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HOW 'NECESSARY'?
A COMPARISON OF LEGAL AND ECONOMIC ASSESSMENTS -
GATT DISPUTE SETTLEMENTS UNDER:
ARTICLE XX(B), TBT 2.2 AND SPS 5.6

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This paper identifies the legal and economic assessments applied to resolve WTO disputes requiring an assessment of the contribution of the measure to the objective pursued, along with identifying any reasonably available alternatives. It focuses on disputes encompassing an interpretation of GATT Article XX (b), Sanitary and Phytosanitary Agreement (SPS) Article 5.6 and the Technical Barriers to Trade (TBT) Agreement Article 2.2. This narrow focus is because the WTO DSB has opined that there are no significant differences between the tests developed under Art. XX(b) of the GATT 1994 and Art. 5.6 of the SPS Agreement, nor that any aspect of the Art. XX(b) jurisprudence relating to the interpretation of the term "necessary" would be inapplicable to Art. 2.2 of the TBT Agreement.¹ This provides an opportunity to compare the legal and economic assessments applied in disputes falling under these provisions.

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¹ Panel Report, *United States—Standards for Reformulated and Conventional Gasoline*, ¶ 6.20, WT/DS2/R (Jan. 29, 1996) [hereinafter *US-Gasoline*] (cited in Panel Report, *EC—Asbestos*, ¶ 8.169; Panel Report, *EC—Tariff Preferences*, ¶ 7.197; Panel Report, *Brazil—Retreaded Tyres*, ¶ 7.40).

This paper identifies no significant differences between the legal tests relating to the interpretation of the term "necessary". A WTO Panel is under no obligation to quantify the measure's contribution to the objective pursued and 'a risk may be evaluated either in quantitative or qualitative terms'. However, the same cannot be said for the economic assessments determining whether the necessity of the contribution of the contested measure.

After setting out the legal tests, the paper identifies those economic assessments undertaken to resolve disputes involving these three different GATT/WTO provisions. The paper finds that quantitative economic models are rarely employed in WTO dispute cases. The lack of coherent guidelines for assessing the economic dimensions of a dispute in a transparent and robust manner potentially undermines the effectiveness and the reputation of WTO Dispute Settlement Body (DSB) recommendations.

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I. INTRODUCTION: COMPARING LEGAL AND ECONOMIC APPROACHES

This paper compares the available jurisprudence of the necessity test, under both GATT XX(b), the SPS Agreement Article 5.6 and the TBT Agreement Article 2.2. This comparative approach is taken in order to highlight the variations in the economic analysis of trade disputes despite similar legal assessments. All three of the GATT/WTO provisions discussed in this article address the trade restrictiveness of a contested measure and the findings of various Panels and Appellate Bodies (AB) have supported a similar approach towards these different provisions. The Panel in *EC-Asbestos* concluded that Art. 2.2 of the TBT Agreement should not be given a radically different interpretation from Art. XX(b) of the GATT 1994. Furthermore, it was unable to identify any significant differences between the tests that have been developed under Art. XX(b) of the GATT 1994 and Art. 5.6 of the SPS Agreement, or any aspect of the Art. XX(b)

jurisprudence relating to the interpretation of the term "necessary" that would be inapplicable to Art. 2.2 of the TBT Agreement.²

On the other hand, a comparison of the quantitative and qualitative economic analyses that were undertaken in different disputes requiring the same legal assessment tests, indicate otherwise. WTO tribunals have been reluctant to embrace quantitative economic practices in their decision-making, and rarely one finds economic methodologies complementing the legal analysis in dispute settlements. Furthermore, in WTO DSB proceedings, it has been the parties, who undertake such analysis. If parties include quantitative economic analysis in their arguments, the Panel/Appellate Body may or may not find it useful or necessary to their own analysis.

The DS cases surveyed in this paper indicate that the tribunals often complement legal analysis by using purely basic economic data or descriptive evidence. Such analysis is certainly neither exhaustive, nor able to provide a conclusive evaluation of the real cost (restrictiveness) of the specific measure when imposed to achieving its desirable objective. Furthermore, it is insufficient to assess the trade restrictiveness of potential alternative measures and other economic impacts in realizing the same goal. A broader perspective is required in order to complement the legal analysis and for that economic analysis could be useful. Since empirical evidence are rarely submitted to the Panel or the Appellate Body, this paper provides several suggestive studies, which could shed light or add further insights to the tribunal's adjudications.

Over the past two decades, the imposition of technical and regulatory policy measures is increasingly expanding, especially in light of the dramatic decline in the use of tariffs. Evidence regarding the incidence of Non-Tariff Measures (NTMs) demonstrates that technical barriers to trade (TBTs) are by far the most frequently used NTM, with the average country imposing them on about 30 percent of products and trade. Sanitary or phytosanitary (SPS) measures are imposed on average on about 15 percent of trade.³

The economic theory regarding the trade effects of NTMs implies that expansion of their use, lead to a decrease of domestic demand, hence creates trade restrictiveness. Albeit, NTMs may increase information and confidence provided to consumers, as well as willingness to pay for these goods, consequently, affect

² Panel Report, *US–Gasoline*, ¶ 6.20 (cited in Panel Report, *EC–Asbestos*, ¶ 8.169; Panel Report, *EC–Tariff Preferences*, ¶ 7.197; Panel Report, *Brazil–Retreaded Tyres*, ¶ 7.40).

³ A. Nicita & J. Gourdon, *A Preliminary Analysis on Newly Collected Data on Non-Tariff Measures*, UNCTAD POLICY ISSUES IN INT. TRADE AND COMMODITIES (2012).

positively on the demand for imports. The empirical literature, however, reinforces the negative overall impact of NTMs on imports. NTMs, in general, add on average an additional 87% on the restrictiveness imposed by tariffs.⁴ Moreover, the level of restrictiveness is significantly higher for exports of developing countries to OECD members,⁵ particularly in food products, which are typically subject to SPS.

Considering that WTO Panel/Appellate Body is expected to evaluate whether a NTM is more trade restrictive than necessary to fulfil its objective – a decisive and comparable level of trade restrictiveness is essential. Yet, measuring trade restrictiveness is a difficult task to perform when regulatory or technical measures are imposed. Unlike tariffs, for which the available quantitative databases enable the evaluation of their effect on various economic indicators; NTMs are more challenging to quantify, due to their numerous forms; qualitative nature, insufficient public available information and unsatisfactory transparency. As a result, the complexity of measuring, in a quantitative systematic manner, the impact of NTMs, remains a significant obstacle for their inclusions in the tribunals' consideration. Nevertheless, in recent years, a significant advancement in both the theoretical and empirical fields could relieve this averseness, allowing to quantifying the impact of NTMs in various countries, sectors and even at the product level, while comparing to other less trade restrictive alternative measures.

Several analytical approaches, which are well grounded on economic theory, were introduced along the years, in order to tackle this issue. Among them are price-based techniques (i.e., price-wedge or econometric approach) and quantity-based methods. The price-wedge method approximates the degree to which a specific regulatory or policy measure raises domestic prices above international prices. Despite some conceptual and empirical drawbacks, this method serves as a suitable proxy for their restrictive impact.

The most predominant approach in the relevant economic literature, which is present in few DS cases where quantitative analysis is provided, is the quantity-based econometric method. It allows observing how the presence of NTMs affects trade, by employing statistical analysis of trade data. The approach uses gravity models, factor-content models or models which combine features of both – in order to identify the trade effects of a particular policy measure. An imperative requirement is a reasonable period of time prior to and after the measure has been

⁴ H. L. Kee, A. Nicita & M. Olarreaga, *Estimating Trade Restrictiveness Indices*, 119 ECON. J. 172-199 (2009).

