "Multilateral Scientific Consensus" and the World Trade Organization*, 38 J. WORLD TRADE 855, 856 (2004).

[34] Jacqueline Peel, *A GMO by Any Other Name… Might Be an SPS Risk!: Implications of Expanding the Scope of the WTO Sanitary and Phytosanitary Measures Agreement*, 17 EJIL 1009, 1017.

regarding the most environmental problems, as opposed to those associated with quarantine pests or diseases, or toxins of concern for human health."[35]

The author of this article agrees with the above argument that when interpreting the SPS Agreement, it should be kept in mind that the scope of the application of SPS Agreement should not be over-stretched considering the rigid requirement of the scientific evidence, which is contrast by the embrace of the precautionary principles in the multilateral environmental agreements. However, from a practical point of view, the arguments proposed above have to find their legal bases for the Panelists to incorporate them in their interpretation of the SPS Agreement.[36]

[35] *Id.*

[36] For example, the reference to the negotiation history will not be considered unless the interpretation according to Article 31 of the Vienna Convention on the Law of Treaties leaves the meaning ambiguous or obscure; or (b) leads to a result which is manifestly absurd or unreasonable according to Article 32 thereof. The applicability of the precautionary principle under the multilateral agreement or the rationale thereof in the present case falls within the issue regarding the relevance of other rules of international law to the interpretation of the WTO agreements.

III. SAFEGUARD MEASURES ADOPTED BY EC MEMBERS

The Complaining Parties made a series of claims concerning measures adopted by EC Member States which allegedly prohibited the import, use of, or marketing of certain biotech products. These measures were adopted based on Article 16 of Directive 90/220 (later replaced by Article 23 of Directive 2001/18[37]) and Article 12 of Regulation 258/97.[38]

Where a biotech product has been approved for Community-wide marketing under Directive 90/220 or 2001/18, or Regulation 258/97, Member States ordinarily may not prohibit or restrict trade in, or use of, that product in their respective territories, provided the conditions attached to the marketing approval are being met.[39] However, Article 16 of Directive 90/220, Article 23 of Directive 2001/18, and Article 12 of Regulation 258/97 provide exception clause to the rules mentioned above. Although the language of these three directives is not exactly the same, their purposes are quite similar.

These directives provide an exception on the conditions that, with new or additional information, Member States have detailed grounds for considering that the

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[37] Parliament/Council Directive 2001/18/EC, 2001 O.J. (L106) 1.

[38] Parliament/Council Regulation (EC) No. 258/97, 1997 O.J. (L43) 1.

[39] *EC–Biotech Products*, *supra* note 10, para.7.2530.

use of a food or a food ingredient complying with the regulations endangers human health or the environment. If the conditions are met, Member States may adopt safeguard measures, but these measures are provisional, pending a full assessment at the EC level.[40] A Member State adopting safeguard measure must immediately inform the EC Commission and other Member States of its measure.[41] Following the procedures stipulated, the Commission must make a decision with respect to the legality of the measure. Such a decision will result either in the modification of the Community-wide marketing approval, or in the termination of the measure.[42] The procedures of the adoption and review of the Member States' safeguard measures are illustrated in the Chart I below.

In the dispute of *EC-Biotech Products*, the Commission was notified of each safeguard measure by the relevant Member States with evidence allegedly supporting the adoption of each measure. On the basis of the information provided by the Member State, the Commission in each case requested the opinion of the EC scientific committee as to whether this information constituted relevant scientific evidence that would permit the committee to consider that the products at issue constituted a risk for

[40] Article 16(1) of Directive 90/220; Article 23(1), 3rd paragraph of Directive 2001/18; and Article 12(1) of Regulation 258/97.

[41] *Id*.

[42] Article 21 of Directive 90/220.

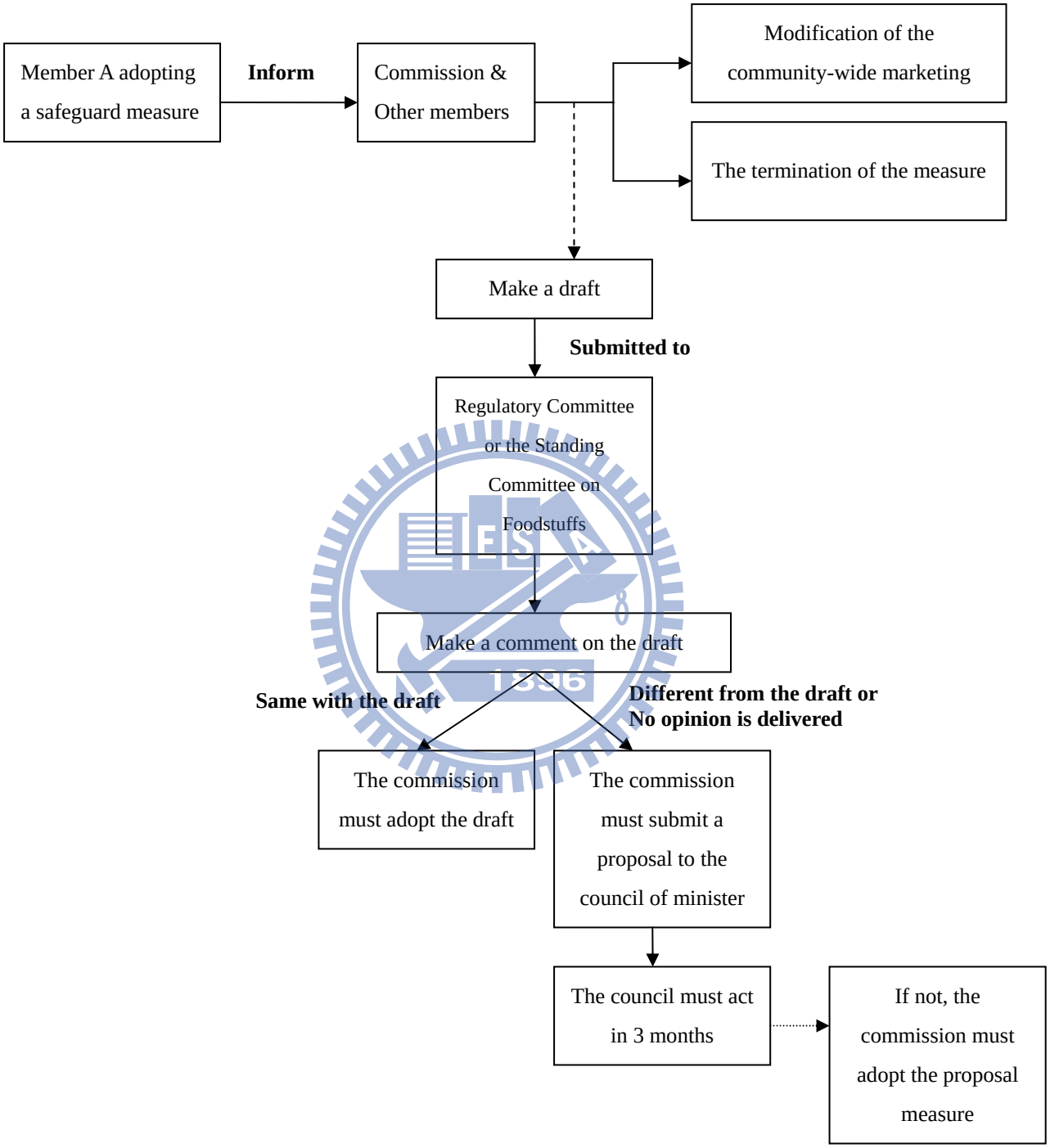
human health or the environment. The EC scientific committee finally came to the conclusion that the relevant disputed products did not present any risks to human health or the environment. However, at the time the panel was established, no decision had been made at the Community level concerning any safeguard measure at issue.[43]

As mentioned, there are nine disputed measures. The U.S., Canada and Argentina referred to different provisions to make their claims. The U.S. asserted that the nine measures violated Articles 5.1, 2.2, 5.3, 2.3 of the SPS Agreement and Article XI:1 of GATT 1994. Canada's complaint was based on Articles 5.1, 5.6, 2.2, 5.5, 2.3 of the SPS Agreement, Article XI:1 of GATT 1994 and Articles 2.1, 2.2, 2.9 of the TBT Agreement. Argentina contended that Articles 5.1, 5.6, 2.2, 5.5 and 2.3 of the SPS Agreement, Article Ⅲ of GATT 1994, and Articles 2.1, 2.2 and 2.9 of the TBT Agreement were violated.

This Article will focus on the interpretation and application of Articles 5.1, 2.2 and 5.7 of the SPS Agreement in this case. The main issues are: (1) the relationship among these three provisions and the implication thereof; (2) the sequence of application of these rules, and (3) how the legal interpretation applies in this case.

[43] *EC–Biotech Products*, *supra* note 10, para. 7.2536.

Chart I　Procedures of the adoption and review of EC Member States' safeguard measures



IV. WHETHER THE MEASURE AT ISSUE IS A "SPS MEASURE"?

When determining if certain provisions of the SPS Agreement are violated, the threshold question is whether the SPS Agreement is the applicable law in the case. Compared to previous Panel and AB reports, this Panel Report provided a more detailed analysis over this issue.

The Panel recalled that pursuant to Article 1.1 of the SPS Agreement, the Agreement applies to "all sanitary and phytosanitary measures which may, directly or indirectly, affect international trade." Also, the Panel recalled that the term "SPS measures" is defined in Annex A (1) of the SPS Agreement. The Panel decided that when determining whether the SPS Agreement is the applicable law, the Panel must examine (1) whether such measures are "sanitary or phytosanitary measures" (the "SPS measures"), as defined in Annex A of the SPS Agreement; and (2) whether these measures may, directly or indirectly, affect international trade.[44]

When analyzing whether a measure constitutes a "SPS measure," the Panel separated its analysis into two parts: First, whether the purpose of the measure falls within one of the purposes enumerated in Annex A (1) of the SPS Agreement, and, Second, determining the form and the nature of the measure.

[44] *Id*. para. 7.2554.

The Panel also pointed out several matters that needed careful attention when determining the purpose of a measure. First, the determination must be made in light of the specific circumstances of each case.[45] In this case, the Panel reviewed both *de jure* and *de facto* applications of the measure. Although Austria invoked Article 16 of Directive 90/220 and Article 12 of Regulation 258/97 as a ground in justifying its measures, the Panel thought that "the mere invocation of, and reference to, the aforementioned articles does not demonstrate, in and of itself, that a particular measure is in fact being applied for the purpose of protecting health or the environment."[46] Therefore, it is necessary to examine whether the measure applied by Austria fulfills the purpose mentioned in the aforementioned directives.

A. THE PURPOSE OF *AUSTRIA T-25*

In order to determine the purposes pursued by *Austria T-25*, the Panel reviewed several documents: (1) the document entitled "*Reasons for the decision of the Republic of Austria to prohibit the placing on the market of GM maize line T25,*" which was sent by Austria to the Commission in support of its safeguard measure, (2) a document submitted by Austria to the Commission for an Experts Meeting held in Brussels in January 2004, and (3) a letter addressed to the Commission in February 2004 by the Austria Federal Minister for Health and Women.

[45] *Id*. para. 7.2556.

[46] *Id*. para. 7.2559.

Based on the foregoing documents, the Panel found that the measure was adopted to address four concerns: (1) the spread of pollen to cultivated surrounding fields (co-existence); (2) long-term ecological effects in environmentally sensitive areas; (3) allergenicity and toxicity; and (4) the development of antibiotic resistance.[47] After figuring out the purposes of *maize T25*, the Panel proceeded to examine whether these purposes fell within one of the categories of purposes which characterized SPS measures in Annex A (1) of the SPS Agreement. The first two concerns are discussed and analyzed as follows:

(1) *Spread of pollen to cultivated surrounding fields*

The Panel first clarified that Austria did not claim that the measure was intended to prevent environmental effects associated with out-crossing between T25 maize and conventional maize. Rather, Austria emphasized the need for "special measures monitoring the possibility; this is mostly regarded as the safe-spread of pollen to fields in the surrounding area which are cultivated with conventional maize."[48] Based on Austria's statement, the Panel considered that the real concern of Austria was the possible loss of economic value to farmers who can no longer market their crops as non-GMO crops as a result of the existence of unwanted, out-crossed plants

[47] *Id*. para. 7.2572.

