Trade, Law *and* Development

Aditya Suresh, *Re-Calibrating the Standard of Review of Scientific Evidence in WTO Dispute Settlement*
15(2) TRADE L. & DEV. 1 (2023)

RE-CALIBRATING THE STANDARD OF REVIEW OF SCIENTIFIC EVIDENCE IN WTO DISPUTE SETTLEMENT

ADITYA SURESH*

The World Trade Organization's (WTO) covered agreements strike a delicate balance between prioritising free trade and allowing Members to pursue legitimate policy goals in areas like public health and environmental policy. While WTO rules are permissive of Member's policies, they require that Members justify the consistency of their policies, either as a justification under Article XX of the General Agreement on Tariffs and Trade (GATT) or as a positive obligation under the Agreements on the Application of Sanitary and Phyto-Sanitary Measures (SPS Agreement) or Technical Barriers to Trade (TBT Agreement). When a Member's measure is challenged before a WTO Panel or the Appellate Body, it must provide scientific evidence to support its measure. In this context, the SPS Agreement establishes detailed provisions regarding the standard of review for such scientific evidence. However, these provisions do not fully address the standard of review and have, in some cases, been applied inconsistently. By delving into the practices of WTO Panels and the Appellate Body as distinguished from other international courts or tribunals, this paper aims to address two pertinent concerns with the WTO's application of the standard of review of scientific evidence: the level of deference granted to a Member's scientific determinations and the relationship between the scientific evidence and the Member's measure. Subsequently, it proposes modifications on both fronts that would help WTO dispute settlement address contemporary disputes and meet its goals as the guardian of international trade law.

TABLE OF CONTENTS

* India-Qualified Advocate (2022). The author may be contacted at aditya.suresh[at]mids.ch.

I. INTRODUCTION

As the world confronts new challenges to public health following the devastation of COVID-19, including increased scrutiny of goods and import bans on health and safety parameters, scientific evidence will become increasingly relevant in assessing whether Member State measures that intend to meet these challenges are consistent with the WTO covered agreements. However, the WTO's Understanding on the Rules and Procedures Governing the Settlement of Disputes (DSU) does not contain any specific procedural rules regarding the review of scientific evidence.[1] Instead, the WTO's covered agreements provide multiple standards for reviewing scientific evidence based on the context in which a party seeks to introduce such evidence. In applying these rules, Panels and the Appellate Body have further refined these rules in ways that are, in some instances, considered too restrictive or too broad.[2] This paper aims to shed some light on the rules within the WTO's dispute settlement system regarding the review of scientific evidence and attempts to distinguish the characteristics of these rules from those adopted by the International

[1] *See infra* Part II.A.

[2] DEFERENCE IN INTERNATIONAL COURTS AND TRIBUNALS: STANDARD OF REVIEW AND MARGIN OF APPRECIATION 155 (Lukasz Gruszczynski & Wouter Wener eds., 2014) [hereinafter Gruszczynski et al.].

Court of Justice (ICJ) and international investment tribunals. Further, it provides suggestions regarding how the WTO's standard of review for scientific evidence could be modified and applied to contemporary international trade disputes.

Accordingly, Part II examines the rules and procedures within the WTO's covered agreements related to the standard of review for scientific evidence, while Part III discusses the jurisprudence adopted by other international courts and tribunals, focusing on the ICJ and international investment tribunals. Subsequently, Part IV suggests modifications to the WTO's standard of review for scientific evidence, which can help it better adjudicate contemporary international trade disputes. Part V provides concluding remarks.

II. REVIEW OF SCIENTIFIC EVIDENCE WITHIN THE WTO'S COVERED AGREEMENTS

Within the WTO's covered agreements, the standard for review of scientific evidence has been addressed in three contexts: as part of the assessment of the consistency of measures with the SPS Agreement, the TBT Agreement, and as part of the determination of the applicability of a justification under Article XX(b) of the GATT. Of these, the GATT applies a general standard of review to scientific evidence that has been derived from the DSU, while the SPS and TBT Agreements impose additional requirements. Part A examines the general standard of review that has been derived from the DSU, while Parts B and C explain the specific rules within the SPS and TBT Agreements, respectively.

A. The General Standard of Review for Scientific Evidence under the DSU

As noted above, the DSU contains no express provisions concerning the standard of review applicable to scientific evidence. Under Article 11, Panels should make an objective assessment of the facts of the case.[3] In disputes concerning Article XX(b) of the GATT, Article 11 of the DSU has been applied as part of the 'necessity' assessment,[4] during the weighing and balancing test.[5] However, the Appellate Body

---

[3] Understanding on Rules and Procedures Governing the Settlement of Disputes art. 11, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 2, 1869 U.N.T.S. 401 [hereinafter DSU].

[4] *See, e.g.,* Appellate Body Report, *European Communities — Measures Affecting Asbestos and Asbestos-Containing Products*, ¶ 161, WTO Doc. WT/DS135/AB/R (adopted Mar. 12, 2001) [hereinafter EC — Asbestos (AB)].