⁵ A. C. Disdier, L. Fontagné & M. Mimouni, *The Impact of Regulations on Agricultural Trade: Evidence from the SPS and TBT Agreements*, 90(2) AM. J. AGRIC. ECON. 336–350 (2008).

implemented (Ex-Post analysis). Results are often expressed as tariff equivalents, and depend on the assumptions and specifications of the models.

Moreover, in recent years, built on quantity-based approach, economic studies have developed novel quantitative tools, which allow measuring the trade restrictiveness index (TRI) of NTMs, at a very disaggregate level of HS classification. These instruments, which take into account the presence of many NTMs, provide estimations of the ad-valorem equivalents of these measures. The levels and changes over time, across different countries and products, may complement other more traditional or less accurate techniques, which were insufficient for the purpose of economic analysis in dispute settlements. An example for a recent work of this kind is the study of Kee, Nicita and Olarreaga in 2009,⁶ which is based on the framework of the Trade Restrictiveness Index (TRI) of Anderson and Neary in 1992 and 1994.

Finally, the simulation methods, which have been long used to model the effects of changes in tariffs on various macroeconomic variables, are recently implemented for NTMs. Such simulations, which have a clearer explanation of causal factors, are designed as ex-ante analysis tools. They may apply static models, which compare specific points in time, or dynamic models (evolution from initial to the final equilibrium). Simulations are either based on General Equilibrium (GE) models, meaning linking several industries and countries, or Partial Equilibrium models, which analyse specific defined products or single markets.

In the paper, we survey the dispute settlement cases, where some of the mentioned economic techniques were provided by the disputing parties. These methodologies are presented along with the reasoning given by the Panel/Appellate Body to the reluctance approach to adopt these analyses in their consideration. In addition, we establish that for almost each of these DS cases, the economic literature can provide at least one study which demonstrates how the impact of the chosen measure can be potentially quantified econometrically. Consequently, these estimations may serve in order to compare the measures' impact to possibly less trade restrictive alternative measures. The paper highlights the valuable importance and the benefits of these methodologies in complementing the existing resolutions of the DSB.

⁶ *Supra*, note 4.

II. GATT ARTICLE XX(B)

A. *The 'Necessity' of a Non-Conforming Measure*

Non-compliant trade measures may be exempt from GATT/WTO rules, if justified under specific public interest conditions set out in GATT Article XX on General Exceptions. The exception assessed in this paper is paragraph (b) of Article XX. Pursuant to this paragraph, WTO members may adopt policy measures that are inconsistent with GATT disciplines, to pursue legitimate non-trade objectives reasonably and in good faith. These measures are deemed “necessary” to protect human, animal or plant life or health.

Clearly much hinges on the interpretation determining the word ‘necessity’. The requirements of the necessity test, as contained in paragraph (b) of Article XX of GATT 1994, have been interpreted in several previous disputes.⁷ According to this body of case law, the necessity of a measure should be determined through the analysis of a series of factors:

- a) The importance of the interests or values protected by the challenged measure.
- b) The contribution of the measure to the realization of the objectives pursued by it.
- c) The restrictive impact of the measure on international trade.

Once these three factors have been assessed, an analysis of possible alternatives to the challenged measure should be undertaken and a process of ‘weighing and balancing’ of the factors and the alternatives should be carried out with the aim of determining whether the challenged measure is “necessary”.

The Panel in *China–Raw Materials* dispute highlighted that a measure falling within Article XX(b) must be visibly intended to achieve the objective perused - the protection of health. A mere linkage is insufficient. The Panel found that China’s export restraints on energy-intensive, highly polluting, resource based products

⁷ Appellate Body Report, *Korea–Measures affecting imports of fresh, chilled and frozen beef*, ¶ 164, WT/DS161/AB/R, WT/DS169/AB/R (Dec. 11, 2000) [hereinafter Appellate Body Report, *Korea-Beef*]; Appellate Body Report, *EC–Measures affecting Asbestos*, ¶ 172, WT/DS135/AB/R (Mar. 12, 2001); Appellate Body Report, *US–Measures affecting the Cross-Border supply of Gambling and Betting services*, ¶ 306, WT/DS285/AB/R (Apr. 7, 2005) [hereinafter Appellate Body Report, *US-Gambling*]; Appellate Body Report, *Dominican Republic–Import and sale of Cigarettes*, ¶ 70, WT/DS302/AB/R (Apr. 25, 2005).

(EPRs) could not be described as measures designed to protect health. To accept the argument that the measure was part of a general program of pollution reduction would mean that Article XX(b) could “be interpreted to allow the use of export restrictions on any polluting products on the ground that export restrictions reduce the production of these products and thus pollution”.⁸

Elsewhere in *China-Rare Earths* dispute, China asserted that a measure relates to conservation whenever the measure "contributes" to the realization of a Member's conservation goals. A measure's contribution to such goals might be demonstrated through a showing of that measure's aptness to contribute to conservation, since the results of regulatory actions aimed at conservation may not be immediately observable. The Appellate Body rejected this approach and maintained the Panel's legal focus on the design and structure of the export quotas in assessing whether the measures relate to the conservation of exhaustible natural resources within the meaning of Article XX(g). Removing the need for economics, the AB found that the Panel did not err in stating that "the analysis under subparagraph (g) *does not* require an evaluation of the actual effects of the concerned measures”.

A non-compliant trade measure may be justified if the Panel determines that the importance of the objective, through a weighing and balancing of the contribution of the measure and the trade restrictive impact are all assessed as necessary. This legal avenue and reasoning places the initial burden of proving the necessity of a non-conforming measure onto the responding party.

B. 2.2 Assessing the Contribution of the Measure

As regards factor b), the subject of this paper, the Appellate Body Report in *Brazil-Retreaded Tyres*⁹ stated that a measure can contribute to the stated objective in two different ways:

- (i) it can bring about a material contribution to the achievement of its objective;
- or
- (ii) it can be apt to produce a material contribution to the objective pursued, even if the contribution is not ‘immediately observable’.

⁸ Panel report, *China-Measures related to the exportation of various Raw Materials*, ¶ 7.515, WT/DS394/R (July 5, 2011) [hereinafter Panel report, *China-Raw Materials*].

⁹ Appellate Body Report, *Brazil-Measures affecting imports of Retreaded Tyres*, ¶ 151, WT/DS332/AB/R (Dec. 3, 2007) [hereinafter Appellate Body Report, *Brazil-Retreaded Tyres*].

Thus, a panel may find that certain complex public health or environmental problems can be tackled only with a comprehensive policy comprising a multiplicity of interacting measures. Yet there must be evidence that the measure can bring about a material contribution to the Member's stated objective. Indeed, the Appellate Body went on to define a material contribution as one which needs to contribute in a significant or non-marginal way to the achievement of its objective. To assess the degree of necessity of a measure in achieving its objective has also been found to be: "in a continuum, located significantly closer to the pole of "indispensable" than to the opposite pole of simply "making a contribution to."¹⁰ A measure could be found to contribute to the achievement of the objective "when there is a genuine relationship of ends and means between the objective pursued and the measure at issue."¹¹

Adding to this relativist approach, the Appellate Body has also expressly recognized that "a risk may be evaluated either in quantitative or qualitative terms" and that a Panel is under no obligation to quantify the measure's contribution to the objective pursued. This was underlined in the *Brazil–Retreaded Tyres* dispute, when the Appellate Body reported that a direct statement was made to the effect that the contribution of the measure could be demonstrated both quantitatively and/or qualitatively:

"Such a demonstration can of course be made by resorting to evidence or data, pertaining to the past or the present, that establish that the import ban at issue makes a material contribution to the protection of public health or environmental objectives pursued. This is not, however, the only type of demonstration that could establish such a contribution... ...[A] demonstration could consist of quantitative projections in the future, or qualitative reasoning based on a set of hypotheses that are tested and supported by sufficient evidence."¹²

Brazil defended its objective of reducing exposure to the risks to human, animal, and plant life and health arising from the accumulation of waste tyres under paragraph (b) of Article XX of the GATT 1994 stating that Brazil's chosen level of protection is the "reduction of the risks of waste tyre accumulation to the maximum extent possible". The Panel then assessed whether the import ban (i) can contribute to reduction in the number of waste tyres generated in Brazil; and (ii) a reduction in the number of waste tyres can contribute to the reduction of the risks to human, animal, and plant life and health arising from waste tyres. The Panel examined the replacement of imported retreaded tyres with new tyres on

¹⁰ Appellate Body Report, *Korea – Beef*, ¶ 161.