[48] *Id*. para. 7.2575.

in their fields.[49]

The Panel recalled that the term "other damage" as it appears in Annex A (1)(d) of the SPS Agreement includes economic damage which arises from the entry, establishment or spread of pests and which is not a consequence of damage to the life or health of plants. Also, the Panel found plants growing where they are undesired can be considered as "pest." [50] Consequently, the Panel came to the conclusion that this purpose of the measure fell within the scope of Annex A(1)(d) of the SPS Agreement.[51]

By construing plants growing where they are undesired as "pest", the Panel seemed to open a wide door for the application of the SPS Agreement. There are two implications embodied in such an interpretation. Firstly, it adopts a quite comprehensive view of the interests protected by Annex A(1)(d). Secondly, by applying this extensive interpretation, more national measures would likely be construed as SPS measures. They then would have to be scrutinized under the complicated and rigid disciplines of the SPS Agreement. Nevertheless, it seems hard to say whether such an approach is more favorable to the members adopting the measures, because while the first implication may favor the responding party, the

[49] *Id*.

[50] *Id*. para. 7.2576.

[51] *Id*. para. 7.2577.

second one may give support to the complaining party.

From the view of legal interpretation, it's worth analyzing whether this broad interpretation is appropriate. Given the issue is the interpretation of the wording, "pest", it is necessary to refer to an authoritative dictionary first. According to the Oxford dictionary, "pest" is defined as an insect or animal that destroys plants, food etc.[52] Further, according to the common knowledge, pests are natural creatures, which, by their ecological design, are harmful to other kinds of creatures. These creatures are usually hard to control and are unexpected. While GMOs as T25 maize are not as pure as natural plants, such plants growing where they are undesired do have some effects on the characteristic of the given product. Thus, the consumers might take into account such effects when purchasing the goods. The economic loss thus may not be avoidable. The next issue is whether such interests are protected in Annex A (1)(d) of the SPS Agreement.

The Appellate Body in the *US-Shrimp* case once stated that: "They must be read by a treaty interpreter in the light of contemporary concerns of the community of nations about the protection and conservation of the environment."[53] The Appellate

[52] Compact Oxford Dictionary, *available at* http://www.askoxford.com/concise_oed/pest?view=uk. The dictionary also pointed out an informal definition of pest as a person or thing that annoys you.

[53] Appellate Body Report, United States – Import Prohibition of Certain Shrimp and Shrimp Products, WT/DS58/AB/R, para. 129 (Oct. 12, 1998) (adopted Nov. 6, 1998) [hereinafter the "*US–Shrimp*"].

Body also referred to the opinion of the International Court of Justice to reveal the importance of the evolutionary principle of treaty interpretation.[54] The Appellate Body stated that"…the generic term 'natural resources' in Article XX(g) is not 'static' in its content or reference but is rather 'by definition, evolutionary."[55] The jurisprudence aforementioned may provide some inspiration for the instant case.

When drafting the provisions of the SPS Agreement, the concerns on GMOs were not as mature as nowadays. However, in the wake of the new development of bio-science, the concerns about GMOs' potential risk are becoming increasingly evident. It has been documented that the spread of the pollen to cultivated surrounding fields (co-existence) will result in the growth of GM maize in a conventional maize field. Further, both pests and the GM maize have the same characteristic of causing economic damage that is protected by Annex A(1)(d). Bearing the evolutionary principle in mind, it therefore would be acceptable to incorporate GM maize into the definition of pest.

(2) Long-term ecological effects in environmentally sensitive areas

There are some concerns that GM plants might crowd out or eliminate other plants, due to a potential competitive advantage, invasiveness or persistence, thus affecting the genetic diversity of remaining plant populations and putting the survival

[54] *See id.*, n. 109.

[55] *Id.*

of certain plant species at risk.[56] The Panel considered that GM plants can be construed as a "pest" since they have such an adverse effect on non-vegetation. Therefore, such measures are covered by Annex A (1) (a), as it applies "to protect […] plant life or health […] from risks arising from the entry, establishment or spread of GM plants *qua* 'pest'."[57]

The Panel regarded the adverse effects that GM plants may cause to the ecology as a basis to include GM plants under the definition of pest. Since they have the same characteristic of eliminating conventional plants,[58] it should be appropriate to do so in light of the principle mentioned above.[59]

Furthermore, the Panel found that "to the extent a measure seeks to avoid adverse effects of GMOs on the environment other than adverse effects on animal or plant life or health, including on geochemical processes, such a measure can be considered to be covered by Annex A(1)(d), inasmuch as it can be viewed as a measure which is applied to prevent or limit 'other damage' from the entry, establishment or spread of 'pests.'"[60]

Overall, while embracing a broad perspective, the Panel considered the

[56] *EC–Biotech Products*, *supra* note10, para. 7.2579.

[57] *Id.*

[58] *Id.* para. 7.2580.

[59] *See supra* notes 39-41 and accompany text.

[60] *EC–Biotech Products*, *supra* note 10, para. 7.2583.

objectives set by Austria to avoid potential long-term ecological effects of the release into the environment of *T25 maize* to meet the definition of both (a) and (d) of Annex A(1) of the SPS Agreement.

B. FORM AND NATURE OF THE SAFEGUARD MEASURE

The Panel first indicated that the reference to the second paragraph of Annex A (1) of the SPS Agreement to "laws, decrees [and] regulations" should not be taken to prescribe a particular legal form and the SPS measures may in principle take many different legal forms.[61] Furthermore, the reference in the same paragraph to "requirement" is broad and unqualified.[62]

The Austrian Safeguard measure on T25 maize was implemented through an "ordinance", which is not the type explicitly listed in Annex A (1) of the SPS Agreement. However, it was found that the second paragraph of Annex A (1) therein does not intend to prescribe a particular legal form. Austria's ordinance was enacted by the government with legal binding force. Therefore, the Panel was of the view that the form and nature of the "law" required by the SPS Agreement has been satisfied.[63]

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[61] *Id*. para. 7.2597.

[62] *Id*.

[63] *Id*. para. 7.2598.

C. ECONOMIC EFFECTS ON INTERNATIONAL TRADE

According to the text of the Austrian Ordinance that went into effect in 29 April 2000, *T25 maize* was prohibited from being placed on the Austria's market. The Panel found that this prohibition applied also to imports of *T25 maize* from outside the EC.[64] Therefore, Austria's measure on *T25 maize* affected the international trade.

The Panel finally concluded that the disputed measure that satisfied the requirements provided in Annex A(1) of the SPS Agreement was qualified as a SPS measure and may affect international trade. Therefore, the measure should be subject to the SPS Agreement.[65]

D. IMPLICATION OF THE BROAD INTERPRETATION OF THE SPS MEASURE

Panel's broad interpretation of the SPS measure, though could not be found legally wrong as reviewed above, might result in unexpected and adverse impact on the development on the international law where trade and environment are interweaved. As mentioned above, a broad interpretation of the SPS measure will subject more national measures into the scrutiny of the SPS Agreement where scientific evidence is required, which will encourage the complaining party to bring international disagreements over SPS measures to be preferentially discussed and determined in front of the WTO rather than under auspices of multilateral

[64] *Id*. para. 7.2608.

[65] *Id*. para. 7.2609.

environmental institutions and treaties.[66] Such trend could be reinforced by the quasi-compulsory jurisdiction under the Understanding on Rules and Procedures Governing the Settlement of Dispute.[67] A rampant recourse to the WTO dispute settlement regime, amplified by the Panel of *EC-Biotech Products*' rigid restriction on the introduction of other international multilateral environmental agreement in its interpretation of the WTO covered agreements by establishing the high threshold requiring that all WTO members be the parties to such agreements,[68] might limit the development of the dialogue between trade and environment in diversified forums.

As mentioned above, we noted that the Panel in *EC-Biotech Products*' recognition of separate application of SPS Agreement and TBT Agreement to a disputed measure in light of the multiple purposes embodied therein, though might ease, but cannot completely resolve the tension arising from a broad interpretation of the SPS measure resulted from broad interpretation of SPS purposes provided under Annex A of the SPS Agreement, at least to the extent TBT Agreement and SPS Agreement are overlapped. The broader the overlap is, the broader the application

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[66] *See* Peel, *supra* note 34, at 1025 & 1026.

[67] *See* Appellate Report, *Mexico-Tax Measures on Soft Drinks and other Beverages*, WT/DS308/AB/R, paragraphs 44 to 57 (adopted on March 24, 2006) [hereinafter "*Mexico-Taxes on Soft Drinks*"]. The Appellate Body in *Mexico-Taxes on Soft Drinks* upheld Panel's conclusion that "under the DSU, it ha[d] no discretion to decline to exercise its jurisdiction in the case that ha[d] been brought before it."

[68] *EC–Biotech Products*, *supra* note 10, para. 7.70

SPS Agreement is and the narrower the application of TBT Agreement is. Therefore, the aforementioned issues regarding the interpretation of SPS purpose and appropriate ambit of the SPS Agreement still matter after the *EC-Biotech Products*.

V. THE LEGAL INTERPRETATION REGARDING THE RELATIONSHIP AMONG ARTICLES 5.1, 5.7 AND 2.2 OF THE SPS AGREEMENT

In analyzing the consistency of the disputed measure within the framework of the SPS Agreement, the Panel confronted a preliminary issue: what is the relationship between Articles 5.1 and 5.7 of the SPS Agreement?

The complaining parties requested the Panel to examine whether the measure was consistent with Article 5.1. However, the responding parties argued that the measure at issue should be assessed under Article 5.7 with a view to the exclusion of Article 5.1.[69] The Panel started its analysis from the issue of whether a provisionally adopted measure can only fall within the purview of Article 5.7.

A. WHETHER A PROVISIONALLY ADOPTED MEASURE CAN ONLY FALL WITHIN ARTICLE 5.7?

The EC relied its argument on the Appellate Body's jurisprudence in the *Japan-Apples* case,[70] asserting that if a measure was provisional, it should fall within the scope of Article 5.7 of the SPS agreement. In the view of the EC, the "provisionality" is the "demarcation line" between Article 5.1 and Article 5.7 of the

[69] *EC–Biotech Products*, *supra* note 10, para. 7.2923.

[70] The European Communities referred to the statement of the Appellate Body in *Japan–Apples* case, stating that "when a panel reviews a measure claimed by a Member to be provisional, that panel must assess whether 'relevant scientific evidence is insufficient.'"

SPS Agreement.[71]

The U.S. responded that the mere labeling of a measure as "provisional" is not sufficient in itself to bring it within the scope of Article 5.7 of the SPS Agreement. In order to subject a measure to the conditions of Article 5.7 therein, the measure must satisfy the four criteria provided in it.[72]

Both Canada and Argentina submitted that the demarcation line should be the "insufficiency of the evidence."[73]

The Panel set out its analysis by examining the structure of Article 5.7 of the SPS Agreement. The first sentence follows a classic "if-then" logic: if a certain condition is met (*in casu*, insufficiency of relevant scientific evidence), a particular right is conferred (*in casu*, the right provisionally to adopt an SPS measure based on available pertinent information).[74] Thus, it is reasonable to state that Article 5.7 of the SPS Agreement can be invoked where relevant scientific evidence is insufficient. The *Japan-Apples* ruling can also support this view, which stated that "the application of Article 5.7 is triggered not by the existence of scientific uncertainty, but by the insufficiency of scientific evidence."[75]

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[71] *EC–Biotech Products*, *supra* note 10, para. 7.2939.

[72] *Id*. para. 7.2934.

[73] *Id*. paras. 7.2935 & 7.2937.

[74] *Id*. para.7.2939.

[75] Appellate Body Report, *Japan-Measures Affecting the Importation of Apples*, WT/DS245/AB/R,

In addition, the Panel found no support in the text of Article 5.1 for the EC argument that Article 5.1 prescribes risk assessment only for SPS measures other than provisionally adopted ones.[76] Thus, even if a measure is provisionally adopted, this fact alone would not exclude it from the applicability of Article 5.1.[77]

The Panel's decision on this issue sounds reasonable. The function of Article 5.7 aims to provide an opportunity for WTO members to adopt an exceptional measure in the event of lack in sufficient scientific evidence. It is the insufficiency of scientific evidence that provides the rationality of Article 5.7, as well as sets the threshold for the measures adopted under Article 5.7.