[5] *Id.*

in *EC — Asbestos* noted that Panels enjoyed a margin of discretion in assessing the value and weight of the evidence to arrive at their objective assessment.[6] Further, the Panel in this case noted that it merely had to examine the existence of a risk and the necessity of the measure in relation to the risk,[7] refusing to extend the more detailed principles within the SPS Agreement to Article XX(b).[8] Regarding the standard of review of scientific evidence under Article XX(b), the Appellate Body in this case rejected Canada's argument that scientific evidence under Article XX(b) must constitute a majority or preponderant opinion.[9] However, no specific test regarding scientific evidence was provided. Since a United States' (US) proposal to expressly require scientific evidence as part of the analysis under Article XX(b) of the GATT was rejected,[10] it has been suggested that WTO Members can, but do not have to, have recourse to scientific expertise to justify a regulatory intervention through recourse to Art. XX(b).[11]

B. Scientific Evidence under the SPS Agreement

Compared to the GATT, the SPS Agreement provides a detailed regime for the assessment of scientific evidence and imposes multiple obligations on Member States to ensure that their sanitary and phytosanitary measures are consistent with scientific evidence. Procedurally, where a dispute involves scientific issues, the complainant must establish a *prima facie* case of inconsistency with the SPS Agreement before the Panel, after which the burden of proof shifts to the respondent, who must refute the complainant's allegations.[12] In doing so, the SPS Agreement mandates Panels to seek scientific advice from experts chosen by the Panel in consultation with the parties to the dispute.[13] Regarding the standard of review, the SPS Agreement grants a lot of deference to Member States in determining the level of protection they desire from the SPS measures. Instead,

---

[6] *Id.*

[7] Panel Report, *European Communities — Measures Affecting Asbestos and Asbestos-Containing Products*, ¶¶ 8.181-8.182, WTO Doc. WT/DS135/R (adopted Sept. 18, 2000).

[8] *Id.* ¶ 8.180.

[9] EC — Asbestos (AB), *supra* note 4, ¶ 178.

[10] GATT Secretariat, *Submission of the United States on Comprehensive Long-Term Agricultural Reform*, at 11, GATT Doc. MTN.GNG/NG5/W/118 (Oct. 25, 1989).

[11] PETROS MAVROIDIS, TRADE IN GOODS 340 (2nd ed. 2012) [hereinafter Mavroidis].

[12] Appellate Body Report, *Japan — Agricultural Products II*, ¶ 122, WTO Doc. WT/DS76/AB/R (adopted Mar. 19, 1999) [hereinafter Japan — Agriculture Products II (AB)].

[13] Agreement on the Application of Sanitary and Phytosanitary Measures art. 11.2, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1869 U.N.T.S. 401 [hereinafter SPS Agreement].

within Articles 2 and 5, it focuses on three points: first, the risk assessments conducted by Member States to determine this level of protection;[14] second, the relationship between the measure and the level of protection sought,[15] and third, whether the State could have adopted a less trade-restrictive alternative to its current measure.[16] Sub-parts 1 to 3 analyse these points in turn.

1. Risk Assessments under the SPS Agreement

As regards the procedure used by Member States to determine their appropriate level of protection, Article 5.1 of the SPS Agreement obliges Member States to base their sanitary or phytosanitary measures on a risk assessment, which must take risk assessment techniques developed by the relevant international organisations into account.[17] Even in case of a dispute, the SPS Agreement maintains this deference to State sovereignty which is subject to certain limits. Under Articles 5.2 and 5.3 of the SPS Agreement, States are required to base their risk assessments on multiple factors, *inter alia*, available scientific evidence, relevant processes and production methods and relevant inspection,[18] as well as economic factors like the potential damage in terms of loss of production or sales in the event of the entry, establishment or spread of a pest or disease; the costs of control or eradication in the territory of the importing Member; and the relative cost-effectiveness of alternative approaches to limiting risks.[19] In addition to these safeguards within the text of the SPS Agreement, WTO Panels and the Appellate Body have added colour to these obligations by defining the standard of review that would be applied to a State's risk assessment. In *EC — Hormones*, the Panel noted that the SPS Agreement empowers the Panel to require the respondent State to submit scientific evidence in support of its SPS measures.[20]

However, it does not empower the Panel to conduct its own risk assessment based on scientific evidence.[21] This position was explained in further detail by the

---

[14] *Id.* art. 5.
[15] *Id.* art. 2.2; Panel Report, *United States — Certain Measures Affecting Imports of Poultry from China*, ¶¶ 7.197-7.200, WTO Doc. WT/DS392/R (adopted Sept. 9, 2010) [hereinafter US — Poultry].
[16] SPS Agreement, *supra* note 13, art. 5.4.
[17] *Id.* art. 5.1.
[18] *Id.* art. 5.2.
[19] *Id.* art. 5.3.
[20] Panel Report, *European Communities — Measures Concerning Meat and Meat Products (Hormones)*, ¶ 8.101, WTO Doc. WT/DS48/R (adopted Feb. 13, 1998).
[21] *Id.* ¶ 8.101.