¹¹ Appellate Body Report, *Brazil–Retreaded Tyres*, ¶ 145.

¹² Appellate Body Report, *Brazil–Retreaded Tyres*, ¶ 151.

Brazil's market and determined that all types of retreaded tyres have by definition a shorter lifespan than new tyres. Accordingly, "an import ban on retreaded tyres may lead to a reduction in the total number of waste tyres because imported verified the link between the replacement of imported retreaded tyres with domestically retreaded tyres and a reduction in the number of waste tyres in Brazil. If retreaded tyres are manufactured in Brazil from tyres used in Brazil, the retreading of these used tyres contributes to the reduction of the accumulation of waste tyres in Brazil by "giving a second life to some used tyres, which otherwise would have become waste immediately after their first and only life."

The Panel chose to conduct a qualitative analysis of the contribution of the Import Ban to the achievement of its objective, which was within the bounds of the latitude it enjoys in choosing a methodology for the analysis of the contribution. In the course of its reasoning, the Panel tested some key hypotheses, including that:

- imported retreaded tyres are replaced with new tyres and domestically retreaded tyres;
- some proportion of domestic used tyres are retreadable and are being retreaded;
- Brazil introduced a number of measures to facilitate the access of domestic retreaders to good-quality used tyres;
- more automotive inspections in Brazil lead to an increase in the number of retreadable used tyres; and
- Brazil has the production capacity to retread such tyres.

The Panel concluded that the prohibition on the importation of retreaded tyres is capable of making a contribution to the objective pursued by Brazil, in that it can lead to a reduction in the overall number of waste tyres generated in Brazil, which in turn can reduce the potential for exposure to the specific risks to human, animal, plant life and health that Brazil seeks to address. The Panel also agreed that Brazil has taken a series of measures to facilitate the access of domestic retreaders to good-quality used tyres, and that new tyres sold in Brazil are high-quality tyres that comply with international standards and have the potential to be retreaded.

Bown and Trachtman criticize the WTO jurisprudence in the *Brazil–Retreaded Tyres* dispute, for its failure to evaluate the types of concerns that an economic welfare analysis would provide.¹³ The Panel should have estimated, in quantitative terms, the reduction of waste tyres that would result from the Import Ban, or the time

¹³ C. P. Bown, & J. P. Trachtman, *Brazil–Measures Affecting Imports of Retreaded Tyres: A Balancing Act*, 8(01) WORLD TRADE REV. 85–135 (2009).

horizon of such a reduction. Without examining any empirical data, nor estimations on magnitudes, on the contribution of the import ban to the objective perused, it is impossible to make a rational judgment of the utility of the Brazilian policies contested. They suggest that if the justification for the import ban was grounded on the argument that it was a second-best Brazilian policy designed to combat a large externality, then Brazil's failure to impose a ban on used-tyre imports weakens its effectiveness by eroding potential welfare gains through a reduction in equilibrium production (and consumption) of Brazilian retreaded tyres. Moreover, the MERCOSURs' exemption from the ban has the same impact as weakening the possible environmental externality benefit of the import ban.

Returning to the reasoning in the *China-Raw Materials* dispute, the export restrictions on various raw materials were defended under Article XX(b) as intended to make a material contribution to reduce health risks associated with pollution generated by the production of specific raw materials. The economic rationale put forward was that under normal economic conditions, export restrictions would reduce the demand for exports, which decreases domestic production and, in turn, the pollution associated with its production. Furthermore, China argued that, in the long term, high world market prices would provide an incentive to new producers to enter the market, consequently reduce the world prices to their initial level. China submitted supporting evidence using both regression analyses and simulation models. The Panel found that the fact that in the long run the trade-restrictive effects of a measure may vanish does not imply that the short-term costs associated with the measure are not highly restrictive. The Panel upheld the claimant's challenge that the health-friendly description of the export duties was a mere ex-post facto rationalization of measures that were not originally designed to protect health.

The Panel found that China's quantitative analysis was problematic on the various grounds.¹⁴ First, the highly speculative estimations, and lack of adequate data used in the economic analysis. Second, the inaccurate specifications of the estimated regression models such as control variables, as consumption and production, which are affected by the very export restrictions being examined. The most significant criticism was also directed at the unreasonable resemblance between domestic supply and demand elasticities for all EPR products. China had failed to establish that production technologies for the raw materials and the degree with which firms in the downstream sector can substitute these raw materials with other inputs, similarly across products. For that, the Panel found the analysis insufficient

¹⁴ Panel Report, *China-Raw Materials*, ¶ 7.531-7.538.

to account for critical upstream-downstream interactions. The latter is particularly important since the impact of China's export restrictions on domestic prices is affected by China's dominant role as an exporter of raw materials. As China's prices have been consistently lower than the international prices over the years, preserving this gap clearly offers an advantage to the domestic downstream manufacturing sectors over foreign producers.

China also built on past empirical evidence that corresponds with the "Environmental Kuznets Curve" (EKC) theory, which suggests that as economic development takes place, environmental degradation increases until a certain point, and then decreases with the rise in GDP per capita. The Panel stated that even assuming that export restrictions could help generate the required discovery externalities and growth in the metal industries, it cannot prove a causal linkage from economic growth to environmental quality.¹⁵ Particularly it does not necessarily mean that imposition of export restrictions on EPR products will be translated into long-term economic growth, which in turn achieves environmental protection. The Panel concluded that the evidence submitted did not prove that the export restrictions made a material contribution to the protection of health. Regarding possible 'future contribution' of the policy objective, the Panel disagreed that these measures could increase national growth and welfare, and consequently raise the level of health protection. Subsequently, the Panel went on arguing, to prove that in any event the measures could not pass the least-trade restrictive means test.

Charlier & Guillou examined the effects of an export quota on quantities, prices and price distortion, based on the *China-Raw Materials* dispute, using a model of a monopoly extracting a non-renewable resource and selling it on both the domestic and foreign markets.¹⁶ The empirical results highlight the importance of demand elasticities, for each heterogenic product, as suggested by the Panel in the dispute. It provides estimations of import demand elasticity for each product concerned in the case (at the HS6 level). Moreover, they challenge the proposition that an export quota always favours conservation of natural resource, and that a higher foreign price necessarily follows this policy and inherently increases price distortion and therefore discrimination. Among the products concerned, two groups should be differentiated depending on China's export market power. When China is a significant exporter, there is no evident sign of the distortionary effect by the export quota. However, as a weak exporter, but a strong producer and consumer, there is evidence according to which China is imposing an inefficient quota.

¹⁵ Panel Report, *China-Raw Materials*, ¶¶ 7.551-7.553.

¹⁶ C. Charlier & S. Guillou, *Distortion effects of export quota policy: an analysis of the China-Raw Materials dispute*, 31 CHINA ECON. REV. 320-338 (2014).