As for the "provisionality," it should be understood as the nature of the applied measure as well as an interests-balance mechanism. As mentioned earlier, a measure adopted under Article 5.7 should be exceptional instead of a usual one. Such a measure should only exist where the scientific evidence is insufficient. As long as there is sufficient evidence, Article 5.7 is no longer applicable.

From another perspective, while Article 5.7 provides WTO members discretion to adopt SPS measures without having to provide sufficient evidence, some legitimate interests of other members may be sacrificed at the same time. To strike a proper

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para. 184 (Nov. 26, 2003)(adopted Dec. 10, 2003)[hereinafter *Japan–Apples*].

[76] *EC–Biotech Products*, *supra* note 10, para. 7.2943.

[77] *Id.* para. 7.2948.

balance of the interests of both sides, the "provisionality" test is essential and crucial. The Panel delivered an appropriate finding in this regard. However, it should be noted that Panel's conclusion that Article 5.7 can be invoked where scientific evidence is not sufficient does not definitely or directly lead to another conclusion that insufficiency of scientific evidence will trigger the application of Article 5.7 and exclude the application of Article 5.1 or Article 2.2 of the SPS Agreement.

B. WHETHER ARTICLE 5.7 OF THE SPS AGREEMENT IS A RIGHT OR AN EXCEPTION FROM THE GENERAL OBLIGATION UNDER ARTICLE 5.1 THEREOF

After reaching the conclusion that Article 5.7 is applicable in every case where relevant scientific evidence is insufficient,[78] the Panel went on to analyze whether Article 5.7 is a right or an exception in the context of the "general obligation" under Article 5.1.

This issue is closely related to the burden of proof, which played a crucial role in the dispute settlement. The EC argued that Article 5.7 was an autonomous right of the importing Member. Therefore, the complaining parties bore the burden of proof regarding the inconsistency of the measure with Article 5.7. In contrast, the Complaining Parties maintained that Article 5.7 constituted an exception to Article 2.2, requiring the Responding Party, when invoking such exception, to bear the burden of

[78] *Id*. para. 7.2946.

proof.

The Panel found it appropriate to begin its examination of the relationship between Article 5.1 and Article 5.7 by first examining the relationship between Article 2.2 and Article 5.7. The Panel also pointed out that it should be noted that Article 2.2 and Article 5.1 should "constantly be read together" and that Article 2.2 is an important part of the context of Article 5.1.[79] This statement sheds light on why the Panel dealt with this issue in such a sequence.

1. Relationship between Article 2.2 and Article 5.7 of the SPS Agreement

a、 Substantive Relationship and Applicable Sequence thereof

The Panel referred first to the Appellate Body report in *EC-Tariff Preferences*, which provided some inspiration for the distinction between exception and autonomous right, stating that:

> In case where one provision permits, in certain circumstances, behavior that would otherwise be inconsistent with an obligation in another provision, and one of the two provisions refers to the other provision, the Appellate Body has found that the complaining party bears the burden of establishing that a challenged measure is inconsistent with the provision permitting particular behavior only where one of the provisions suggests that the obligation is not

[79] *Id*. para. 7.2961.

applicable to the said measure.[80]

Furthermore, the Appellate Body also cited its own opinion in *EC-Hormone* regarding the relationship between Articles 3.1 and 3.3 of the SPS Agreement. The Appellate Body recognized Article 3.3 as an autonomous right to Article 3.1. It stated that Article 3.1 of the SPS Agreement simply excludes from its scope of application the kinds of situation covered by Article 3.3 of that Agreement, ...[81]

The Panel found that Article 5.7 which permits provisional adoption of SPS measure in case where scientific evidence is insufficient on the basis of available pertinent information would otherwise be inconsistent with an obligation in Article 2.2.[82] Furthermore, Article 2.2 refers to Article 5.7 and suggests that the obligation in Article 2.2 is not applicable to measures falling within the scope of Article 5.7.[83] From the above analysis, it can be found that Article 5.7 fully satisfies the criteria provided in *EC-Tariff Preferences* as an autonomous right, instead of an exception.

The Panel also found that the structure and terms in Article 2.2 of the SPS Agreement are quite similar to those in Article 3.1 thereof. Both of them contained

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[80] Appellate Body Report, *European Communities - Conditions for the Granting of Tariff Preference to Developing Countries*, WT/DS246/AB/R, para. 88 (Apr. 7, 2004)(adopted Apr. 20, 2004) [hereinafter *EC–Tariff Preference*].

[81] Appellate Body Report, *EC–Hormones*, *supra* note 18, para. 104.

[82] *EC–Biotech Products*, *supra* note 10, para. 7.2968.

[83] *Id.*

the clause "except as otherwise provided for…." The Panel decided that the interpretation regarding the relationship between Article 2.2 and Article 5.7 of the SPS Agreement should be consistent with the one between Article 3.1 and Article 3.3 thereof.[84] Recalling the Appellate Body Report in *EC-Hormones*, the Panel concluded that Article 5.7 should be an autonomous right, instead of an exception to Article 2.2.[85] Since Article 5.7 is an autonomous right in the SPS Agreement, it is the complaining parties that should bear the burden of proof to demonstrate that the measure taken by the responding party is inconsistent with Article 5.7.[86]

After determining the relationship between Article 2.2 and Article 5.7, the Panel proceeded to analyze what the sequence was when applying these two provisions. The Panel referred to two previous rulings of the Appellate Body, i.e. *Japan-Agriculture II* and *Japan Apples*. In *Japan-Agriculture II*, the Appellate Body enunciated that "Article 5.7 operates as a qualified exemption from the obligation under Article 2.2 not to maintain SPS measures without sufficient scientific evidence."[87] The Appellate Body also made it clear that "there are four cumulative requirements in Article 5.7 which must be met in order for a Member to adopt and

[84] *Id*. para. 7.2967.

[85] *Id*. para. 7.2969.

[86] *Id*. para. 7.2976.

[87] Appellate Body Report, *Japan–Measures Affecting Agricultural Products*, WT/DS76/AB/R, para. 80 (Feb. 22, 1999)(adopted Mar. 19, 1999) [hereinafter *Japan–Agriculture Products II*].

maintain a provisional SPS measure consistently with Article 5.7."[88] The Panel thought that these requirements were the reasons why the Appellate Body emphasized that "Article 5.7 operates as a *qualified* exemption from the obligation under Article 2.2."[89] Based on the above, the Panel (in this case) deduced that if the measure at issue is not consistent with one of the four criteria provided in Article 5.7, the situation is not "as provided for in paragraph 7 of Article 5" (Article 2.2). As a result, the relevant obligations in Article 2.2 would be applicable to the challenged measures, provided there are no other elements which render Article 2.2 inapplicable.[90] After clarifying the substantive relationship, the Panel proceeded to review the examining sequence in the two cases aforementioned.

Both of the Panel in the aforementioned two cases examined the measure under Article 2.2 of the SPS Agreement first. If the measure was inconsistent with Article 2.2 of the SPS Agreement, it would be examined under Article 5.7 thereof provided that the responding party invoked Article 5.7. If the measure was inconsistent with Article 5.7 of the SPS Agreement, then the Panel could ultimately decide that the measure was inconsistent with Article 2.2 (and Article 5.7). The Panel in *Japan-Agriculture II* stated that "[i]f the [challenged measure] meets the requirements

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[88] *Id*. para. 89.

[89] *Id*. para. 80.

[90] *EC–Biotech Products*, *supra* note 10, para. 7.2974.

[in Article 5.7], we cannot find that it violates Article 2.2."[91] The Panel in the *Japan-Apple* case recalled and agreed with the approach taken in *Japan-Agriculture II* and stated that "it would therefore make no final findings with respect to the consistency of the measure at issue with Article 2.2 until it had completed its analysis under Article 5.7.[92]

From the analysis of the Panel in the instant case, which referred to *Japan-Agriculture II* and *Japan-Apple*, it seems that the rule of the sequence for the application of Articles 2.2 and 5.7 of the SPS Agreement has been well established. In this sequence, we must first examine the disputed measure under Article 2.2. If the measure is inconsistent with Article 2.2, then we must examine its consistency with Articles 5.7 and 2.2. If the measure is consistent with Article 5.7, then its consistency with Articles 5.7 and 2.2 can be ultimately affirmed.

However, it is worth noting that the authorities the Panel referred to are the Panel reports of the two cases, instead of the Appellate Body reports thereof. Since these two cases were appealed, it would be helpful to refer to the Appellate Body's rulings in reviewing the decisions of the Panels. Indeed, the Appellate Body in *Japan-Agriculture II* stated that "it is clear that Article 5.7 of the SPS Agreement, to which Article 2.2 explicitly refers, is part of the context of the latter provision."

[91] Panel Report, *Japan-Agriculture Products II*, WT/DS76/R, para. 8.48 (Oct. 27, 1998).

[92] Panel Report, *Japan-Apples*, WT/DS245/R, para. 8.201 (July 15, 2003).

Nevertheless, the Appellate Body in both cases basically followed the same sequence by examining the consistency with Article 2.2 first, followed by an examination of the consistency with Article 5.7. The Appellate Body seemed to deal with Article 2.2 and Article 5.7 individually.

It is interesting to see the discrepancy between the rulings of the Panel and the Appellate Body. However, the Appellate Body did not explicitly express its view on this point as adopting an apparently different method from the one taken by the Panel. The difference of the approaches taken by the Appellate Body and the Panel might have significant implication on the nature of Article 2.2 and Article 5.7 and further affect the rulings and recommendation of the dispute settlement especially where the third and/or fourth criteria under Article 5.7 is not met, i.e. the responding member taking provisional SPS measure fails to satisfy its obligations to seek additional information and/or review the measure in dispute after the measure is taken. A full analysis on the appropriateness of the Panel's approach will be further discussed in section IV.C. below.

b、 Burden of Proof

Another important issue is the burden of proof regarding the inconsistency between the challenged measure and Article 5.7 of the SPS Agreement. The Panels in *Japan-Agriculture II* and *Japan-Apples* held different points of view on this issue.

The former ruled that the complaining party should bear the burden in providing that the measure adopted by the responding party was inconsistent with Article 5.7 of the SPS Agreement. In contrast, the latter Panel opined that the burden lied with the responding party. Because this issue had not been appealed in *Japan–Apples*, the Appellate Body did not have the standing to make further elaboration or reverse the decision of the Panel in this regard. The Panel in GMOs case, basing its analysis on the Appellate Body report of *EC–Tariff Preference* ruled that Article 5.7 of the SPS Agreement was an exemption, not an exception to Article 2.2 thereof, and concluded that "it is incumbent on the complaining party to establish a *prima facie* case of inconsistency with both Article 2.2 and 5.7."[93]

In response to the arguments proposed by Canada, the Panel further strengthened its conviction that Article 5.7 of the SPS Agreement is an exemption from Article 2.2 thereof, rather than an exception thereto. The Panel agreed with Canada and recognized that, although the structural and textual similarity between Articles 3.1 and 3.3 and Articles 2.2 and 5.7 existed, there were substantive differences between them.[94] In the scenario where Articles 3.1 and 3.3 apply, a Member is free to choose whether to base a SPS measure on a relevant international standard in line with Article 3.1 or, alternatively, to avail itself of the qualified right not to do so under Article

[93] *EC–Biotech Products*, *supra* note 10, para. 7.2979.

[94] *Id*. para. 7.2983.

3.3.[95] However, the application of Articles 2.2 and 5.7 is another story. Whether there is sufficient evidence is a factual issue that cannot be decided or altered by members. Therefore, Article 5.7 should be viewed as a qualified exemption from the relevant obligation in Article 2.2, which confirms the right of Members to enact measures where the available scientific evidence is "insufficient. "[96]

The issue as to whether Article 5.7 is an exception or an exemption from Article 2.2 is indeed a complicated legal one that is difficult to decide. The interpretation of distribution of burden of proof is not only of purely legal task, but of a policy decision. It is to recall that the preamble of the SPS Agreement, which confirms the right to adopt SPS measure provided that such measure should not result in unjustified effect on international trade. Thus, it can be inferred that Members shall be entitled to take necessary SPS measures, no matter whether or not there is sufficient scientific evidence to support them. The sufficient or insufficient scientific evidence scenarios are parallel without priority relationship. Since the sufficiency of scientific evidence is a factual issue that the Members cannot change, it is necessary, as the SPS Agreement provides, to accord Members a right to adopt certain SPS measures under Article 5.7, which should be valued equally with the obligation under Article 2.2. Interpreting Article 5.7 as an exemption to Article 2.2 and imposing the burden of

[95] *Id.*

[96] *Id.*

proof on the complaining party therefore reaffirms and shows respect to the legitimate right of WTO Members to adopt necessary SPS measures.