Appellate Body in *US — Continued Suspension*, where the Panel set out four indicators that must be considered when reviewing a Member's risk assessment: first, whether the views upon which an SPS measure is based are from qualified and respected sources; second, whether the reasoning articulated on the basis of scientific evidence is objective and coherent; third, whether the particular conclusions drawn by the Member assessing the risk find sufficient support in the scientific evidence relied upon; and fourth, whether the results of the risk assessment sufficiently warrant the SPS measure at issue.[22] As summed up by the Appellate Body in *Australia — Apples*, the standard under Article 5.1, which mirrored the general standard under the DSU, required neither that the Panel conduct a *de novo* review nor that the Panel defer to the State's risk assessment completely.[23] Accordingly, it noted that Panels reviewing scientific evidence must first determine whether the scientific basis relied upon by the risk assessor is legitimate before reviewing whether the reasoning and the conclusions of the risk assessor that rely upon such a scientific basis are objective and coherent.[24]

2. The Relationship between the Scientific Evidence and the Measure

The relationship between the scientific evidence and the measure has been addressed within Article 2.2 of the SPS Agreement, which requires Member States to base their measures on scientific principles and disallows them from maintaining any SPS measures without sufficient scientific evidence.[25] In other words, the scientific evidence must have a rational relationship to the measure, sufficiently demonstrating the extent of the risk that the measure seeks to address, and be evidence that is needed for a risk assessment.[26] Regarding what constitutes scientific evidence, the Panel in *Japan — Apples* understood the term as being evidence gathered through scientific methods, including evidence of risks and the impact of the measure on these risks.[27] Based on this understanding of scientific evidence, Article 2.2 creates two important obligations: first, there must be a 'rational relationship' between the

---

[22] Appellate Body Report, *United States/Canada — Continued Suspension of Obligations in the EC – Hormones Dispute*, ¶ 598, WTO Doc. WT/DS320/AB/R (adopted Nov. 14, 2008) [hereinafter US — Continued Suspension (AB)].

[23] Appellate Body Report, *Australia — Measures Affecting the Importation of Apples from New Zealand*, ¶¶ 211-212, WTO Doc. WT/DS367/AB/R (adopted Dec. 17, 2010) [hereinafter Australia — Apples (AB)].

[24] *Id.* ¶ 220.

[25] SPS Agreement, *supra* note 13, art. 2.2.

[26] US — Poultry, *supra* note 15.

[27] Panel Report, *Japan — Measures Affecting the Importation of Apples*, ¶¶ 8.92-8.98, WTO Doc. WT/DS245/R (adopted Dec. 10, 2003) [hereinafter Japan — Apples (Panel)].

scientific evidence and the measure in question; and second, the scientific evidence must be 'sufficient'.

Regarding the requirement of a rational relationship, the Appellate Body in *Japan — Agricultural Products II* noted that it would depend on the circumstances of each case, including the characteristics of the measure at issue and the quality and quantity of the scientific evidence.[28] On the point of sufficiency, the Appellate Body in the same case understood sufficiency as a 'relational concept' that required the existence of a sufficient or an adequate relationship between the SPS measure and the scientific evidence.[29] However, this understanding of sufficiency appears inadequate since the Appellate Body merely suggests that there must be a relationship between the evidence and the SPS measure. Even when confronted with the question of whether 'sufficient' referred to a 'patent insufficiency' in *Japan — Agricultural Products II*, it merely noted that neither Article 2.2 nor Article 5.1 suggested that sufficiency was limited to 'patent insufficiency'.[30] It left open the question of how broad the term 'sufficient' was intended to be, which has become the principal point of concern with how the WTO has approached the review of scientific evidence.

3. The Trade-Restrictiveness of the Measure

Within the SPS Agreement, Article 3 on harmonisation imposes an obligation on Member States to base SPS measures on international standards but allows them to maintain measures that achieve a higher level of protection than these standards recommend if there is a scientific justification.[31] However, under Articles 2 and 5, the Agreement proceeds to create several additional obligations concerning trade-restrictiveness. Under Article 2.2 of the SPS Agreement, Member States are required to apply SPS measures only to the extent necessary to protect human or animal health.[32] Further, under Article 2.3, they are precluded from applying SPS measures as means of arbitrary or unjustifiable discrimination or using them as disguised restrictions on international trade.[33]

These general obligations are reiterated in more specific terms within Articles 5.4 and 5.5,[34] while Article 5.6 requires Member States to ensure that such measures are

---

[28] Japan — Agriculture Products II (AB), *supra* note 12, ¶ 84.
[29] *Id.* ¶ 73.
[30] *Id.* ¶ 82.
[31] SPS Agreement, *supra* note 13, art. 3.
[32] *Id.* art. 2.2.
[33] *Id.* art. 2.3.
[34] *Id.* arts. 5.4, 5.5.