Despite several differences, driven by the characteristics of the two dispute cases, and the quantitative evidence provided, the Panel has reached relatively similar conclusions in *China-Rare Earths* dispute. China justified export duties that violated Paragraph 11.3 of China's Accession Protocol to the WTO, by alleging that these duties were justifiable under the scope of Article XX(b).¹⁷ While the Panel admitted that it was provided with sufficient evidence to substantiate that the mining and production of rare earths caused grave harm to the environment, health of humans, animals and plants in China, it was not convinced by China's quantitative or qualitative arguments. Particularly, China failed to prove that the export duties were specifically designed to reduce the environmental pollution; make a material contribution to achieve pollution reduction; establish causal linkage between the duties and the objective perused; relate the actual environmental impacts of the export duties on rare earths with that of "reasonably available" measures.

China's arguments were supported by Prof. Jaime de Melo's economic report "Selected Economic Issues Regarding Export Quotas and Production Quotas".¹⁸ These claims were confronted with an economic analysis of Prof. L. Alan Winters.¹⁹ Both economic experts agreed that a binding production quota introduced in isolation is likely to reduce both exports and domestic consumption relative to the unrestricted trade situation, as both export and domestic prices would be driven up. However, the experts disagreed on the nature of the interaction between production quotas and export quotas that would be necessary to ensure that no "perverse signals" are sent by the export quotas.

The Panel rejected China's arguments while expressing concerns regarding the reliability of the data and methodology with respect to the gap between foreign and domestic prices, and found the position of the complainants more convincing, based on a supportive analysis by Prof. Grossman.²⁰ According to this, a tax levied on exports causes an increase in foreign markets prices, and a fall in price in the home market. The increase in domestic consumption would offset the fall in foreign consumption. The Panel concluded that the fall in China's foreign exports of rare earths would indeed be offset by the increase in domestic consumption of

¹⁷ Panel Report, *China—Measures relating to exportation of Rare Earths, Tungsten and Molybdenum*, ¶ 7.172, WT/DS431/R (Mar. 26, 2014) [hereinafter Panel Report, *China – Rare Earths*].

¹⁸ *China – Rare Earths*, Exhibit CHN-157.

¹⁹ *China – Rare Earths*, Exhibit JE-169.

²⁰ *China – Rare Earths*, Exhibit JE-164, "Export Duties as a Means to Address Environmental Externalities".

rare earths as to negate any possible pollution reduction effects of the challenged measures.²¹ In the case above, the Panel was expected to determine which particular economic evidence and methodologies are more reliable and should therefore be trusted. In turn, this reaffirms the imperative role of a well-grounded quantitative analysis in complementing the legal arguments, in similar future disputes.

C. *Assessing Less Trade Restrictive Alternative Measures*

If the preliminary analysis under Article XX(b) on the contribution of the measure to the objective pursued yields an initial conclusion that the measure is necessary, the result must be confirmed by comparing the challenged measure with possible alternatives suggested by the complainants.²² Further, that in order to qualify as an alternative, a measure must be not only less trade restrictive than the challenged policy measure, but should also preserve for the responding Member its right to achieve its desired level of protection with respect to the objective pursued.²³

The mere existence of an alternative measure is not sufficient to prove that the disputed measure is not "necessary". Citing *US–Gambling*,²⁴ the Appellate Body in *Brazil–Retreaded Tyres* confirmed that a proposed alternative must preserve a Members' "right to achieve its desired level of protection with respect to the objective pursued". If the respondent demonstrates that the measure proposed is not a genuine alternative, or is not 'reasonably available', the measure at issue is to be deemed necessary.²⁵ Moreover, such alternative cannot be "merely theoretical in nature, for instance, where the responding Member is not capable of taking it, or where the measure imposes an undue burden on that Member, such as prohibitive costs or substantial technical difficulties."²⁶

In *Brazil–Retreaded Tyres*, the EU suggested two possible alternative measures or practices: (1) measures to reduce the number of waste tyres accumulating in Brazil; (2) measures or practices to improve the domestic management of waste tyres.

²¹ Panel Report, *China–Rare Earths*, ¶ 7.178.

²² The AB Reports for several disputes have confirmed that it rests upon the complaining Member to identify possible alternatives: *US–Gambling*, *Brazil–Retreaded Tyres*, *China–Measures affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products*, WT/DS363/AB/R (Dec. 21, 2009).

²³ Appellate Body Reports: *US–Gambling*, ¶ 309 and *Brazil–Retreaded Tyres*, ¶ 156.

²⁴ Appellate Body Report, *US–Gambling*, ¶ 308.

²⁵ Appellate Body Reports: *Brazil–Retreaded Tyres*, ¶ 156; *US–Gambling*, ¶ 307; *Korea–Beef*, ¶ 166.

²⁶ Appellate Body Report, *US–Gambling*, ¶ 308.

The Panel rejected them as reasonably available alternatives to the Import Ban since: the proposed alternatives were already in place and have not achieved Brazil's chosen level of protection, or would carry their own risks and hazards. Yet, certain "estimates would have been very useful and, undoubtedly, would have strengthened the foundation of the Panel's findings." Bown and Trachtman argue however, that the Panel/Appellate Body reached their conclusions using unsatisfactory statements, rather than pursuing the best available evidence.²⁷ The WTO thus ignored its mandate of identifying the existence of less treaty inconsistent or trade restrictive alternatives that would contribute equivalently to the achievement of the relevant goal.

Furthermore, in their welfare-economic analysis, Bown and Trachtman suggest examining the effects of two possible alternative measures.²⁸ The first-best policy measure involves a production subsidy on retreads of once-used Brazilian tyres, equal to the size of the environmental externality, which Brazil aims to correct. Such measure incentivizes retreading additional tyres that would not otherwise have been retreaded. The reason for that is the relatively low price received by producers, as the market was not compensating them for the external societal benefit associated with retreading. Their model indicates that though consumers do not benefit from a change in price, and the level of imports decreases, domestic producers will increase their manufacturing to the socially optimal level. Moreover, such measure is anticipated to contribute positively to Brazil's total welfare. The second-best policy measure was levying a tariff on imports of retreads. Similarly to the previous proposed measure, domestic producers are encouraged to retread more of the stock of once-used Brazilian tyres. Yet, consumers face a higher price, and consequently reduce their imports even more compared to the production subsidy. The authors suggest that such trade policy can be welfare improving to Brazil, when the externality gains are large and the by-product (consumption) distortion losses associated with the import tariff are small.

Both of the alternative policies are less restrictive than a full ban, and capable of achieving Brazil's goal to the same extent as an import ban. However, each may raise questions regarding their "reasonable availability". A production subsidy may potentially discriminate or impose a restriction on imported tyres, which violate Articles III and IX of GATT (respectively). Moreover, such measures may involve establishing a costly and often too administratively complex tax collection scheme that would later provide the exact production subsidy. An additional difficulty, involves verifying that the once-used tyres being retreaded, which are entitled to

²⁷ *Supra*, note 13.

²⁸ *Id.*, at 7.

receive subsidy, were consumed in Brazil and not elsewhere while later imported to Brazil. Nevertheless, this economic analysis provides a theoretical framework, assessing potential alternative measures employed in similar disputes.