2. Relationship between Article 5.1 and Article 5.7 of the SPS Agreement

The Panel relied on the three elements established by the Appellate Body in *EC–Tariff Preference* as a ground to examine the relationship between Article 5.1 and Article 5.7 of the SPS Agreement.[97] The Panel stated that it could characterize Article 5.7 as a right in relation to Article 5.1 if firstly the relationship between these two provisions is one "where one provision permits, in certain circumstances, behavior that would otherwise be inconsistent with an obligation in another provision; secondly one of the two provisions refers to the other provision; lastly where one of the provisions suggests that the obligation is not applicable to the said measure."[98]

With respect to the first element, the Panel recalled the previous Appellate Body ruling, which stated that "relevant scientific evidence will be 'insufficient' within the meaning of Article 5.7 if the body of available scientific evidence does not allow, in quantitative or qualitative terms, the performance of an adequate assessment of risks

[97] In spite of the Panel's fitfulness to previous WTO ruling, there is critique regarding the consistency and appropriateness of the current WTO jurisprudence on "rules" and "exceptions. *See* Simon Lester, *WTO—Sanitary and Phytosanitary Measures Agreement—rules/exception—international Law as interpretive tool*, 101 AM. J. INT'L L. 453, 458 (2007).

[98] *EC–Tariff Preferences*, *supra* note 80, para. 88.

as required under Article 5.1."[99] In effect, the Panel correctly found that any kind of risk assessment taken under Article 5.7 would not need to meet the requirement set by Article 5.1 and as defined in Annex A(4).[100] Therefore, Article 5.7 satisfies the first criterion given that Article 5.7 permits Members to do what would be prohibited under Article 5.1.

On the second element, although Article 5.7 or Article 5.1 does not refer to each other explicitly, it was observed by the Panel that Article 5.7 contains an *implicit* reference to Article 5.1.[101] The phrase "a more objective risk assessment" specified in the second sentence of Article 5.7 was considered to refer to a risk assessment required by Article 5.1 as defined in Annex A(4).[102] Furthermore, it was recalled that the Appellate Body in *Japan-Apples* has made the ruling that the insufficiency of relevant scientific evidence embodied in the first sentence of Article 5.7 does not allow the fulfillment of an assessment of risks as required under Article 5.1.[103] Based on these two reasons, the Panel thus found the existence in Article 5.7 of an

[99] It seems that the Panel made a mistake here. In footnote 1848 of this Panel Report, it referred to paragraph 92 of *Japan–Agriculture II* when quoting this statement. However, there is no correspondent part in that AB report. That statement shall be found in paragraph 179 of the AB report in *Japan–Apples*.

[100] *See EC–Biotech Products*, *supra* note 10, paras. 7.2991 & 7.2992.

[101] *Id*. para. 7.2994.

[102] *Id.*

[103] *Id.*

implicit reference to Article 5.1. Therefore, the second requirement is fulfilled.[104]

Thirdly, by looking at the opening phrase of Article 5.7 which provides that "in case where relevant scientific evidence is insufficient," it was found that the obligation in Articles 5.1 that requires Members to conduct an alleged risk assessment is not applicable to measures permissible under Article 5.7.[105] Furthermore, the Panel also secured the support from the analysis given in *EC-Hormones* where the Appellate Body affirmed the finding of the Panel that Article 5.1 may be viewed as a specific application of the obligations provided for in Article 2.2.[106] Noting that Article 5.7 may literally exempt from Article 2.2's application and by classifying Articles 2.2 and 5.1 as same footing rule help to imply that Article 5.1 is not applicable in situations covered by Article 5.7. Hence, the third requirement is also met.

Since the test set forth in *EC-Tariff Preference* can be applied to the relationship between Article 5.1 and Article 5.7, the Panel reached the conclusion that Article 5.7

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[104] *Id.*

[105] *Id.* para. 7.2995.

[106] The Appellate Body has agreed that Article 5.1 may be viewed as a specific application of the basic obligation contained in Article 2.2. Therefore, the Panel found that "[s]ince Article 5.1 is not applicable in situation where Article 2.2 is not applicable, the clause 'except as provided for in paragraph 7 of Article 5' in Article 2.2 necessarily implies that Article 5.1 cannot be applicable in situations covered by Article 5.7.

shall be construed as a right, instead of an exception to Article 5.1 and shall operate as a qualified exemption from the obligation under Article 5.1.[107] In effect, if a measure cannot satisfy the four cumulative requirements of Article 5.7, the obligation of Article 5.1 shall be applicable to the measure at issue, provided that there are no other elements which render Article 5.1 inapplicable.[108]

The Panel, in view of the specific circumstances in this case,[109] following the order of analysis used by the Panels in *Japan – Agricultural Products II* and *Japan –Apples* in dealing with the consistency of the challenged measures with Articles 2.2 and 5.7, decided to begin its analysis from Article 5.1.[110] Under this approach, if the challenged measure is found consistent with Article 5.1, there is no need to further examine its consistency with Article 5.7. If the measure is found inconsistent with Article 5.1, then the Panel shall examine its consistency with Article 5.7. If the measure is found consistent with Article 5.7, then Article 5.1 is not applicable, and the Panel would consequently need to conclude that the measure is not inconsistent with Article 5.1. On the contrary, if the safeguard measure were inconsistent with Article 5.7, then Article 5.1 would be applicable. The final

[107] *EC–Biotech Products*, *supra* note 10, para. 7.2997.

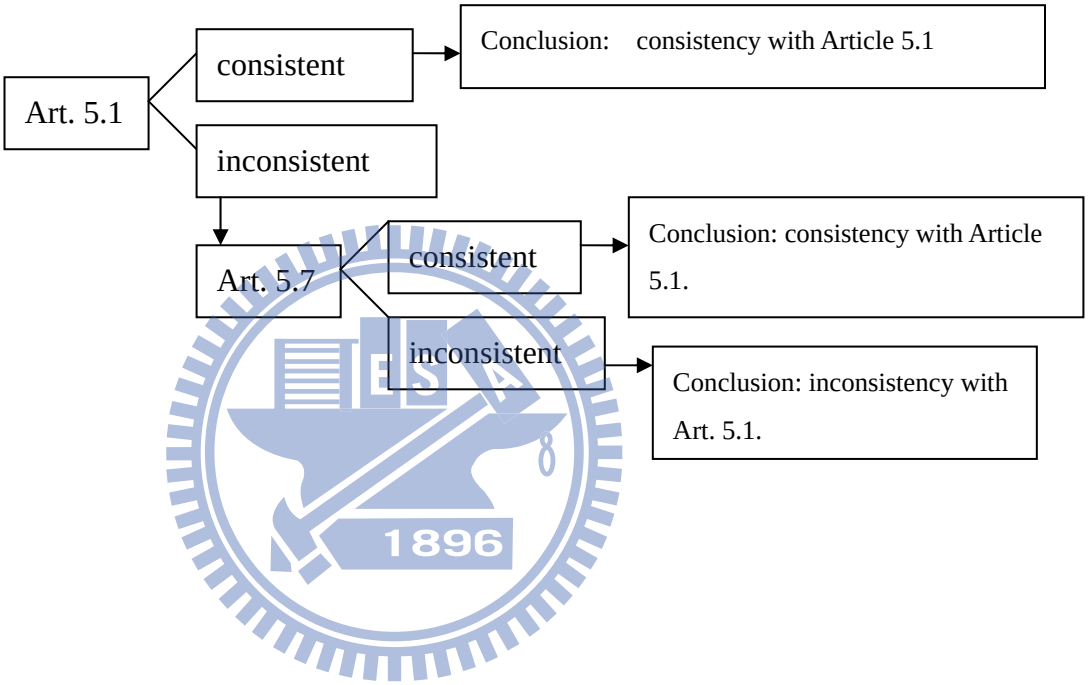
[108] *Id.* para. 7.2998.

[109] From the view of Panel, the critical legal issue in this case is whether the measure is consistent with Article 5.1, instead of Article 5.7. *See id*. para. 7.3006.

[110] *See id*. para. 7.3006.

conclusion can be reached that the challenged measure is inconsistent with Article 5.1.[111] The application sequence can be illustrated as the following chart:

Chart II: Application Sequence of Articles 5.1 and 5.7 of SPS Agreement



C. IMPLICATION AND REVIEW OF THE PANEL'S APPROACH OF THE RELATIONSHIP AMONG ARTICLES 2.2, 5.1 AND 5.7

Panel in *EC-Biotech Products*, after finding that Article 5.7 of the SPS Agreement constitutes a *qualified* exemption to Article 2.2 and Article 5.1 thereof, reaches the conclusion that where the SPS measure at issue does not satisfy any of the

[111] *Id*. para. 7.3007.

four criteria set forth in Article 5.7, Article 2.2 and Article 5.1 shall apply and the consistency of the measure at issue with Article 2.2 and 5.1 cannot not be found after the review of the same under Article 5.7. It is legally reasonable to say that the principle (Article 2.2) cannot be found to have been violated if an exemption (Article 5.7) is established. That is also the reason why the Panel in *Japan–Agriculture II* opined that a measure satisfying the requirements in Article 5.7 of the SPS Agreement cannot be found as inconsistent with Article 2.2 thereof. By the same token, if the exemption is not established, the principle shall apply unless otherwise agreed by the parties. The implication of the Panel's approach is that the four elements under Article 5.7 are equally valued and lacking in any of them will result in the inapplicability of Article 5.7 and introduction of Article 2.2 and Article 5.1, inconsistency of which will, in most cases, result in the revocation of the measure at issue. Given that the four elements are indispensable for the exemption of the application of Article 2.2 and Article 5.7, especially noted that existence of insufficiency of scientific evidence is only one of the four elements, the existence of the insufficiency of scientific evidence does not *per se* precludes the application of Article 2.2 and Article 5.1.

Panel's said approach is criticized by Lang who proposed an alternative interpretation of Article 5.1 and Article 5.7 of the SPS Agreement by distinguishing

the first sentence of Article 5.7 from the second sentence thereof,[112] which from the author's view, also applies to the relationship between Article 2.2 and Article 5.7 because throughout Lang's analysis, he focused on the distinction between the first and second sentence of Article 5.7 of the SPS Agreement and when he referred to Article 5.1, he referred to the governments' obligations to conduct a risk assessment, which is also provided under Article 2.2. According to Lang, the first sentence contains a right to provisionally adopt SPS measure on the basis of available pertinent information and such right exists in all cases where relevant scientific evidence is "insufficient."[113] The second sentence is an independent obligation, which is triggered by a Member's exercise of its right under the first sentence of Article 5.7, to seek additional information and to review the measure within a reasonable period of time (abbreviated as "research and review obligations" by Lang in his article).[114] Lang pointed out that "the difference between the two (i.e. the approach adopted by Lang and the approach adopted by the Panel in *EC-Biotech Products*) lies in the characterization of the nature of the research and review obligations: instead of seeing

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[112] Andrew T.F. Lang, *Provisional Measures under Article 5.7 of the WTO's Agreement on Sanitary and Phytosanitary Measures: Some Criticisms of the Jurisprudence So Far*, 42 (6) J. WORLD TRADE 1085, 1091 (2008).

[113] *Id.*, at 1091.