not more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility.[35] In addition to these obligations, where a Member State has reason to believe that an SPS measure is more trade-restrictive than necessary, Article 5.8 allows such a Member State to demand an explanation of the reasons behind the measure.[36] Regarding how these obligations are to be understood, the Appellate Body in *Australia — Salmon* found that trade-restrictiveness under Article 5.6 required finding an alternative measure that, first, is reasonably available taking into account technical and economic feasibility; second, achieves the Member State's appropriate level of sanitary or phytosanitary protection; and third, is significantly less restrictive to trade than the SPS measure contested.[37] These elements have to be cumulatively established by the complaining party proposing the alternative measure,[38] and have to provide scientific evidence to this effect.[39] The three requirements have largely been applied on a case-by-case basis,[40] depending on the alternatives proposed by the complaining State. However, the Appellate Body has made it clear that the 'appropriate level of protection', which is the objective, is self-judging insofar as the procedure for assessment conforms to the SPS Agreement,[41] while the measure itself, which is the instrument, is subject to scrutiny.[42]

C. Scientific Evidence under the TBT Agreement

The TBT Agreement mentions scientific evidence in a purely substantive context as part of the obligation to assess the consequences of non-fulfilment of a legitimate objective that a technical barrier seeks to achieve.[43] However, beyond that, the TBT Agreement is more deferential to a Member State's determination since it does not require a national authority to carry out a formal investigation or explain its

---

[35] *Id.* art. 5.6.
[36] *Id.* art. 5.8.
[37] Appellate Body Report, *Australia — Measures Affecting Importation of Salmon*, ¶ 194, WTO Doc. WT/DS18/AB/R (adopted Nov. 6, 1998) [hereinafter Australia — Salmon (AB)].
[38] Japan — Agricultural Products II (AB), *supra* note 12, ¶ 126.
[39] Australia — Apples (AB), *supra* note 23, ¶ 364.
[40] Panel Report, *Australia — Measures Affecting Importation of Salmon - Recourse to Article 21.5 by Canada*, ¶ 7.146, WTO Doc. WT/DS18/RW (adopted Feb. 18, 2000); Japan — Apples (Panel), *supra* note 27, at ¶ 8.171.
[41] *See supra* Part II.B.1; Australia — Salmon (AB), *supra* note 37, ¶¶ 203-204.
[42] *Id.*
[43] Agreement on Technical Barriers to Trade art. 2.2, 15 April 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1869 U.N.T.S. 401 [hereinafter TBT Agreement].

justifications for the TBT measure.[44] Accordingly, when the issue of the standard of review of technical standards came up before the Panel in *EC — Sardines*, the Panel conducted a *de novo* review of the facts concerning the EC's understanding of sardines.[45] Admittedly, this case did not concern scientific evidence. While the issue came up again in *US — Tuna II (Mexico)*, it was not specifically addressed by the Panel or the Appellate Body.[46]

As a response to *EC — Sardines*, it has been suggested that the standard of review of scientific evidence under the SPS Agreement must be extended to cases under the TBT Agreement as well.[47] However, given that previous decisions like *EC — Asbestos* refused to extend the provisions of the SPS Agreement to other covered agreements, such a solution appears unlikely. Even so, the situation in *EC — Asbestos* can perhaps be distinguished from the TBT Agreement. While Article XX(b) contains the express wording of 'necessity' and creates a standard different from the standard under the SPS Agreement, the question of the applicable standard of review has been left open-ended within the TBT Agreement.[48] Thus, extending the standard of review under the SPS Agreement to the TBT Agreement would be the legally sound solution despite the decision in *EC — Asbestos*, particularly considering the significant discretion that both Agreements grant to Member States while determining their measures. Further, it would promote consistency in the standard of review of scientific evidence for functionally similar measures.

III. STANDARDS OF REVIEW BEFORE OTHER INTERNATIONAL DISPUTE SETTLEMENT FORUMS

Having examined the provisions within the WTO's covered agreements related to the standard of review of scientific evidence, this part delves into the standards established by inter-state courts and tribunals as well as international investment tribunals and compares these standards with those under the WTO's covered agreements.

---

[44] *Id.* art. 2.9.2; DANIEL BETHLEHEM ET AL., THE OXFORD HANDBOOK OF INTERNATIONAL TRADE LAW 409 (1st ed. 2009) [hereinafter Bethlehem et al.].

[45] Panel Report, *European Communities — Trade Description of Sardines*, ¶ 7.137, WTO Doc. WT/DS231/R (adopted Sept. 26, 2002).

[46] Panel Report, *United States — Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna products*, WTO Doc. WT/DS381/R (adopted Sept. 15, 2011).

[47] Bethlehem et al., *supra* note 44, at 412.

[48] *Id.* at 414.