In the *EC-Asbestos* dispute, Canada argued that the Decree was an excessive measure in view of the fact that controlled use is a less trade-restrictive alternative that enables the French objective of protecting human health to be attained.²⁹ Neither the preamble to the TBT Agreement nor the precautionary principle can justify the measure taken by the French Government in breach of the obligations contained in the TBT Agreement. Moreover, Canada claimed that France's risk assessment is based on hypothetical data and therefore has no real factual relation to the situation actually prevailing in France, while often misleading to base it on data from exposure to amphiboles or mixed fibres, instead of to chrysotile fibres alone. The extrapolations from data based on high exposure levels and exposures to friable products greatly exaggerates the risk from low exposure levels to products where chrysotile is encapsulated in a hard matrix, specifically chrysotile-cement and friction products. The analysis of reasonably available alternatives included the question of whether controlled use of asbestos:

- (a) is sufficiently effective in the light of France's health policy objectives and
- (b) constitutes a reasonably available measure.

The Panel considered that the evidence tends to show that handling chrysotile-cement products constitutes a risk to health rather than the opposite. Accordingly, a decision-maker responsible for taking public health measures might reasonably conclude that the presence of chrysotile-cement products posed a risk because of the risks involved in working with those products. Accordingly, the Panel concluded that the EC has made a *prima facie* case for the existence of a health risk in connection with the use of chrysotile, in particular as regards lung cancer. Furthermore, it was noted that the levels of protection obtained by following international standards, whether it be the ISO standard or the WHO Convention, are lower than those established by France, including those applicable before the introduction of the Decree. Considering the high level of risk identified, France's objective, which the Panel could not question, justified the adoption of exposure ceilings lower than those for which the international conventions provided. The Appellate Body report therefore found that controlled use is not a reasonably

²⁹ Panel Report, *European Communities – Measures Affecting Asbestos and Asbestos – Containing Products*, ¶3.12, WT/DS135/R (September 18, 2000)..

available alternative in all the other sectors in which workers may be exposed to chrysotile.

In the case of *China-raw materials*, the Panel acknowledged that the measures in place (export restrictions) are less restrictive in most of the EPR products than full "bans" would be.³⁰ However, the Panel rejected China's claims that the policy measures are not restrictive, since the effect of an export restrictions on the world market does not depend on the world availability of the raw natural resources needed to manufacture EPR products, but on a country's export market share in the EPR market. Economic evidence proves that China's share of global exports in some of these products is significant, hence even unassertive measures would have a substantial impact. The complainants suggested six available WTO-consistent less trade-restrictive alternative measures that could ensure reduction of pollution and protection of health. The Panel agreed to undertake an *arguendo* analysis of the measures, which consist: (i) investment in more environmentally friendly technologies; (ii) further encouragement and promotion of recycling of consumer goods; (iii) increasing environmental standards; (iv) investing in "infrastructure necessary to facilitate recycling scrap"; (v) stimulating greater local demand for scrap material without discouraging local supply; and (vi) introducing production restrictions or pollution controls on primary production.

China responded that these suggested measures are already in place in China, and export restrictions complement them in order to achieve a better environmental protection. The Panel stated that China has not been able to provide evidence that these measures are actually implemented, while simply showing guidelines or plans cannot substitute mandatory obligations. Secondly, China did not justify why the proposed alternatives, could not be sufficient to achieve the objective stated or stand-alone without additional export restrictions.³¹ Based on the examination of the three factors determining whether the measures were "necessary" and the assessment of less trade restrictive alternative measures, the Panel found that China's claims for using the export restrictions were not sufficiently justified. China did not to appeal the Panel's decisions under Article XX(b).

³⁰ Panel Report, *China-Raw Materials*, ¶7.558.

³¹ Panel Report, *China-Raw Materials*, ¶ 7.590.

III. SPS ARTICLE 5.6

A. 3.1 The Scope of Article 5.6

Article 5.6 of the SPS Agreement provides that:

“[W]hen establishing or maintaining sanitary or phytosanitary measures to achieve the appropriate level of sanitary or phytosanitary protection, Members shall ensure that such measures are not more trade-restrictive than required to achieve their adequate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility.”

The footnote to this provision reads as follows:

“For purpose of paragraph 6 of Article 5, a measure is not more trade-restrictive than required unless there is another measure, reasonably available taking into account technical and economic feasibility, that achieves the appropriate level of sanitary or phytosanitary less restrictive to trade.”

Article 5.6 adopts a least trade restrictive alternatives test where, like the same test under Article XX(b) of the GATT, the less trade restrictive alternatives are regarded as reasonably available only when they are economically feasible and can accomplish the same levels of protection which the measures invoked by defending parties can achieve. Marceau & Trachtman, however, identify a significant difference, which unlike the assessment of necessity under Article XX of the GATT, the evaluation under Article 5.6 of the SPS Agreement does not include consideration of the degree of the measure’s contribution to the end pursued.³²

In *Australia-Salmon* and *Japan-Apples*, the Appellate Body found that all of the following three factors have to be shown in order to establish a violation of Article 5.6:

- 1) There is at least one alternative, which is reasonably available, taking into account technical and economic feasibility;
- 2) The alternatives can achieve the Member's appropriate level of sanitary or phytosanitary protection;
- 3) The alternative is significantly less restrictive to trade than the SPS measure in dispute.

³² G. Marceau & J. P. Trachtman, *Responding to National Concerns*, in THE OXFORD HANDBOOK OF INTERNATIONAL TRADE LAW (D. Bethlehem, D. McRae, R. Neufeld, I. Van Damme eds., Oxford University Press 2009).

In *Australia–Salmon*, the Appellate Body affirmed that determining the appropriate level of protection is the right of the Member concerned, and not of the WTO tribunals. However, determining the level of protection should be done before adopting the measure, with sufficient precision. Otherwise, the Panel may determine its level of protection on the basis of the measure itself. In this dispute, Australia expressed its level of protection as ‘very conservative’, but the Panel instead assessed it as ‘zero-risk’ on the basis that the measure itself was a total ban. Moreover, since Article 5.6 ignores balancing the contribution to a legitimate objective, the tribunal need not reject the use of a measure merely because it did not adequately contribute to its objective and is highly trade restrictive. In the absence of a reasonably available alternative, a measure will be considered as consistent with the provision.

Additionally, in Article 5.6, the complainant must raise a *prima facie* case that the measure infringes them before the burden switches to the respondent to provide a rebuttal. Under the general exceptions, the complainant only needs to propose a measure to activate the respondent’s burden of proving that it is not reasonably available. As the subject matter of the SPS Agreement typically applies to measures designed to achieve protection of health, the complainant’s burden will often require it to prove detailed technical matters demonstrating that its proposed alternative would achieve the respondent’s level of protection.

As indicated, under the SPS Agreement, a non-compliant measure may be justified, not unlike Article XX(b) exception, in order to achieve a desired level of protection. The interpretation of the legal requirements of Article 5.6 SPS is similar to those under Article XX(b). The complainant must first demonstrate that there is a *prima facie* case that the measure infringes the relevant provision, before the burden switches to the respondent to provide a rebuttal. The complainant then needs to propose a reasonably available alternative measure.

B. 3.2 Assessing Trade Restrictiveness of a Measure and Possible Alternatives

In *Australia–Salmon*, the contested measure imposed by Australia (certain heat treatment requirements) prohibits the importation of fresh, chilled or frozen salmon. The Panel stated that the possible alternatives, which would be compared with the import ban of the raw salmon concerned, were five measures, identified, in the Australian 1996 Final Report. Whereas, Canada noted four alternative options are significantly less trade restrictive, Australia argued that the feasibility of one measure may be reliant on the existence of another, therefore individual

measures or sets of measures are not technically and economically feasible in practice.³³ Moreover, some of the options were clearly less trade-restrictive than the import ban/heat treatment requirement. While the Panel found that less trade-restrictive measures existed, and could have been used by Australia,³⁴ the Appellate Body reversed the ruling on grounds that the Panel did not evaluate or assess the alternative' measures relative effectiveness in reducing the overall disease risk. Furthermore, it had based its considerations on the heat-treatment requirement, and not on the import prohibition. Yet because of these insufficient factual findings, the Appellate Body found itself unable to conclude whether Australia had violated Article 5.6.