[114] *Id.*

these obligations which are triggered by the exercise of that right (so that failure to comply makes the right disappear), they are here seen as supplementary obligations which are triggered by the exercise of that right (so that failure to comply has no effect on the existence of the underlying right).”[115]

Lang based his analysis on four reasons from the perspectives of both the texts and object and purposes of Article 5.7. First, he found that the structure of Article 5.7, including the absence of the “if-then logic” in the second sentence compared to its existence in the first sentence, the use of separating phrase “in such circumstances” between the first and the second sentence thereof, the contrast between the permissive “may” in the first sentence and the obligatory “shall” in the second sentence suggested that the second sentence sets out independent obligations, not additional conditions.[116] Secondly, he recalled the object and purpose of Article 5.7 which is a compromise between the two objectives: on the one hand to ensure that Members maintain their right to take protective SPS measures on a temporary basis where there is objective cause for concern but where there is as yet inadequate science to make a proper risk assessment; and on the other hand to discipline the use of such provisional measures to ensure that their use does not in practice undermine other obligations

[115] *Id.*

[116] *Id.*

contained therein.[117] Thirdly, Lang opined that his approaches, under which the research and review obligations were freestanding and only triggered once provisional measures are adopted under the first sentence of Article 5.7 of the SPS Agreement, and a finding on compliance with the first sentence is a logically prior step, provides Members a clearer guidance to bring their measures at dispute into the conformity with the SPS Agreements than the result under the Panel's approach, where the Panel would reach its decision on the dispute once any of the four elements under Article 5.7 of the SPS Agreement is found not met, which left the responding Member inadequate information to ensure the conformity of its measure. Last but most important, Lang argued that the Panel's approach involved a serious logical flow because it required a member to conduct a risk assessment where there is no sufficient scientific evidence. In a hypothetical case where a Member adopted a provisional SPS measure in accordance with the first sentence of Article 5.7 of the SPS Agreement while it failed to meet its obligations under the second sentence thereof, which would result in the inapplicability of Article 5.7 and applicability of Article 5.1, the government is therefore required to conduct a risk assessment, which is in fact impossible because there is no sufficient evidence for it to do so.[118]

Before starting our analysis on this issue, we would like to make remarks about

[117] *Id.* at 1092.

[118] *Id.* at 1093.

the implementation of recommendation under the dispute settlement mechanism of the WTO. We believe that a clarification of the nature of Article 5.7 of the SPS Agreement helps to address what is the appropriate way to implement the recommendation of the disputed SPS measure found inconsistent with Article 5.7 thereof.

We recall Article 19.1 of the Understanding on Rules and Procedures governing the Settlement of dispute which provides that "[w]here a panel or the Appellate Body concludes that a measure is inconsistent with a covered agreement, it shall recommend that the Member concerned bring the measure into conformity with that agreement. In addition to its recommendations, the panel or Appellate Body may suggest ways in which the Member concerned could implement the recommendations." According to the Panel in United States – Final Dumping Determination on Softwood Lumber from Canada, the Panel considered that "[b]y virtue of Article 19.1, panels have discretion ("may") to suggest ways in which a Member could implement the relevant recommendation. However, a panel is not required to make a suggestion should it not deem it appropriate to do so."[119] In the absence of more detailed provision under the SPS Agreement regarding how to bring a measure inconsistent with Article 5.7 of the SPS Agreement, it is the Panel or the

[119] Panel Report, *United States – Final Dumping Determination on Softwood Lumber from Canada*, WT/DS 264, para. 8.5, April 13, 2004 (hereinafter "*US-Soft Lumber V*").

responding Member (where the Panel exercise its discretion not to make suggestion) will in the first place decides the way of implementation of recommendation. The next question is whether the Panel or the responding Member has the discretion on how to implement the recommendation of bringing a disputed measure which is found inconsistent with maintenance obligation of Article 5.7 into conformity with the SPS Agreement by fulfilling its maintenance obligations under Article 5.7 or by revocation the disputed measure to be in conformity of the Article 5.1, or even if recognizing the Panel's discretion on the suggestion of the ways to implement its recommendation, what is the more appropriate suggestion the Panel is to make.

The author finds Lang's analysis, though seems to be supported by the texts and object and purposes of the SPS Agreement, no more persuasive than the same proposed by the Panel. For example, the structural difference between the first and second sentences of Article 5.7 does not necessarily lead to the conclusion proposed by Lang as it is equally persuasive to the author that the criteria set forth under Article 5.7, accumulatively applied, procure the legality of the provisional measure thereunder as proposed by the Panel based on the language of Article 5.2. For example, if it were the Members' intention to differentiate the obligations under the first and the second sentences of Article 5.7 as proposed by Lang, language used in Article 2.2 should be "except where relevant scientific evidence is insufficient"

instead of "except as provided for in paragraph 7 of Article 5." The author is of the view that Article 5.7 is a compromise taking care of needs of both sides *by setting forth the criteria of a provisional SPS measure, which in essence reflect Members' agreement on the balance of interest in the adoption of SPS measures*. Considering the texts and the object and purpose of SPS Agreement is not especially in favor of the Panel's approach nor Lang's approach and Article 5.7 is in essence a balance of interest, the author finds it might be helpful to analyze the issue from the perspective of risk allocation. The author will first analyze what the exact difference of the outcome under the Panel's approach and the Lang's approach is. If there is any difference, then proceed to see whether the current SPS Agreement has determined that it is the complaining Member or the responding Member in the dispute that should bear the disadvantage of the risk under the SPS Agreement, interpreted in light of its object and purpose as required by Article 31 of the *Vienna Convention*.

Firstly, the result will not be different if it is one of the first two elements of the Article 5.7 is violated, which will result in the violation of Article 2.2 and the recommendation of the dispute settlement body will be bringing the measure at dispute into conformity with Article 5.1 and 2.2 and, in such circumstances, is most likely to cease the measure. However, if it is the research and review obligations under Article 5.7 that are not met, under the approach of the Panel in *EC-Biotech*

Products, the Panel will then find that the Articles 2.2 and 5.1 of the SPS Agreement applies, and the way to implement the recommendation in such circumstances will require the cease of the application of the measure at dispute rather than to seek additional information and review the measure under Article 5.7 as proposed by Lang. Finding that the difference the aforementioned two approaches will only exists in where the research and review obligations are not fulfilled, below the analysis narrows down to such circumstances.

Under the Panel's approach, the implementation of the recommendation will require the cease of the measure at dispute without waiting for the responding to conduct the required research and review and regardless whether the responding Member can find additional information to support the insufficiency of scientific evidence. However, if the responding Member, after its seeking to obtain the additional information necessary for a more objective assessment of risk and review, finds the grounds to continue (or to be more precisely, re-adopt) the provisional measure, there is no provision under the SPS Agreement preventing a Member from doing so. On the contrary, if the responding Member, cannot find the grounds to maintain the measure at issue after its research and review thereof, such measure should not be readopted after its immediate cease after the recommendation is made by the dispute settlement body. On the other hand, under the approach suggesting

separate application of Articles 2.2 and Article 5.7 proposed by Lang, the recommendation will require the responding Member bring the measure into conformity with Article 5.7 and the responding Member shall conduct the required research and review. The provisional SPS measure will continue during the research and review and will be ceased or maintained thereafter depending on the result of the research and review. Compared to where the required research and review is conducted within the a reasonable period of time under Article 5.7, under the Panel's approach, during the period of research and review, *there will be no provisional SPS measure which would be otherwise permitted* and under Lang's approach, during the period of research and review, *the provisional SPS measure, which would be otherwise ceased, remains effective*. The above can be summarized by the following matrix.

Chart III : Result of measures at dispute under Panel's approach and Lang's approach (compared to where the review and research were conducted in accordance with Article 5.7)

Approaches / Result of research & review	Panel's Approach	Lang's Approach
Supports the provisional measure	Provisional SPS measure will be "readopted."	Provisional SPS measure will be maintained.

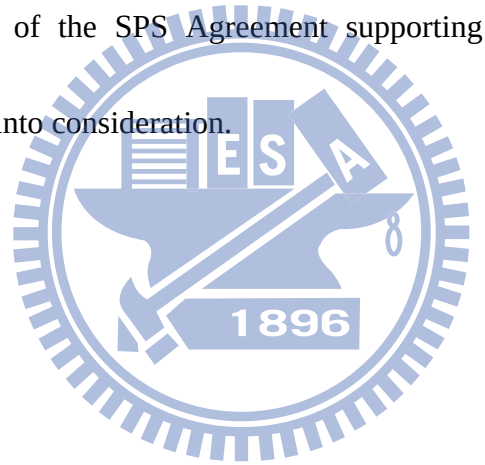
Comparison with where research and review were conducted in accordance with Article 5.7	The SPS measure, which would be otherwise permitted, will be ceased during the research and review period.	Same (SPS measure continues without being affected by the dispute settlement procedures or the required research and review thereof)
Not supports the provisional measure	No provisional SPS measure will be readopted	SPS measure at issue ceases to exist after the research and review
Comparison with where research and review were conducted in accordance with Article 5.7	Same (SPS measure cease to exist immediately after the recommendation and will not be adopted after the research and review)	The SPS measure, which would be otherwise prohibited, will remain effective during the research and review period.

The next question is who should bear the disadvantage of such difference. As summarized above, the difference between the Panel's approach's and Lang's approach's comparison with where the research and review are conducted in a reasonable period of time is *the existence of the provisional SPS measure during the research and review period*, Panel's approach prohibits what would be otherwise permitted, and Lang's approach, on the contrary, permits what would be otherwise prohibited. Panel's approach protects the legitimate interest of the complaining Member, which is basically the economic interest derived from the trade without affecting by the SPS measure at issue, at the cost of the a regulatory gap where a

required and otherwise permitted provisional SPS measure will not be allowed to maintain during the review and research period. On the contrary, Lang's approach ensures the continuance of SPS measures without the aforementioned regulatory gap at the cost of the economic interest of the complaining Member at dispute. Who should bear the disadvantage in such circumstances?

The author advocates the view of the Panel for the following two reasons. First, as aforementioned, the criteria set forth in Article 5.7 are in essence Members' agreement on the distribution of risk and balance of interest between Members in SPS measures provisionally adopted and the four elements set forth in Article 5.7 constitute the legality of the provisional SPS measure. Lack in any of them would deprive the legality of the provisional measure taken. It is especially true when the research and review is closely related to the fundamental ground for the taking of the provisional SPS measure, i.e. the sufficiency of scientific evidence. Secondly, given that it is the responding Member that fails to fulfill its research and review obligations, it should be such Member to take the disadvantage results from such failure, especially considering the uncertainly but possibly long time period it will require for the conduct of review and research. Although the author is also aware of the different natures of the competing interests at issue, i.e. the economic interest of the complaining Member versus the legitimate purpose the SPS measure at issue pursue,

including the life and health of human, animals or plants, which are irrevocable, or other interest, which according to the Panel in *EC-Biotech Products* as aforementioned, including economic ones, that will be protected against damage from the entry, establishment or spread of pests, as applicable. A sophisticated deliberation of the risk allocation might take such difference of natures of the competing interests at issue into consideration, especially considering their irrevocability, but the author is not in a position to do so before finding more grounds from the interpretation of the SPS Agreement supporting the inclusion of such comparison of interests into consideration.



VI. THE CONSISTENCY OF THE SAFEGUARD MEASURE WITH ARTICLES 5.1, 5.7, AND 2.2 OF THE SPS AGREEMENT

After analyzing the relationship among Articles 5.1, 5.7 and 2.2 of the SPS Agreement, the Panel started to apply the aforementioned legal interpretation to the instant case at dispute.

A. INITIAL EXAMINATION OF A MEASURE'S CONSISTENCY WITH ARTICLE 5.1 OF THE SPS AGREEMENT

1. A General Issue

Article 5.1 of the SPS Agreement requires Members to ensure their SPS measures be "*based on*" a "*risk assessment*" "*as appropriate to the circumstance*".

With respect to the "based on" requirement, the Panel further elaborated on the timing of a risk assessment to be maintained. The Panel stated that "it is clear to us that SPS measures must be 'based on'…by a risk assessment through out the period of time for which these measures are maintained."[120] The Panel also found that its view was consistent with the view expressed by the Panel in *Australia-Salmon*.[121]

With respect to the notion that a risk assessment must be "appropriate to the circumstances," the Panel recognized that a change in relevant circumstances may

[120] *Id.* para. 7.3030.

[121] *See* Panel Report, *Australia–Measures Affecting Importation of Salmon*, WT/DS/18R, para. 8.100 (June 12, 1998).

have an impact on a completed risk assessment.[122] Thus, a risk assessment shall be conducted accordingly if the circumstances change in order to maintain its relevance and validity.[123] Since the Complaining Parties in the instant case were challenging the maintenance of the disputed measures, the Panel found that its task was to determine that whether, on the date of the establishment of this Panel, each safeguard measure was based on an assessment of the risk which was appropriate to the circumstances *existing at that time*.[124]

Panel's recognition of the impact of the change in circumstances on the risk assessment is crucial. The change in circumstances can be observed from two facets. On the one hand, the request of attention to the change in circumstances functions as a monitoring mechanism to the provisional measures taken. Once scientific evidence needed to conduct a qualified risk assessment become available after the provisional measures are adopted, the provisional measures lose their grounding and could not be maintained. On the other hand, it opens the door for the introduction of new provisional measures even if there exists a qualified risk assessment under Article 5.2 of the SPS Agreement. Newly-finding scientific evidence may turn an originally-determined sufficiency of scientific evidence to be insufficiency and

[122] *EC–Biotech Products*, *supra* note 10, para. 7.3031.