A. Scientific Evidence Before Inter-State Courts and Tribunals

Unlike the WTO's covered agreements, the standard of review of evidence has largely developed out of the practices of different inter-state courts and tribunals. The ICJ's response to determining the standard of review of scientific evidence was initially one of avoidance, as evidenced in the *Gabčikovo-Nagymaros Project (Hungary v. Slovakia)* judgement in 1996.[49] The majority of the Court in this case not only refused to rule on issues concerning scientific evidence but also refused to examine any scientific experts as requested by Hungary.[50] The only other significant development before the ICJ stemmed from the decision in *Pulp Mills in the River Uruguay (Argentina v. Uruguay)*,[51] where the scientific experts appeared as counsels for both States.[52] While the court extensively delved into the burden of proof and even stated that it could not adjudicate upon the relative merits, reliability, and authority of the scientific evidence,[53] it did not note the standard of review it would apply to the questions it was adjudicating.

Following these decisions, the question was extensively discussed in *Whaling in the Antarctic (Australia v. Japan; New Zealand intervening)*.[54] In determining whether the Japanese Whale Research Program under Special Permit in the Antarctic was conducted for the purpose of scientific research, the Court delved into whether the program involved scientific research and, if so, whether the program's design and implementation were reasonable in relation to its stated objectives.[55] This standard is markedly different from the standards under the WTO's covered agreements since the ICJ expressly noted 'reasonability' as the standard of review. As noted above, the Appellate Body in *Japan — Agricultural Products II* rejected patent insufficiency as the standard of review but did not expressly lay down the applicable standard of review under the SPS Agreement.[56]

Nonetheless, the applicability of the *Whaling* standard even before the ICJ is questionable, since both States in that case had agreed to apply reasonability as the standard of review.[57] Additionally, the decision in *Whaling* has been subject to

---

[49] Gabčikovo-Nagymaros Project (Hung. v. Slovk.), Judgment, 1997 I.C.J. Rep. 7 (Sept. 25).
[50] *Id.* ¶ 54.
[51] Pulp Mills on the River Uruguay (Arg. v. Uru.), Judgment, 2010 I.C.J. Rep. 14 (Apr. 10).
[52] *Id.* ¶ 167.
[53] *Id.* ¶ 168.
[54] Whaling in the Antarctic (Austl. v. Japan & N.Z.), Judgment, 2014 I.C.J. Rep. 226, (Mar. 31) [hereinafter Whaling in the Antarctic].
[55] *Id.* ¶ 67.
[56] *See supra* Part II.B.
[57] Whaling in the Antarctic, *supra* note 54, ¶ 66.

multiple criticisms. For instance, Judge Owada noted, in his separate opinion, that the ICJ contradicted itself by noting reasonableness as its standard of review but proceeding to conduct a scientific assessment that it was not qualified to provide.[58] This position, which was based on the standard of review adopted by the WTO,[59] argued for additional deference to States in matters concerning scientific evidence. Moreover, the *Whaling* case did not assess what the standard of reasonableness meant, raising questions regarding how such a threshold can be met.[60]

A narrow understanding of reasonableness would entail that the State must only provide a reason as part of its international obligations, while a broader meaning of reasonableness could allow the Court to extensively analyse the reasonableness of a State's action, potentially disincentivising States from bringing matters before the Court. As a practical matter, if the tribunal were to examine the reasonableness of its own accord, then the scrutiny of scientific evidence could take place much after the circumstances that prompted such a measure took place.[61] Thus, while the approach taken by the ICJ differed from that of the WTO, the relative efficacy of this system is unclear.

Interestingly, beyond the ICJ, another interesting approach can be seen in the intra-state *Abyei Arbitration* before the Permanent Court of Arbitration (PCA).[62] Herein, the tribunal was tasked with assessing whether the experts of the Abyei Boundary Commission (ABC) had exceeded their mandate in delimiting the boundaries of Abyei, a region contested between the Government of Sudan and the Sudan People's Liberation Movement. In defining the scope of its review of the scientific aspects in that case, the tribunal found that it was not tasked with determining the correctness of the ABC's report and restricted itself to analysing whether the conclusions arrived at were reasonable.[63] While this standard was applied as a general standard of review based on the ICJ's decision in *Arbitral Award of July 31, 1989*,[64] the *Abyei* case illustrated how the acknowledgement of a State's discretion and reasonableness as

---

[58] *Id.* (dissenting opinion of Owada J.) ¶ 25.
[59] *Id.* ¶¶ 36-40.
[60] Makane Mbengue, *Scientific Fact-finding at the International Court of Justice: An Appraisal in the Aftermath of the Whaling Case*, 29(2) LEIDEN J. INT'L. L. 529 (2016).
[61] KATALIN SULYOK, SCIENCE AND JUDICIAL REASONING THE LEGITIMACY OF INTERNATIONAL ENVIRONMENTAL ADJUDICATION (2020) [hereinafter Sulyok].
[62] The Government of Sudan v. The Sudan People's Liberation Movement/Army (Abyei Arbitration), Final Award, Perm. Ct. Arb. Case No. 2008-07, July 22, 2009.
[63] *Id.* ¶ 400.
[64] Arbitral Award of 31 July 1989 (Guinea-Bissau v. Sen.), Judgment, 1991 I.C.J. Rep. 53 (Nov. 12, 1991).

the standard of review could potentially interact in disputes involving scientific evidence.