In *Australia-apples*, the Panel stated that the reasoning articulated in Australia's risk assessment, with respect to the likelihood of entry, establishment and spread of fire blight, including estimation of the value for the respective probabilities, does not rely on adequate scientific evidence and, accordingly, is not coherent and objective.³⁵ The Panel agreed with New Zealand's' assertions that the methodological flaws result in a situation where the risk assessment overestimates the overall probability of the entry, establishment and spread of fire blight in this dispute. Moreover, the importation of mature, symptomless apples, suggested by New Zealand, was an appropriate alternative for Australia's eight fire blight and four European canker measures, and that the inspection of a 600-unit sample from each import lot was an appropriate alternative for Australia's ALCM measure.

In its appeal, Australia's submitted a *Final Import Risk Analysis Report for Apples from New Zealand* ("IRA"). This risk assessment was "semi-quantitative" in that, for each pest, it combined a quantitative assessment of the likelihood of entry, establishment and spread with a qualitative assessment of the likely associated potential biological and economic consequences. The combination of these probability assessments then yield an overall determination of "unrestricted risk", that is, the risk associated with the importation of apples from New Zealand in the absence of any risk management measures. The IRA Report, responded to New-Zealand's claims regarding the imposition of the SPS measures in the *Australia-Apples* case, although it did not allow a genuine assessment of the restrictiveness of the measure, or possible alternatives. Nevertheless, the Appellate Body reversed the Panel's findings of inconsistency in regard to the measures relating to these two pests.

³³ Panel Report, *Australia—Measures affecting importation of Salmon*, ¶ 4.276, WT/DS18/R (June 12, 1998) [hereinafter Panel Report, *Australia—Salmon*].

³⁴ Panel Report, *Australia—Salmon*, ¶ 7.146.

³⁵ Panel Report, *Australia – Measures Affecting the Importation of Apples From New Zealand*, ¶ 7.259, WT/DS367/R (August 9, 2010)..

An economic analysis which was undertaken by Yue and Beghin reaffirms New Zealand's claims. It estimates the tariff equivalent and trade effects when there is no trade flow of a commodity due to the presence of a quarantine non-tariff measure (i.e. imports ban).³⁶ Their solution yields demand functions influenced by prices (include transportation costs, tariffs and the tariff equivalent of the technical barriers) and a random component. This yields likelihood functions of consumption levels of the commodity in the countries involved and other countries that depend on prices in those countries. Their application suggests that the ad-valorem tariff equivalent of the ban by Australia on New-Zealand's apples is, on average, about 99% of the fob price inclusive of transportation costs.

In *Japan-Apples*, the 'Least Trade Restrictive Alternative' analysis under Article 5.6 of the SPS Agreement was seen to have been a relatively moderate one, as compared with that of Article XX (b) of the GATT. In this dispute, the Japanese varietal testing requirement was compared with "testing by product", as a less trade restrictive alternative. The Panel found that Japan acted inconsistently with Article 5.6 since the measure was more trade-restrictive than required to achieve the appropriate level of SPS protection. It concluded that this alternative measure: (i) was reasonably available taking into account technical and economic feasibility; (ii) achieved Japan's appropriate level of SPS protection; and (iii) was significantly less restrictive to trade than the SPS measure at issue, confirming the 3-pronged test.

The Panel's ruling is reinforced by an econometric analysis of Calvin & Krissoff, who quantify the restrictiveness of the SPS measures that Japan imposed on apple imports from the US.³⁷ They measured the trade and welfare impacts of reducing trade barriers, building on a partial equilibrium (PE), two-equation framework that endogenously determines the SPS tariff-rate equivalent and the level of trade. Their estimates of ad-valorem equivalent of the Japanese technical measures, using the price wedge approach, are around 27%, hence significantly more critical than tariffs in restricting imports. They suggest that these measures serve mainly as a protectionist instrument for shielding domestic producers of Fuji apples.

A follow-up analysis, by Calvin et al, indicates the economic costs of Japan's SPS measures on US apples.³⁸ They estimate the transaction cost ($k = 33$) and SPS

³⁶ C. Yue & J. C. Beghin, *Tariff Equivalent and Forgone Trade Effects of Prohibitive Technical Barriers to Trade*, 91(4) AM. J. AGRIC. ECON. 930–941 (2009).

³⁷ L. Calvin & B. Krissoff, *Technical Barrier to Trade: A Case Study of Phytosanitary Barriers and U.S.-Japanese Apple Trade*, 23(2) J. AGRIC. & RESOURCE ECON. 351–366 (1998).

³⁸ L. Calvin, B. Krissoff, & W. Foster, *Measuring the Costs and Trade Effects of*

measures ($CPP = 15$) at cents per pounds. Using these results and the exporter's price ($Pus = 50$), the tariff equivalent of SPS is estimated to be approximately 18.1%. Honda uses similar methodology to that suggested by Yue and Beghin for Australia³⁹ and suggests that Japan's SPS measures impose a significantly higher restrictiveness on U.S. apples, which has an average effect over the entire period of 118.9%.⁴⁰ These results imply that other suggested methodologies for quantifying tariff equivalents of Japanese SPS on U.S. apple imports have been underestimated.

IV. TBT ARTICLE 2.2

A. Application of Technical Regulations under Article 2.2

Article 2.2 of the TBT Agreement establishes:

"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."

The resemblance in much of the wordings to GATT general exceptions has resulted in Appellate Body jurisprudence on TBT Article 2.2 being closely aligned with Article XX(b). When determining if the challenged measure is more trade-restrictive than necessary to fulfil a legitimate objective under Article 2.2, the Appellate Body has established a test very similar to the necessity test under the general exceptions. First, the Panel is required to weigh and balance the trade-restrictiveness of the regulation with its contribution to the legitimate objective, and the risks that non-fulfilment creates.⁴¹ Second, if the measure is found

Phytosanitary Protocols: A U.S.-Japanese Apple Example, 30(1) REV. AGRIC. ECON. 120—135 (2007).

³⁹ *Supra* note 36.

⁴⁰ K. Honda, *Tariff equivalent of Japanese sanitary and phytosanitary: Econometric estimation of protocol for US-Japanese apple trade*, 32(2) ECONOMICS BULLETIN ACCESSECON 1226-1237 (2012).

⁴¹ Appellate Body Report, *US—Measures concerning the importation, marketing and sale of Tuna & Tuna Products*, ¶ 318, WT/DS381/AB/R (May 16, 2012) [hereinafter Appellate Body Report, *US—Tuna II (Mexico)*]; see also Appellate Body Reports, *US—Certain Country of Origin*

necessary, the Panel will consider whether there are any reasonably available less-trade restrictive alternatives, which could make an equal contribution to the objective⁴² Accordingly, the Panel should take account of ‘the nature of the risks at issue and the gravity of the consequences that would arise from non-fulfilment’⁴³.

The main differences between the two provisions are the following: First, the burden of proof to establish the violation of Article 2.2 of the TBT agreement lies with the complainant. This is in contrast to GATT Article XX, where the respondent bears the burden of establishing the justification for what else would be a violation.⁴⁴ Second, while Article 2.2 contains a non-exhaustive list of the ‘legitimate objectives’, the general exceptions contain only the base on which an exception can be established.⁴⁵ Third, it is only in Article 2.2, that the risks of non-fulfilment of the relevant objective is required to be considered in determining whether a TBT measure is more trade-restrictive than necessary.