[123] *See id.*

[124] *Id.* para.7.3034 [emphasis added].

therefore provides the justification for the adoption of new provisional measures under Article 5.7 of the SPS Agreement.[125]

2. Risk Assessment

After deciding the general issue, the Panel commenced its analysis of individual safeguard measure to decide whether the documents the measures relied on might qualify a risk assessment. For the purpose of this paper, below we will use Austria's measure on T25 maize as an example.

When elaborating the definition of a risk assessment specified in Annex A(4) to the SPS Agreement, the Appellate Body in *Australia-Salmon* identified three criteria that constitute a risk assessment, including (1) identification of the diseases; (2) evaluation of the likelihood; and (3) evaluation of the likelihood according to the SPS measures which might be applied. The Panel then followed this rule and scrutinized the selected documents existing at the time when the Panel was established.

(1) Austria's Reasons document

This document focused on the concerns regarding the lack of a monitoring program for possible long term environmental impacts associated with herbicide use on GM plants and the spread of pollen from GM-cultivated fields

[125] *See* Antonia Eliason, *Science versus law in WTO Jurisprudence: The (Mis)interpretation of the scientific process and the (in)sufficiency of scientific evidence in EC-biotech*, 41 NYUJILP 341, 376 (2009).

to other fields in the surrounding areas. However, this document only included reference to possibilities of associated risks. It did not provide an evaluation of the likelihood of such risks occurring.[126] Therefore, it failed to fulfill the second requirement of a qualified risk assessment.

(2) Hoppicheler Study

This study focused on the protection of environmentally-sensitive areas. However, this study did not indicate the relative "probability" of the potential risks it identified, but rather made reference to "possibilities" of risks or simply to the inability to determine probabilities.[127] The WTO jurisprudence has established the rules that possibility and probability are different, and that possibility alone is not sufficient to satisfy the requirement of risk assessment.[128] Therefore, this study cannot be qualified as a risk assessment, either.

(3) Austrian study on toxicology and allergology of biotech products of March 2003

This study only evaluated risk assessment *procedures*, instead of addressing the

[126] *Id.* para.7.3041.

[127] *Id.* para.7.3044.

[128] *See* Appellate Body Report, *Australia–Measures Affecting Importation of Salmon*, WT/DS/AB/R18, paras. 123-24 (Oct. 20, 1998) (adopted Nov. 6, 1998) [hereinafter *Australia-Salmon*].

potential for adverse effects on human and animal health arising from the consumption of specific foods containing or consisting of GMOs.[129]

(4) As for Austria's concerns on the development of antibiotic resistance, there were no available documents at all.[130]

In light of the analysis above, there were no documents that could be qualified as the "risk assessment" within the meaning of Annex A(4) and Article 5.1 of the SPS Agreement. However, in addition to these documents provided by Austria, the EC contended that the risk assessment conducted by CA and SCP, which was carried out at the time when the original EC consent was given, constituted a risk assessment.[131] The Panel agreed with the EC[132] and proceeded to examine whether the Austrian measure was "based on" either of these risk assessments.

3. Based on

The EC raised two main arguments in supporting the Austrian measures to fulfill the "based on" requirement. The EC's first argument was that Austria acted on the basis of new scientific information, which presented a view divergent from the mainstream scientific opinion reflected in the original risk assessment. The Panel

[129] *EC–Biotech Products*, *supra* note 10, para.7.3049.

[130] *Id.* para.7.3050.

[131] *Id.* para. 7.3054.

[132] *Id.*

admitted that the Appellate Body in *EC-Hormones* stated that "responsible and representative governments may act in good faith on the basis of what, at a given time, may be a divergent opinion coming from qualified and respected sources."[133] The Panel however pointed out the difference between *EC-Hormones* and the instant case. The former case related to a situation where the divergent opinion was presented as opposed to a single mainstream document. By contrast, in the instant case, both the risk assessment conducted by CA and SCP only presented one single opinion which did not warrant Austria's measure. There was actually no divergent opinion in such documents at all. The Panel reiterated that "where a given risk assessment sets out a single opinion, it cannot be reasonably said that an SPS measure is 'based on' *that* risk assessment if the relevant SPS measure reflects a divergent opinion which is not expressed in the risk assessment in question."[134] Since Austria's proposed new information was not contained in the original risk assessment conducted by CA and SCP, the Panel concluded that Austrian measure was not based on those documents, rather than on its own modified version of the assessment, namely, its divergent assessment.[135]

The Panel also clarified that such an interpretation did not bar Members from

[133] Appellate Body Report, *EC–Hormones 18*, *supra* note, paras.193-94.

[134] *EC–Biotech Products*, *supra* note 10, para.7.3060.

[135] *See id.* para. 7.3061.

relying in part on an existing risk assessment which sets out a single opinion. The Panel stated that "but to the extent they disagreed with some or all of the conclusion contained in such an assessment, it would be necessary for Members to explain, by reference to the existing assessment, how and why they assess the risk differently, and to provide their revised or supplemental assessment of the risks."[136] However, neither the EC nor Austria ever did so.[137]

Generally, the Panel agreed with EC's further argument that the same risk assessment might support a variety of SPS measures.[138] Nevertheless, in the present case, the Panel found that the risk assessment conducted by the lead CA and by the SCP has given positive finding on *T25 maize* that the biotech product presents no greater risk to human health or the environment than its conventional counterpart.[139] Thus, the Panel was not convinced that the Austrian use of strictest type of SPS measure, *i.e.* a complete prohibition, was warranted by such a risk assessment.

Based on the analysis above, the Panel reached the initial conclusion that the Austrian measure that prohibited the marketing of T25 maize was not based on a risk assessment pursuant to Article 5.1 of the SPS Agreement.[140]

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[136] *Id*. para. 7.3062.

[137] *Id.*

[138] *Id.* para. 7.3063, 7.3064.

[139] *Id*. para, 7.3064.

[140] *Id.* para. 7.3069.

To sum up, the Panel's found that EC failed to provide a qualified "risk assessment" which could support its Member State's measure. If the EC had formulated a decent one, it might not have been necessary for them to avail the risk assessment made by CA and SCP as a justification for their measure. Admittedly, the Panel clearly and correctly construed the "divergent opinion principle." Meanwhile, it is commendable to see the Panel showing flexibility on this issue. The Panel did not bar Members from introducing new evidence into an existing risk assessment as long as they may provide an explanation aforementioned. Such an explanation is necessary and would not be an undue burden to meet the "base on" requirement. If Members still cannot provide a qualified risk assessment, they shall invoke Article 5.7 as a justification, instead of blurring the line between Article 5.1 and Article 5.7.

B. EXAMINATION OF A MEASURE'S CONSISTENCY WITH ARTICLE 5.7 OF THE SPS AGREEMENT AND THE FINAL FINDING REGARDING ITS CONSISTENCY WITH ARTICLE 5.1 THEREOF

As indicated above, the Panel clarified the relationship between Articles 5.1 and 5.7 of the SPS Agreement by stating that "if a challenged measure is not consistent with one of the four cumulative requirements of Article 5.7, the aforementioned obligation of Article 5.1 is applicable to that measure, provided that there are no other

elements which render Article 5.1 inapplicable."[141] This opinion is consistent with the approach adopted by the Appellate Body in *Japan-Agriculture II* and *Japan-Apples*, which examined Article 5.7 of the SPS Agreement first, followed by Article 5.1 thereof. Although the Panel made an initial examination of the measure's consistency with Article 5.1 of the SPS Agreement because of the special circumstances in this case, the Panel needed to make a decision on the disputed measures' consistency with Article 5.7 of the SPS Agreement in order to make the final decision on its consistency with Article 5.1 thereof. Therefore, the Panel proceeded to analyze whether the measure at issue was consistent with Article 5.7 of the SPS Agreement.

The Panel recalled the finding of the Appellate Body in *Japan-Agriculture II*, which specifying that there were four requirements in Article 5.7 of the SPS Agreement to be met for a Member to legally adopt provisional measure under Article 5.7 thereof.[142] As long as any single requirement is not met, the measure cannot be

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[141] *Id.* para. 7.2998.

[142] *Japan–Agricultural Products II*, *supra* note 87, para. 89. The Appellate Body thereof stated that "[p]ursuant to the first sentence of Article 5.7, a Member may provisionally adopt an SPS measure if this measure is: (1) imposed in respect of a situation where "relevant scientific information is insufficient"; and (2) adopted "on the basis of available pertinent information." Pursuant to the second sentence of Article 5.7, such a provisional measure may not be maintained unless the Member which adopted the measure: (1) "seek[s] to obtain the additional information necessary for a more

found consistent with Article 5.7 of the SPS Agreement. Where the exemption provided by Article 5.7 of the SPS Agreement can not be established, Article 5.1 thereof will then apply to that case.

The Panel started from the first requirement of Article 5.7 of the SPS *Agreement*—the insufficiency of relevant scientific evidence. When examining this requirement, the Panel confronted two questions. First, whether the sufficiency of relevant scientific evidence must be assessed by reference to Austria's appropriate level of sanity or phytosanitary protection, and second, whether the sufficiency of such scientific evidence is to be judged at the time of adoption of the Austrian safeguard measure or at the time of review by the Panel, *i.e.*, at the time the Panel's terms of reference were fixed.[143]

1. Relevance of the Appropriate Level of Sanitary or Phytosanitary Protection with the Risk Assessment

The EC managed to link the assessment on the sufficiency of relevant scientific evidence to the protection goals pursued by legislators.[144] The Panel recalled the decision of the Appellate Body in *Japan-Apples*, which states that "'relevant scientific

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objective assessment of risk"; and (2) "review[s] the … measure accordingly within a reasonable period of time."

[143] *EC–Biotech Products*, *supra* note 10, para. 7.3232.

[144] *Id.* para.7.3233.

evidence' will be 'insufficient' within the meaning of Article 5.7 if the body of available scientific evidence does not allow, in quantitative or qualitative terms, the performance of an *adequate* assessment of risks as required under Article 5.1 and as defined in Annex A to the SPS Agreement."[145] The Panel was not convinced that the so called "adequate assessment" should be understood as a relative subjective approach of the appropriate level of SPS protection sought by national legislators.[146] Rather, it took an objective stand over the issue, noting that the second sentence of Article 5.7 underlined the obligation of Members to seek to obtain the additional information necessary for "a more objective assessment of risk."[147]

Further, the Panel referred to risk assessment techniques established by relevant international organizations, such as Codex Alimentarius Commission and International Plant Protection Convention (IPPC) in distinguishing risk assessment from risk management that is more relevant to the determination of appropriate measures. For instance, the *Working Principles for Risk Analysis for the Risk*

[145] *Japan–Apples*, *supra* note 75, para. 179 [emphasis added].

[146] The Panel was indeed aware that a Member's appropriate level of protection is relevant to determining the SPS measure to be applied, if any, to protect that member from risks, evidenced in Articles 5.3 and 5.6 of the SPS Agreement. *EC–Biotech Products*, *supra* note 10, para. 7.3242.

[147] *Id.* para.7.3236. The Panel further argued that scientists did not need to know a member's "acceptable level of risk" in order to assess objectively the existence and magnitude of a risk. *Id.* para.7.3243. Panel's opinion on this issue in fact is inconsistent with the Appellate Body report of *EC-Hormones*, *see supra* note 18 and the accompany text.