B. Scientific Evidence Before International Investment Tribunals

On the question of scientific evidence, international investment tribunals have largely followed an approach like that of the SPS Agreement. At the outset, investment tribunals have avoided examining whether a host State's measures are scientifically or technically sound.[65] Instead, investment tribunals focus on the procedural rights of the investor, such as due process rights.[66] For instance, in *Chemtura v. Canada*, where the dispute concerned Canada's ban on lindane, the tribunal did not delve into Canada's assessment of the harms of lindane and focused solely on whether Canada's regulatory process violated the investor's due process rights.[67]

Similarly, in *Methanex v. United States*, where the US attempted to justify California's ban on methyl tertiary-butyl ether (MTBE) using scientific evidence, the tribunal noted that it was not responsible for examining the scientific correctness of the report but rather, whether there were any factors that could question such scientific correctness.[68] However, the position taken by investment tribunals on the deference granted to host States has been criticised as constricting the scope of the review of scientific evidence. For instance, S.W. Schill notes that while investment tribunals must continue to give deference to host States' scientific determinations, the scope for procedural review should be expanded to include a review on whether the State has based its determination on scientific principles and using contemporary methods, as well as whether the measures have been applied discriminatorily.[69]

---

[65] Joshua Paine, *Standard of Review: Investment Arbitration*, *in* MAX PLANCK ENCYCLOPEDIAS OF INTERNATIONAL LAW 13 (Hélène Ruiz Fabri ed. 2018); Glamis Gold Limited v. U.S., Ad Hoc NAFTA Arbitration, Award, ¶ 779 (June 8, 2009).

[66] *Id.*

[67] Chemtura Corp. v. Gov't. of Canada, Ad Hoc NAFTA Arbitration, Award, ¶ 134 (Aug. 2, 2010).

[68] Methanex Corp. v. U.S., Ad Hoc NAFTA Arbitration, Final Award of the Tribunal on Jurisdiction and Merits (Aug. 19, 2005).

[69] S.W. Schill, *Deference in Investment Treaty Arbitration: Re-Conceptualizing the Standard of Review*, 3(3) J. INT'L. DISPUTE SETTLE. 577, 603 (2012).

Nonetheless, commentators have been supportive of the manner in which investment tribunals have approached scientific evidence[70] since it prevents investment tribunals from taking decisions on the scientific correctness of a host State's actions and protects the host State's right to adopt measures with legitimate objectives.[71] Further, given the similar taxonomy of international trade and investment disputes and how both kinds of proceedings involve assessing national non-economic regulatory measures by States against a set of purely economic obligations,[72] a similar approach of deference must be adopted in both kinds of disputes. In fact, even Schill's criticism above argues for the application of SPS Agreement principles like anti-discrimination and standard of review by international investment tribunals, showing a distinct preference for consistency in the standard of review for scientific evidence in international economic law disputes.

IV. THE WAY AHEAD: CONTEMPORISING THE WTO'S APPROACH

The WTO's approach to scientific evidence, especially under the SPS Agreement, is more rules-based than the approach taken by other international courts and tribunals. Nonetheless, Panels and the Appellate Body retain a level of discretion in their standard of review of scientific evidence, which has led to concerns regarding incorrect or inconsistent application of the standard of review. This part aims to shed some light on these concerns and attempts to devise solutions based on the analyses in Parts II and III. Accordingly, Sub-part A focuses on the level of deference accorded by WTO Panels and the Appellate Body to Member States in practice, while Sub-part B discusses the standard of review that must be applied to scientific evidence.

A. The Level of Deference Accorded to Member State Authorities

While WTO Panel and Appellate Body decisions have consistently reaffirmed the need to defer to Member State scientific determinations,[73] these decisions differ in the level of deference they accord to Member States while reviewing scientific evidence. In fact, some early decisions have been criticised for adopting a rather

---

[70] *Id.*; *see* Yuka Fukunaga, *Standard of Review and "Scientific Truths" in the WTO Dispute Settlement System and Investment Arbitration*, 3(3) J. INT'L. DISPUTE SETTLE. 559 (2012) [hereinafter Fukunaga].
[71] *Id.* at 575.
[72] Gruszczynski et al., *supra* note 2, at 153.
[73] *See supra* Part II.

intrusive review that came close to a *de novo* review.[74] Illustratively, the Appellate Body in *Japan — Apples* considered that an objective review of a Member State's measure did not require a Panel to defer to that Member State's evaluation of scientific evidence and considered that Panels have wide discretion in choosing, weighing, and evaluating the parties' scientific evidence.[75] In *US — Continued Suspension*, the Panel decided on questions of scientific evidence by accepting the position that was "most specific in relation to the question at issue and to be best supported by arguments and evidence."[76] Thus, despite the seemingly clear-cut stances within the SPS Agreement regarding Member States' discretion in deciding their appropriate level of health protection, Panels and the Appellate Body have proceeded to independently examine the relevant scientific evidence.