This section completes the proposition underpinning this article, that under the TBT Agreement, a non-compliant measure may be justified, not unlike the exception under Article XX(b) and Article 5.6 of the SPS Agreement. A very similar interpretation of the legal requirements has been explicitly followed by the DSB under Article XX(b). Indeed, the WTO DSB has opined that there are no significant differences between the tests developed under Art. XX(b) of the GATT 1994 and Art. 5.6 of the SPS Agreement, nor that any aspect of the Art. XX(b) jurisprudence relating to the interpretation of the term "necessary" would be inapplicable to Article. 2.2 of the TBT Agreement.⁴⁶

B. *Assessment of Trade Restrictiveness of a Measure*

In the *US-Clove Cigarettes*, the Panel found a solid basis for justifying the imposition of the measure, as it makes a material contribution to the identified objective. This

Labelling Requirements, ¶ 374, WT/DS384/AB/R (June 29, 2012 and May 18, 2015) [hereinafter Appellate Body Reports, *US-COOL*].

⁴² Appellate Body Report, *US-Tuna II (Mexico)*, ¶ 320; *see also* Appellate Body Reports, *US-COOL*, ¶ 376.

⁴³ Appellate Body Report, *US-Tuna II (Mexico)*, ¶ 321.

⁴⁴ Appellate Body Report, *EC-Measures prohibiting the importation and marketing of Seal Products*, ¶ 5.169, WT/DS400/AB/R (May 22, 2014); Appellate Body Report, *Korea-Beef*, ¶ 157.

⁴⁵ Appellate Body Report, *US-Tuna II (Mexico)*, ¶ 313; Appellate Body Reports, *US-COOL*, ¶ 370.

⁴⁶ Panel Report, *US-Gasoline*, ¶ 6.20 (cited in Panel Report, *EC-Asbestos*, ¶ 8.169; Panel Report, *EC-Tariff Preferences*, ¶ 7.197; Panel Report, *Brazil-Retreaded Tyres*, ¶ 7.40).

finding was supported by numerous of scientific and quantitative evidence, which were submitted by the respondent party.⁴⁷ Subsequently, the Panel decided to compare the measure with several less restrictive alternatives measures, suggested by Indonesia. Among these measures were: adopting provisions to limit cigarette companies from engaging in practices targeting youth and adopting various measures set out in the WHO Framework Convention on Tobacco Control aimed at preventing cigarette sales to minors.⁴⁸ Yet the Panel's assessment rested on pure legal analysis, without complementary economic evidence on the level of restrictiveness of the proposed measures, or on their success in achieving the objective perused. Based on this narrow legal focus, the Panel found that Indonesia failed to prove that its proposed alternative measures could reduce the relevant health risks to the same extent as the US measure.

In the *US-Certain Country of Origin Labelling (COOL)*, the Panel ruled that the US did not meaningfully inform consumers about the countries of origin with respect of meat products. It asserted that the labels identifying multiple countries of origin could confuse or mislead, rather than inform, consumers. Moreover, the Panel stated that the COOL implementation is more trade restrictive than is necessary to fulfil its objective, and therefore violates Article 2.2 of the TBT agreement. The Panel indicated that the focus of an assessment of trade-restrictiveness should be the impact on competitive opportunities:

[T]he scope of the term 'trade-restrictive' is broad ... [and] does not require the demonstration of any actual trade effects, as the focus is on the competitive opportunities available to imported products...⁴⁹ . [T]he COOL measure negatively affects imported livestock's conditions of competition in the US market in relation to domestic livestock by imposing higher segregation costs on imported livestock.⁵⁰

The term 'competitive opportunities' is often used in contradistinction to trade effects; emphasising the importance of market access to potential imports. Nevertheless, the Panel declared that the COOL measure had 'brought about actual negative trade effects on imported livestock as shown by a significant and negative impact on import shares and prices'.⁵¹ The US provided the Panel with an econometric study⁵², prepared by the US Department of Agriculture (USDA),

⁴⁷ Panel Report, *US – Measures affecting the production and sale of Clove Cigarettes*, ¶ 7.402-7.414, WT/DS406/R (Sept. 2, 2011) [hereinafter Panel Report, *US – Clove Cigarettes*].

⁴⁸ Panel Report, *US – Clove Cigarettes*, ¶ 7.420.

⁴⁹ Panel Reports, *US–Certain Country of Origin Labelling Requirements*, ¶ 7.572, WT/DS384/R (Nov. 18, 2011 and Oct. 20, 2014) [hereinafter Panel Reports, *US–COOL*].

⁵⁰ Panel Reports, *US–COOL*, ¶ 7.574.

⁵¹ Panel Reports, *US–COOL*, ¶ 7.759.

⁵² *US–COOL*, Exhibits US-42 and 149.

focusing on imports from the Canadian and Mexican fed and feeder cattle market. The study indicates that the price gap between Canada and US's livestock decreased subsequent to the implementation of the COOL. The estimators of the COOL measure on the import ratio of Canadian livestock were found to be negatively correlated, although not significantly far from zero. Furthermore, it showed that the US economic recession is the primary cause for the decline in Canada import shares. The Panel also reviewed two econometric analyses, submitted by Canada, namely the 'Informa Study'⁵³ and the 'Sumner Econometric Study'. The 'Informa Study' focused on the how different types of compliance and segregation costs, of the COOL measure, are allocated along the supply chains. It showed that these costs depend on a large number of variables, among them the production fragmentation, the stage of the supply chain, size of the firm, and others. The compliance costs increase as livestock and meat move downstream on the chain. The second analysis described an economic model simulation of the US livestock sector to illustrate how the differential implementation costs of the COOL measure are distributed among market participants through market forces. It emphasised the readiness of economic operators along the supply chain to pay for mixed origin beef and hog, along a comparison of the behaviour of consumers, prior and post the imposition of the COOL measure. The implementation of the COOL requirements, leads to a reduction of the willingness to pay by the operators along the supply chain for given quantities of Canadian cattle and hogs.

The Panel stated that it could not genuinely assess, the reliability and precision of the estimations in the studies proposed by both sides. Yet, Canada's reports were "sufficiently robust" to prove the causal impact of COOL in reducing competitive opportunities for Canadian exporters. It accepted that the segregation costs lead traders towards privileging US-origin livestock, consequently create a negative and significant impact on Canadian import shares and prices. The US challenged this two-step approach, arguing that the Panel went beyond the scope of Article 2.2, to make an "intrusive and far-ranging judgment" on whether COOL "is effective public policy." Instead it should have focused only on whether COOL is more trade-restrictive than necessary. Although upholding the Panel's ruling with regards the legitimacy of the measure's objective, the Appellate Body found the Panel's had incorrectly decided that a measure could be consistent with Article 2.2 only if it fulfilled its objective completely or exceeded some minimum level of fulfilment. It has ignored its own findings, which demonstrated that the COOL measure does contribute, at least to some extent, to achieving its objective. Although reversing

⁵³ *US-COOL*, Exhibits CDA-64.

the Panel's finding that COOL is inconsistent with Article 2.2, the Appellate Body was not able to determine whether COOL is more trade-restrictive than necessary to meet the TBT requirement that it be a legitimate objective. The Appellate Body did not complete its analysis, since it lacked the necessary evidentiary information. It should also be noted that with respect to the less trade-restrictive alternative measures, the Panel never reached the stage of comparing the COOL measure against less trade restrictive alternative measures, since the COOL measure "does not fulfil the identified objective within the meaning of Article 2.2, as "it fails to convey meaningful origin information to consumers", therefore violates Article 2.2 of the TBT agreement.