Analysis of Food Derived from Modern Biotechnology state that "[t]he report of the risk assessment should indicate any constraints, uncertainties, assumptions and their impact on the risk assessment.… The Responsibility for resolving the impact of uncertainty on the risk management decision lies with the *risk manager*, not the *risk assessors*."[148]

In conclusion, the Panel disagreed with EC's contention that the "insufficiency of relevant scientific evidence" in Article 5.7 of the SPS Agreement must be assessed by reference to the appropriate level of protection of importing Members.[149]

Panel's separation of the risk assessment from the political risk management is challenged by some scholars.[150] According to Antonia Elison, it is impossible to fully differentiate the two when addressing the potential environmental hazards of GMOs.[151] The ignorance of the national preference with respect to the importance accorded to environmental protection is effectively to claim that a uniform level of risk acceptability must be imposed on a global scale.[152]

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[148] Codex Alimentarius Commission, *Working Principles for Risk Analysis for the Risk Analysis of Food Derived from Modern Biotechnology* of the Codex Alimentarius (adopted on June/July 2003), Section III, Codex Procedural Mannual, 14th edition, 2004, para. 25.

[149] *EC–Biotech Products*, *supra* note 10, para. 7.3246.

[150] *See* Antonia Eliason, *supra* note 125.

[151] *Id.* at 353.

[152] *Id.* at 353 & 354.

The panel of the *U.S.-Hormone Suspension* followed the opinion of the *EC–Biotech Products* on this issue, disconnecting the determination of the sufficiency of scientific evidence for conducting qualified risk assessment from the intended level of protection.[153] However, the Appellate Body thereof reversed the Panel on this issue.[154] The Appellate Body of the *U.S.-Hormone Suspension* first recalled the Appellate Body Report of the *EC-Hormones*, which noted that the SPS Agreement does not refer to the concept of "risk management" and it rejected the panel's restrictive interpretation of a "risk assessment" based on that distinction.[155] Although the Appellate Body thereof does not provide a clear demarcation of the factors that may be considered in a "risk assessment" under the SPS Agreement, it made clear that "there is nothing to indicate that the listing of factors that may be taken into account in a risk assessment of Article 5.2 was intended to be a closed list"[156] and that "the concept of 'risk management' is not mentioned in any provision of the SPS Agreement and as such, *cannot be used to sustain a more restrictive*

[153] *See* Panel Report, *United States – Continued Suspension of Obligations in the EC – Hormones Dispute*, WT/DS320/R, paras. 7.610-7.612 (March 21, 2008).

[154] *See* Appellate Body Report, *United States-Continued Suspension of Obligations in the EC-Hormones Dispute*, WT/D320/AB/R (Oct. 18, 2008) (adopted Nov. 14, 2008) [hereinafter the *US-Hormone Suspension*].

[155] Appellate Body Report, *EC-Hormones supra* note 18, para. 181.

[156] *Id*. para. 187.

interpretation of 'risk assessment' than is justified by the actual terms of Article 5.2, Article 8 and Annex C of the SPS Agreement."[157] In addition, the Appellate Body in *US-Hormone Suspension* further opined that "the risk assessment cannot be entirely isolated from the appropriate level of protection"[158] while it emphasized the nature and the importance of the objectiveness requirement of the risk assessment.[159]

Compared to the panel's restrictive interpretation and application of the Article 5.2 of the SPS Agreement in *EC–Biotech Products*, the Appellate Body in *US-Hormone Suspension* reverted to the comparatively broad interpretation thereof by the Appellate Body in *EC-Hormones*. We agree with the approach taken by the Appellate Body in *EC-Hormones* and *US-Hormone Suspension* on this issue of the relationship between risk assessment and risk management. We think the opinion of the Appellate Body may obtain its support from not only the language but also the

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[157] *Id*. para. 206 [emphasis added].

[158] Appellate Body Report. *US-Hormone Suspension*, *supra* note 154, para. 534.

[159] *Id.* The Appellate Body states that "the fact that the WTO Member has chosen to set a higher level of protection may require it to perform certain research as part of its risk assessment that is different from the parameters considered and the research carried out in the risk assessment underlying the international standard. However, the chosen level of protection must not affect the rigour or objective nature of the risk assessment, which must remain, in its essence, a process in which possible adverse effects are evaluated using scientific methods. Likewise, whatever the level of protection a Member chooses does not pre-determine the results of the risk assessment. Otherwise, the purpose of performing the risk assessment would be defeated."

purpose of the Article 5.2 of the SPS Agreement. Appellate Body's recognition of the relevance of level of protection with the risk assessment echoes paragraph 6 of the preamble of the SPS Agreement which promotes the harmonization of SPS measures among Members based on international without sacrificing Member's right to determine its own appropriate level of protection of human, animal or plant life or health.[160] In addition, it is in effect making the recognition of Article 5.7 as a right instead of an exception meaningful, which reaffirms Members' rights to take SPS measures regardless whether there is sufficient scientific evidence. Under Appellate Body's approach, Members' can take measures to pursue the level of protection appropriate to them according to their discretion without restricted by the fact whether the scientific evidence is sufficient, which is, as Panel in *EC-Biotech Products* noted, a factual issue and not controllable by Members. The possible result from recognition of level of protection appropriate to the responding Member in a dispute is that more measures might obtain their justification under Article 5.7 which were to

[160] Its original text is that "*Members, [d]esiring* to further the use of harmonized sanitary and phytosanitary measures between Members, on the basis of international standards, guidelines and recommendations developed by the relevant international organizations, including the Codex Alimentarius Commission, the International Office of Epizootics, and the relevant international and regional organizations operating within the framework of the International Plant Protection Convention, *without requiring Members to change their appropriate level of protection of human, animal or plant life or health*. [emphasis added]" Official text of the SPS Agreement is available on the website of WTO, http://www.wto.org/english/docs_e/legal_e/15sps_01_e.htm (last visited on July 9, 2010).

be subject to Article 5.1 of the SPS if level of protection was not considered in the risk assessment, which we found consistent with the SPS Agreement without concerns that Article 5.7 might be therefore abused. As the Appellate Body found that the core concept of the risk assessment in Article 5.2 is an *objective* assessment of risk, there is no need to limit or restrict the resources where the risks come from as long as such risks can be objectively evaluated. The objectiveness requirement of the risk assessment together with the rational relationship requirement between the risk assessment and the SPS measure may serve their functions to prevent the misuse or abuse of SPS measures well without worrying that the inclusion of the risk arising from the risk management may open the pandora's box to the regulations of the SPS measures under WTO. In addition, there are also other obligations for the Members' taking SPS measures under Article 5.7 to fulfill, which can also serve as a safe valve to prevent misuse of Article 5.7.

2. Time at which the "Sufficiency" or "Insufficiency" of Relevant Scientific Evidence to be Assessed

Another issue was raised regarding whether the alleged "insufficiency" of relevant scientific evidence should be assessed at the time of adoption of the measure at dispute or at the time when the Panel's terms of reference were fixed.[161]

[161] *Id.* para. 7.3247.

The Panel first emphasized a clear linkage between the required insufficiency of scientific evidence and the provisional adoption of a measure in the first sentence of Article 5.7 of the SPS Agreement. In accordance with the Appellate Body's rulings in *Japan-Agriculture Products II*[162] and *Japan-Apples* respectively, the Panel found that the first sentence of Article 5.7 applies to the *adoption* of a provisional measure, and that the second sentence relates to the *maintenance* of such a measure.[163] Furthermore, the Panel reinforced its view by making a terminology comparison among Articles 5.6, 5.8 and the first sentence of Article 5.7 of the SPS Agreement.[164] Articles 5.6 and 5.8 thereof explicitly specify not only the maintenance of SPS measures but also the establishment or introduction of SPS measures.[165] By contrast, there is an intentional omission of the "maintenance" of SPS measures in the first sentence of Article 5.7 of the SPS Agreement.[166] Therefore, it was concluded that the element of the insufficiency of scientific evidence should be determined at the

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[162] *See Japan–Agriculture Products II*, *supra* note 87, para. 89. The Appellate Body stated that "[p]ursuant to the first sentence of Article 5.7, a Member may provisionally *adopt* an SPS measure if this measure (meets the two requirements set out in the first sentence)" and that "[p]ursuant to the second sentence of Article 5.7, such a provisional measure may not be *maintained* unless the Member which adopted the measure (complies with the two requirements set out in the second sentence)."

[163] *EC–Biotech Products*, *supra* note 10, para. 7.3250.

[164] *Id.* para. 7.3251.

[165] *Id.*

[166] *Id*.

time when the provisional SPS measure was adopted.[167]

The Panel also summarized that when dealing with the claims concerning Articles 5.1, 2.2, and the second sentence of Article 5.7 of the SPS Agreement, the requirement should be viewed as it existed at the time the Panel's terms of reference were fixed. However, when dealing with the first sentence of Article 5.7, the time basis for examination is the time of adoption of the measures at dispute.[168] The Panel considered the difference as not incongruent[169] since the latter related to the adoption of the measure, while the former related to the maintenance of the measure. Therefore, although a Member may obtain the justification for its measures from the insufficiency of scientific evidence at the time of the adoption of provisional measures, such Member might still violate its obligation under the SPS Agreement if it does not cease the provisional measures in the event of change in the sufficiency of scientific evidence.

3. The Final Determination of Consistency of Austria- T25 with Article 5.1 of the SPS Agreement

The Panel found that both the SCP opinions delivered in the context of relevant EC approval procedures – the original assessments– and the SCP opinions delivered

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[167] *Id*. para. 7.3253.

[168] *EC–Biotech Products*, *supra* note 10, para. 7.3256.

[169] *See id*.

after the adoption of the relevant member State safeguard measures – the review assessments – are risk assessments within the meaning of Annex A(4) to and Article 5.1 of the SPS Agreement.[170] Therefore, at the time when the measure was adopted, the relevant scientific evidence was not insufficient.[171] The Panel came to the conclusion that the measure at dispute did not satisfy the first requirement of Article 5.7, and consequently failed to be consistent with Article 5.7.[172] Since the exemption provided by Article 5.7 cannot be successfully established, Article 5.1 applies to the measure at dispute. As indicated above, the SPS measure taken by Austria on T25 maize was not "based on" a risk assessment. The Panel determined that the EC had not acted consistently with Article 5.1 of the SPS Agreement.[173]

C. THE CONSISTENCY OF AUSTRIA-T25 WITH ARTICLE 2.2 OF THE SPS AGREEMENT

There are three requirements in the Article 2.2 of the SPS Agreement: (i) SPS measures are to be applied only to the extent necessary to protect human, animal or plant life or health, (ii) SPS measures are to be based on scientific principles, and (iii) SPS measures are not to be maintained without sufficient scientific evidence.

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[170] *Id.* para.7.3260.

[171] *Id.*

[172] *Id.* para. 7.3261.

[173] *Id.* para. 7.3262.

For the first requirement, given the measure has been found to be inconsistent with Article 5.1 of the SPS Agreement, the Panel decided that the import prohibitions made effective through the relevant safeguard measures could not eventually be maintained as they are.[174] Accordingly, the Panel exercised judicial economy regarding the claims under the first requirement in Article 2.2,[175] finding no necessity to make judgment on whether the measures being challenged are inconsistent with such requirement.[176]

For the second and third requirements, the Panel, literally relying on the Appellate Body ruling in *Australia-Salmon*, concluded that by maintaining the challenged safeguard measures to be inconsistently with Article 5.1 of the SPS Agreement, the EC had, by implication, also acted inconsistently with the second and third requirements in Article 2.2 thereof.[177]

The Panel also recalled its finding that the measure was inconsistent with Article 5.7. Based on its analysis structure, the examination of the disputed measure' consistency with Article 2.2 of the SPS Agreement can only be completed after firstly examining Article 5.7 thereof.[178] As indicated, the Austrian safeguard measure on

[174] *Id.* para. 7.3394.

[175] *Id*.

[176] *Id*.

[177] *Id.* para. 7.3396.

[178] *Id*. para. 7.3397.

T25 maize was not based on a risk assessment as required by Article 5.1 of the SPS Agreement, and was not consistent with the requirements of Article 5.7 thereof. Such conclusion means that an exemption to Article 2.2 of the SPS Agreement has not been established, and an implication of the inconsistency of the measure with Article 2.2 thereof can therefore be deduced.[179]

[179] *Id*. para. 7.3398.

VII. CONCLUSION

This Article manages to review and analyze how the WTO Panel applied and interpreted relevant SPS Agreement provisions over the highly controversial GMOs measures adopted by some EC members. Indeed, the Panel had dealt with legal issues very prudently and logically. Its ruling basically followed the jurisprudence of the Appellate Body in the previous cases in exact manner. Besides, the Panel's contribution to a further elaboration on Articles 5.1, 5.5, 5.7 and 2.2 of the SPS Agreement should be highly regarded. The Panelist arguably fulfilled their responsibility as rigid law interpreters.