Later cases have shown a shift towards a relatively more deferential approach. For instance, the Appellate Body in *US — Continued Suspension* re-emphasised the Panel's role as merely examining whether the Member State's measure is supported by scientific evidence and not examining the correctness of the measure.[77] However, in other cases, like *EC — Biotech*,[78] Panels have proceeded to review and choose between scientific evidence independently. This inconsistency significantly impairs the systemic predictability that is envisaged by the WTO's covered agreements,[79] and jeopardises Member States' acceptance of WTO rules.

Typically, SPS measures based on scientific evidence intend to prioritise a health concern over economic interests and represent a significant exercise of sovereign power. Unwarranted encroachment on State sovereignty in the absence of State consent further foments doubts regarding whether the WTO system, as it stands, is well-equipped to adequately exercise its functions when faced with increasingly complex disputes. Nonetheless, any change in this context will largely depend on how WTO decisions flow from this point onwards. Recent decisions, such as the

---

[74] Gruszczynski et al., *supra* note 2, at 156; Fukunaga, *supra* note 70, at 564.
[75] Appellate Body Report, *Japan — Measures Affecting the Importation of Apples*, WTO Doc. WT/DS245/AB/R (adopted Dec. 10, 2003).
[76] Panel Report, *United States — Continued Suspension of Obligations in the EC*, ¶ 7.420, WTO Doc. WT/DS320/R (adopted Nov. 14, 2008).
[77] US — Continued Suspension (AB), *supra* note 22, at ¶ 590.
[78] Panel Report, *European Communities — Measures Affecting the Approval and Marketing of Biotech Products*, Add.1 to Add.9, and Corr.1, WTO Doc. WT/DS291/R, WT/DS292/R, WT/DS293/R (adopted Nov. 21, 2006).
[79] Joost Pauwelyn, *Sources of International Trade Law: Mantras and Controversies at the World Trade Organization*, *in* JEAN D'ASPREMONT & SAMANTHA BESSON, THE OXFORD HANDBOOK OF THE SOURCES OF INTERNATIONAL LAW 1031 (Jean d'Aspremont & Samantha Besson eds., 2017).

Panel Reports in *Russia — Traffic in Transit* [80] and *Saudi Arabia — IPRs*,[81] show an increasing inclination by Panels towards refusing to let States make self-judging decisions even in sensitive areas like national security.

As the history of terminated Optional Clause declarations before the ICJ shows, State perceptions of judicial encroachment can adversely affect States' consent towards having their disputes adjudicated at a particular forum.[82] As a compulsory dispute settlement mechanism that is embedded within a single undertaking,[83] the WTO's dispute settlement system is unlikely to suffer the same fate as the ICJ. However, the present paralysis of the Appellate Body, which has been motivated by US concerns of judicial encroachment,[84] may instil a larger wave towards deference to State authorities in the assessment of scientific evidence by Panels, a potentially renewed Appellate Body, and arbitral tribunals constituted under the Multi-Party Interim Appeal Arbitration (MPIA) arrangement.

B. The Standard to Review Scientific Evidence

As noted in Part II, WTO Panels and the Appellate Body have avoided the issue of a standard of review, particularly when considering the 'sufficiency' of the relationship between the scientific evidence and the measure,[85] or the scope of a 'necessity' evaluation of scientific evidence in the context of Article XX(b) of the GATT.[86] However, as the analysis in Part III shows, international courts and tribunals are generally hesitant to articulate a definitive standard of review for scientific evidence.[87] Nonetheless, some of the 'standards' of review established in

---

[80] Panel Report, *Russia — Measures Concerting Traffic in Transit*, WTO Doc. WT/DS512/R (adopted Apr. 26, 2019).
[81] Panel Report, *Saudi Arabia — Measures Concerning the Protection of Intellectual Property Rights*, WTO Doc. WT/DS567/R (adopted June 16, 2020).
[82] Neil B. Nucup, *Infallible or Final?: Revisiting the Legitimacy of the International Court of Justice as the "Invisible" International Supreme Court*, 18 L. & PRAC. INT'L. COURTS & TRIBUNALS 145, 149 (2019).
[83] *How the Negotiations are Organized*, WORLD TRADE ORGANIZATION, https://www.wto.org/english/tratop_e/dda_e/work_organi_e.htm.
[84] *Report on the Appellate Body of the World Trade Organization,* UNITED STATES TRADE REPRESENTATIVE 38 (Feb. 2020), https://ustr.gov/sites/default/files/Report_on_the_Appellate_Body_of_the_World_Trade_Organization.pdf.
[85] *Supra* Part II.B.2.
[86] *Supra* Part II.A.
[87] *Supra* Part III.

international legal jurisprudence could be examined as potential solutions to this issue.