Pouliot & Sumner highlight that the relative sizes of the impacts of COOL on quantities and prices depend significantly on Canada's export supply elasticity.⁵⁴ Given the conditions on demand and supply in Canada, the export supply of fed cattle should be less elastic than the export supply for feeder cattle. Subsequently, the model predicts that a strong effect of COOL on price in the fed cattle market, and strong effect of COOL on import quantity ratios in the feeder cattle market. The empirical results show statistically significant effects of COOL that are consistent with the expectations from the theoretical model. In the fed cattle market, results show a significant widening of the basis from COOL while smaller and less significant effects on the ratio of imports to domestic use. In the market for feeder cattle, they found less significant results for the price, but significant reductions in the import ratios. Overall, the implementation of COOL had a significant differential effect on the cattle market in Canada versus the US domestic cattle market.

Twine & Rude assert the impact of the COOL measure from a slightly different angle.⁵⁵ The authors propose a multi-market partial equilibrium model in order to simulate the impact of several exogenous shocks, on the economic performance of Canadian and US beef cattle industries. These include: feed price escalation, mandatory COOL requirements, and economic recession. Their empirical results demonstrate that the impacts on the US industry are relatively small compared to those on the Canadian industry. Moreover, the COOL measure and feed price escalation, account for the largest negative impact on the Canadian cattle industry.

⁵⁴ S. Pouliot & D. A. Sumner, *Differential Impacts of Country of Origin Labeling: COOL Econometric Evidence from Cattle Markets*, WORKING PAPERS 148593, STRUCTURE AND PERFORMANCE OF AGRICULTURE AND AGRI-PRODUCTS INDUSTRY (2012).

⁵⁵ E. Twine & J. Rude, *Effects of Market and Policy Shocks on the Canadian and U.S. Cattle and Beef Industries*, Paper presented at the Agricultural and Applied Economics Association's Annual Meeting, Seattle (Aug. 12 – 14, 2012).

These simulations reinforce the WTO tribunal's findings with respect to the trade restrictiveness of the COOL measure.

C. The Contribution of the Tuna-Dolphin Dispute

In many respects, the *US-Tuna II (Mexico)* dispute is a unique example. First, this case was the first time, in nearly 200 WTO rulings, that the Panel found a violation under Article 2.2 of the TBT agreement. More importantly, the dispute exemplifies the difficulties faced by the DSM when disputes involve contentious quantitative submissions in the form of existing qualitative studies. For after determining whether the US dolphin safe provisions fulfilled a legitimate objective, the Panel was also called upon to determine whether the contribution of provisions to the US objective (of ensuring that consumers are not misled about whether the tuna contained in tuna products was caught in a manner that adversely affects dolphins) are more trade-restrictive than necessary to fulfil such objective, taking account of the risks non-fulfilment would create.⁵⁶

The only piece of evidence presented in these proceedings to ascertain what US consumers in fact understand the terms "dolphin-safe" to mean is an opinion poll submitted by Mexico.⁵⁷ This poll shows that 48 per cent of the 800 individuals surveyed believe that "dolphin safe" means that "no dolphins were killed or injured" while 12 per cent believe that it means that "dolphins were not encircled and then released to capture the tuna". The Panel found that in light of the poll, it is not clear that US consumers understand the term "dolphin-safe" to mean the same as what the US dolphin-safe provisions define it to mean.⁵⁸ The discrepancies between the meaning of this term under the measures and consumer perceptions may create confusion and undermine the ability of the measure to effectively ensure that consumers are not misled.

The Panel noted the numerous studies that suggest that various adverse impacts can arise from setting on dolphins, beyond observed mortalities,⁵⁹ but also other studies that question these conclusions. The Panel stated that further study would be required in order to draw overall conclusions, confirming that the information

⁵⁶ *US-Tuna II (Mexico)*, Mexico's first written submission, ¶ 205.

⁵⁷ *US-Tuna II (Mexico)*, Exhibit MEX-64.

⁵⁸ *US-Tuna II (Mexico)*, United States' response to Panel question No. 42, ¶ 108-09.

⁵⁹ *US-Tuna II (Mexico)*, Exhibit US-4, p. 24.

available in this respect is incomplete and that this issue warrants additional analysis.⁶⁰

*Our findings take into account the information, including scientific information concerning the effects of tuna fishing on dolphins that is available to us for the purposes of these proceedings. From these elements, it appears that a number of aspects of this issue are not fully documented and that further research may be necessary in order to ascertain the exact situation in various areas.*⁶¹

Ultimately, the Appellate Body reversed these Panel findings, disagreeing that the measure at issue was more trade-restrictive than necessary to fulfil US legitimate objectives, thus inconsistent with Article 2.2. Instead, the Appellate Body determined that the alternative measure proposed by Mexico (AIDCP ‘dolphin safe’ labelling combined with the existing US standard) would contribute to both the consumer information objective and the dolphin protection objective, to a lesser degree than the measure at issue.

Mexico’s failure to justify its arguments in front of the Appellate Body, was likely due to its lack of ability to provide any quantitative evidence to support its claims. Simply stating a hypothetical less trade restrictive alternative, without providing empirical support that it is reasonably available, or that it is less trade restrictive, was insufficient. Taking the complementary approach using an econometric analysis may have been found to be more beneficiary to support Mexico’s argument. Such an analysis should have focused on the adverse effects of the labelling measure along with the US standard on the behaviour of consumers, and eventually proving that it could achieve a similar level of consumer information and dolphin protection as US’s stated objective.

V. CONCLUSIONS

This paper has provided a comparison of the legal and economic assessments used in GATT Article XX(b), Article 5.6 of the SPS Agreement and Article 2.2 of the TBT Agreement. Particularly, it displays the selection of methodologies which were undertaken in various dispute settlements, to analyse the “necessity” of the selected measure at achieving the objective/ perused, evaluate the ‘trade restrictiveness’ which the policy measure imposes, as well as assess the availability of alternative less trade restrictive policy measures. Since despite the substantial importance and centrality of the term ‘trade-restrictiveness’ in DSM, its definition

⁶⁰ *US–Tuna II (Mexico)*, Exhibit MEX-67, p. 9.

⁶¹ Panel report, *US–Tuna II (Mexico)*, ¶ 7.623.

and exact scope still remain unclear, we aim to identify the arsenal of practices that the WTO tribunals use in determining its meaning and justified extent.

The main conclusions are as follows: First, despite minor differences, in general, the legal assessments are noticeably similar. The same cannot be said regarding the application of quantitative assessments of the various measures, which fall under these provisions. Second, rarely any of the parties in the disputes support their arguments using empirical modelling and quantification of the trade restrictiveness of the chosen measures, nor a quantitative comparison to less trade restrictive alternative measures. Third, in the few cases where the parties do provide such evidence, it is often rejected by the tribunal, which explicitly express its concerns and lack of trust in these methodologies. Much of this reluctance is explained on the grounds of the reliability and accuracy of the data, the specifications and control variables included the regressions or the robustness of the findings. These justifications may explain the tribunals' rulings, however, the insufficient trust or lack of acquaintance with the recent economic progress, still remain at the heart of the underuse of economic assessments by the parties themselves.

Finally, the significant advancements in international trade theory as well as in analytical methodologies assessing the trade restrictiveness of policies, is of great benefit to WTO tribunals. It may reduce uncertainty and promote a more consistent approach regarding assessments required in GATT/WTO trade disputes. In the paper, we provide various examples of studies from the economic literature, which are directly related to the particular DS cases mentioned, and highlight the benefits of implementing quantitative methodologies. Such valuable experience in quantifying the extent to which a given policy measure or alternative measure would contribute to a given non-trade policy objective, may provide coherent guidelines to on-going and possibly future WTO disputes. Moreover, unless the Panel/Appellate Body are prepared to assess the key conceptual economic approach in their proceedings, they may potentially risk resulting in economic outcomes that ultimately undermine the original objectives of the WTO agreements.