Overall, the Panel still adheres to the main concerns of the WTO over the liberalization of trade. As mentioned above, the Panel did interpret the legal texts logically and it seems hard to criticize the Panel report from a purely legal point of view. However, it is true that the current context of the SPS Agreement does not extend a proper consideration to the special situation of different cultures.[180] The European countries that are more cautious to GMOs should be given more flexibility

[180] *See* Laylah Zurek, *The European Communities Biotech Dispute: How the WTO Fails to Consider Cultural Factors in the Genetically Modified Food Debate*, 42 TEX. INT'L L. J. 345 (2007) (criticizing the ruling's failure to consider cultural factors and non-market values in the GMO debate). *See also* Carmen G. Gonzalez, *Genetically Modified Organisms and Justice: the International Environmental Justice: the International Environmental Justice Implications of Biotechnology*, 19 GEO. INT'L ENVTL. L. REV. 583 (2007).

or latitude in handling this issue with loft objective of protecting public health and the environment. It is suggested that the SPS Agreement might need to be revised so as to provide reasonable and necessary flexibility to countries with higher or more cautious health or environmental standards.

Given this Panel report was not appealed and has been adopted,[181] the Panel's finding has become the final legal interpretation and application of the relevant provisions of SPS Agreement over the EC GMOs measures thereto. Of course, it remains to be seen whether such judicial conservationism would be maintained or adjusted in the future.[182]

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[181] The EC did not consider its current regulatory regime of GMOs would be affected by the WTO judgment.

[182] There is a growing concern on whether the WTO remains an appropriate forum in adjudicating a dispute highly involving science and health issues instead of a pure trade matter. *See* Strauss, *supra* note 4, at 801, 821-24. *See also* Elison, *supra* note 125, pointing out how the difference between legal speak and science speak would affect the adjudication of the panelists in GMO disputes and further challenging the capacities of the WTO DSB in handling such cases in view of the constitution of the panelists and their backgrounds. For arguing alternative forums to deal with such disputes, *see* Marguerite A. Hutchinson, *Moving beyond the WTO: A Proposal to Adjudicate GMO Disputes in an International Environmental Court*, 10 SAN DIEGO INT'L L.J. 229, 259-62 (2008). In fact, the failure of the EC and its Member States to implement the recommendation of the *EC–Biotech Products* may explain the dilemma faced by the WTO DSB in adjudicating the cases tangled with not only the trade restrictions but also scientific expertise, cultural difference and public concerns. The implementation of the adopted report of the instant case has been postponed for several times (for example, the deadline for the implementation of the recommendation for the dispute with Argentina, the deadline has been postponed to the end of 2009, *see* WTO, WT/DS293/37, July 2, 2009) and only Canada and EC

have reached the final settlement of the dispute (*See* WT/DS292/40, July 17,2009), which is made on July 17, 2009, almost three years after the adoption of the panel report of the case. The lack in the effective and efficient implementation of the adopted reports of DSB may derogate authority and the legitimacy of the WTO DSB. *See* Strauss, *supra* note 2, at 824-825.

References

Books

MURPHY, JOSEPH & LEVIDOW, LES, GOVERNING THE TRANSATLANTIC CONFLICT OVER AGRICULTURAL BIOTECHNOLOGY (2006)

MATSUSHITA, MITSUO, SCHOENBAUM, THOMAS J. & MAVROIDIS, PETROS C., THE WORLD TRADE ORGANIZATION-LAW, PRACTICE, AND POLICY (2006)

POLLACK, MARK A. & SHAFFER, GREGORY C., WHEN COOPERATION FAILS, THE INTERNATIONAL LAW AND POLITICS OF GENETICALLY MODIFIED FOODS (2009)

Articles

Chalmers, Damian, *Risk, Anxiety, and the European Mediation of the Politics of Life*, 30 EUROPEAN L.REV 649 (2005)

Charnovitz, Steve, *The Supervision of Health and Biosafety Regulation by World Trade Rules*, 13 TUL. ENVTL. L. J. 271 (2000)

Covelli, Nick & Hohots, Viktor, *The Health Regulation of Biotech Foods Under the WTO Agreements*, 6 J. IN'T ECON. L. 773 (2003)

Gonzalez, Carmen G., *Genetically Modified Organisms and Justice: the International Environmental Justice: the International Environmental Justice Implications of Biotechnology*, 19 GEO. INT'L ENVTL. L. REV. 583 (2007)

Hutchinson, Marguerite A., *Moving beyond the WTO: A Proposal to Adjudicate GMO Disputes in an International Environmental Court*, 10 SAN DIEGO INT'L L. J. 229 (2008)

Issac, Grant E. & Kerr, William A., *Genetically Modified Organism at the World Trade Organization: A Harvest of Trouble*, 37 J. World Trade 1083 (2003)

Kellow, Aynsley, *Risk Assessment and Decision-Making for Genetically Modified Foods*, 13 RISK 155 (2002)

Lang, Andrew, T.F., *Provisional Measures under Article 5.7 of the WTO's Agreement on Sanitary and Phytosanitary Measures: Some Criticisms of the Jurisprudence So Far*, 42 (6) J. WORLD TRADE 1085, 1091 (2008)

Antonia Eliason, *Science versus law in WTO Jurisprudence: The (Mis)interpretation of the scientific process and the (in)sufficiency of scientific evidence in EC-biotech*, 41 NYUJILP 341 (2009)

Lester, Simon, *WTO—Sanitary and Phytosanitary Measures Agreement—rules/exception—international Law as interpretive tool*, 101 AM. J. INT'L L. 453 (2007)

Lively, Sarah, *The ABCs and NTBs of GMOs: The Great European Union-United States Trade Debate-Do European Restrictions on the Trade of Genetically Modified Organisms Violated International Trade Law?*, 23 NW. J. INT'L L. & BUS. 239 (2002)

McDonald, Michelle K., *International Trade Law and the U.S.-EU GMO Debate: Can Africa Weather this Storm?*, 32 GA. J. INT'L & COMP. L. 501 (2004)

Motaal, Doaa Abdel, *The "Multilateral Scientific Consensus" and the World Trade Organization*, 38 J. WORLD TRADE 855 (2004)

Pauwelyn, Joost, *A typology of Multilateral Treaty Obligations: Are WTO Obligations Bilateral or Collective in Nature?*, 14 Eur. J. Int'l L. 907 (2003)

Peck, Alison, *The New Imperialism: Toward an Advocacy Strategy for GMO Accountability*, 21 GEO. INT'L ENVTL. L. REV. 37 (2008)

Peel, Jacqueline, *A GMO by Any Other Name… Might Be an SPS Risk!: Implications of Expanding the Scope of the WTO Sanitary and Phytosanitary Measures Agreement*, 17 EJIL 1009 (2008)

Pereira, Ravi Afonso, *Why Would International Administrative Activity Be Any Less Legitimate?- A Study of the Codex Alimentarius Commission*, 9 GERMAN L.J. 1693

Phillips, Peter W. B. & Kerr, W.A., *Alternative Paradigms: The WTO versus the Biosafety Protocol for Trade in Genetically Modified Organisms*, 34 J. World Trade 63 (2000)

Scott, Joanne, *European Regulation of GMOs and the WTO*, 9 COLUM. J. EUR. L. 213 (2003)

Shaffer, Gregory, *A Structure Theory of WTO Dispute Settlement: Why Institutional Choices Lies at the Center of the GMO Case*, 41 N.Y.U.J. INT'L L. & POL. 1

Strauss, Debra M., *Feast or Famine: The Impact of the WTO Decision Favoring the U.S. Biotechnology Industry in the EU Ban of Genetically Modified Foods*, 45 AM. BUS. L. J. 775 (2008)

Strauss, Debra M., *The International Regulation of Genetically Modified Organisms: Importing Caution into the U.S. Food Supply*, 61 FOOD & DRUG L. J. 167 (2006)

Wolff, Christiane, *Regulating Trade in GMOs: Biotechnology and the WTO*, TRADING IN GENES: DEVELOPMENT PERSPECTIVES ON BIOTECHNOLOGY, TRADE AND SUSTAINABILITY 217 (edited by Melendez-Oriz, Ricardo & Sanchez, Vicente, 2003)

Wynne, Brian, *Creating Public Alienation: Expert Cultures of Risk and Ethics on GMOs*, 10(4) SCIENCE AS CULTURE 445 (2001)

Zurek, Laylah, *The European Communities Biotech Dispute: How the WTO Fails to Consider Cultural Factors in the Genetically Modified Food Debate*, 42 TEX. INT'L L. J. 345 (2007)

WTO Panel and Appellate Body Reports

Appellate Body Report, *European Communities- Measures Concerning Meat and Meat Products (Hormones)*, WT/DS26/AB/R, WT/DS48/AB/R (Jan. 16, 1998)

Appellate Body Report, *Australia-Measures Affecting Importation of Salmon*, WT/DS18/AB/R (Oct.20, 1998)

Appellate Body Report, *Japan-Measures Affecting Agriculture Products*, WT/DS76/AB/R (Feb. 22, 1999)

Appellate Body Report, *Japan-Measures Affecting the Importation of Apples*, WT/DS245/R (Nov. 26, 2003)

Appellate Body Report, *European Communities-Conditions for Granting of Tariff Preferences to Developing Countries*, WT/DS246/AB/R (Apr. 7, 2004)

Appellate Report, *Mexico-Tax Measures on Soft Drinks and other Beverages*, WT/DS308/AB/R (adopted March 24, 2006)

Appellate Body Report, *United States-Continued Suspension of Obligations in the EC-Hormones Dispute*, WT/D320/AB/R (Oct. 18, 2008) (adopted Nov. 14, 2008)

Panel Report, *Japan-Measures Affecting Agriculture Products*, WT/DS76/R (Oct.27, 1998)

Panel Report, *Japan-Measures Affecting the Importation of Apples*, WT/DS245/R (July 15, 2003)

Panel Report, *European Communities — Measures Affecting the Approval and Marketing of Biotech Products*, WT/DS291, 292, 293/R (Sept. 29, 2006)

Panel Report, *European Communities- Trade Description of Sardines*, WT/DS 231/R (May 29, 2002)

Panel Report, *United States – Continued Suspension of Obligations in the EC – Hormones Dispute*, WT/DS320/R, (March 21, 2008)

Documents

EC Council Directive 2001/18/EC, 2001 O.J. (L106)

Agreement under Article 21.3(b) of the DSU— *Measures Affecting the Approval and Marketing of Biotech Products*, WT/DS293/37 (July 2, 2009)

Notification of a Mutually Agreed Solution— *Measures Affecting the Approval and Marketing of Biotech Products*, WT/DS292/40 (July 17, 2009)

International Law Commission, Report of the Study Group of the International Law Commission, *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, ILC, UN Doc. A/CN.4/L.682 (finalized by Koskenniemi, Martti 2006)

中文期刊

牛惠之，「科技法律」與科技「治理」--研究生醫、安全與環境等跨科技法律議題之方法與省思，月旦法學169，頁142-155 (2009年6月)。

牛惠之，WTO技術性貿易障礙 (TBT) 協定就安全貿易之適用與限制--環保標示、GMO標示之評析，政大法學評論95，頁323-383 (2007年2月)。

牛惠之，生物科技之風險議題之省思--兼論GMO與基因治療之科技風險管理與規範體系，東吳法律學報 15:1，頁179-228 (2003年8月)。

林彩瑜，從歐體生技產品爭端之裁決論SPS協定對GMO規範之影響，國立臺灣大學法學論叢 36:4，頁257-323 (2007年12月)。

李森墉，從法制調和與地方自治的觀點看GMO-Free運動與相關區域立法，科技法律透析21:4，頁28-45 (2009年4月)。

黃慧嫻，奧地利全面實施GMO禁令可能使歐盟面臨WTO制裁，生技與醫療器材報導103，頁57-59 (2008年2月)。

楊一晴，談美國GMO管理規範之修法趨勢--從「全有全無」到「多階分級」許可管理之制度轉換，科技法律透析 21:5，頁38-64 (2009年5月)。

楊一晴，美研擬修改以風險為基礎的GMO許可制，生技與醫療器材報導112，頁6-8 (2008年11月)。

楊一晴，CODEX建立GMO評估標準加速國際貿易流通，生技與醫療器材報導111，頁11-13 (2008年10月)。