At the outset, the standard of reasonableness mentioned by the ICJ in *Whaling* and the PCA in the *Abyei* arbitration could be extended to the WTO as well. However, since neither case further elaborated upon what constitutes reasonableness, the scope of this standard is unclear. As noted in Part III.A., the degree of reasonableness adopted by this standard poses significant consequences since, within a narrow conception of the term, a State could merely provide reasons and meet this requirement.[88] In the context of WTO dispute settlement, the availability of detailed provisions within the SPS Agreement and an express requirement of a relationship between the scientific evidence and the measure in question refute this narrow conception of reasonableness. In other words, even if WTO Panels were to agree that 'sufficiency' within Article 2.2 of the SPS Agreement imposes a standard of reasonableness for the review of scientific evidence, Member States are obligated to prove a reasonable relationship between the evidence and the measure. In turn, this would preclude Panels from considering the narrow view of reasonableness in the context of 'sufficiency'.

With regards to 'necessity' under Article XX(b) of the GATT, Member States are not obliged to provide scientific evidence in support of their measure. Even so, where such evidence is provided to show the existence of a threat to human, animal, or plant health, a similar standard of reasonableness could be used to prove the existence of such a threat. This would concur with the understanding of the weighing-and-balancing test as established in *EC — Asbestos*[89] and reinforced in subsequent jurisprudence.[90] While this is lower than the standard for 'necessity' under the International Law Commission's Articles on the Responsibility of States for Internationally Wrongful Acts,[91] it better coincides with the purpose behind Article XX since the provision endeavours to protect Member States' rights to enact measures in sensitive policy areas like public health.[92] As an extension of the deference accorded to Member States, this standard better encapsulates the role of WTO dispute settlement in adjudicating upon these defences.

---

[88] Sulyok, *supra* note 61.
[89] EC — Asbestos (AB), *supra* note 4.
[90] *See, e.g.*, Appellate Body Report, *Brazil — Measures Affecting Imports of Retreaded Tyres*, ¶ 176, WTO Doc. WT/DS332/AB/R (adopted Dec. 17, 2007).
[91] Int'l. L. Comm'n., Articles on Responsibility of States for Internationally Wrongful Acts art. 25, U.N. Doc. A/RES/56/83 (Jan. 28, 2002).
[92] Mavroidis, *supra* note 11, at 326.

Beyond the standard of reasonableness, the ICJ has previously considered standards of proof, including requiring that facts be proven 'with a high degree of probability',[93] 'beyond any reasonable doubt',[94] or with 'sufficient certainty'.[95] However, applying these standards to the review of scientific evidence risks exacerbating concerns surrounding judicial encroachment of State sovereignty. While the ICJ deals with a variety of subjects that have direct consequences for ongoing conflicts[96] in its role as the principal judicial organ of the United Nations,[97] WTO dispute settlement concerns a relatively narrower scope of issues that are principally economic in nature. Further, when confronted with issues of scientific evidence, the ICJ has stepped away from these high standards and instead, adopted a case-by-case approach to the standard of review.[98] Therefore, while these alternative standards could be applied to determine the 'sufficiency' of scientific evidence under the SPS Agreement, such an approach is not recommended. The standard of reasonableness is better suited in this respect.

V. CONCLUSION

The WTO dispute settlement system is currently at a crossroads owing to the paralysis of the Appellate Body. As Member States devise interim solutions like the MPIA or seek permanent dispute settlement reform, they would consider the impact of COVID-19 and the role that the standard of review of scientific evidence plays in determining the extent of prior scientific inquiry on the part of Member States when enacting responsive measures. In doing so, they could further clarify the scope of deference accorded to Member State scientific determinations and the degree to which scientific evidence must be assessed under the WTO's covered agreements. This paper looks at the ways forward for WTO dispute settlement in this context.

---

[93] Land, Island and Maritime Frontier Dispute (El Sal. /Hond. & Nicar.), Judgment, 1992 I.C.J. Rep. 351, ¶ 155 (Sept. 11).

[94] Oil Platforms (Islamic Republic of Iran v. United States of America), 2003 I.C.J. Rep. 161, ¶ 56 (Nov. 6) (separate opinion of Kooijmans J.); South West Africa (Eth. & Liber. v. S. Afr.), 1962 I.C.J. Rep. 319, at 473-474 (Dec. 21) (joint dissenting opinion of Spender, J. and Fitzmaurice, J.).

[95] Oil Platforms (Iran v. U.S.), Judgment, 2003 I.C.J. Rep. 161, ¶ 63 (Nov. 6) (separate opinion of Kooijmans J.).

[96] *See, e.g.*, Application of the International Convention on the Elimination of All Forms of Racial Discrimination (Arm. v. Azer.) 2021 I.C.J.

[97] U.N. Charter art. 93, H1.

[98] *Supra* Part III.A.

Ultimately, it is more likely that the standard of proof develops through the case law of the Panel, MPIA, and a potential Appellate Body. With the recognition that excessive review could further State discontent and have the counter-intuitive effect of discouraging WTO dispute settlement, a balanced approach would help the WTO retain its relevance as the protector of free and fair international trade.