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## Abstract

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## Keywords

GATT, Article 3, Article III, National Treatment, NT, International Trade, Trade, WTO

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## 1 Introduction

The General Agreement on Tariffs and Trade (GATT) was created in 1947 with the intent to reduce or eliminate discriminatory and economically devastating tariffs imposed by the contracting parties (now Members under the WTO). Signatories to the GATT agreed to exercise reciprocity with respect to their international trade regimes by according "Most Favored Nation" status to one another.[1] In this regard the agreement unambiguously increased global welfare by virtually eliminating protectionist trade barriers that were universally erected during the Smoot-Hawley era of global economic isolationism. Integral to the mission of the GATT is the National Treatment (NT) obligation captured in

[1] By granting MFN status to one another, contracting parties prevent discriminatory treatment by ensuring that importing countries may not discriminate in favor of goods from one contracting party over another. In other words, trade concessions granted to one country must be extended to all others with MFN status.

Article III, which in principle prohibits the contracting parties from creating internal policy that results in imported products being treated less favorably than "like" domestic products.[2] In particular, Article III.1-2,4 reads as follows:

> 1. The contracting parties recognize that internal taxes and other internal charges, and laws, regulations and requirements affecting the internal sale, offering for sale, purchase, transportation, distribution or use of products, and internal quantitative regulations requiring the mixture, processing or use of products in specified amounts or proportions, should not be applied to imported or domestic products so as to afford protection to domestic production.
>
> 2. The products of the territory of any contracting party imported into the territory of any other contracting party shall not be subject, directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products. Moreover, no contracting party shall otherwise apply internal taxes or other internal charges to imported or domestic products in a manner contrary to the principles set forth in paragraph 1.
>
> 4. The products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use. The provisions of this paragraph shall not prevent the application of differential internal transportation charges which are based exclusively on the economic operation of the means of transport and not on the nationality of the product.

Attached to Article III.2, second sentence is an Interpretive Note regarding violations in the absence of like products:

> A tax conforming to the requirements of the first sentence of paragraph 2 would be considered to be inconsistent with the provisions of the second sentence only in cases where competition was involved between, on the one hand, the taxed product and, on the other hand, a directly competitive or substitutable product which was not similarly taxed.

The reach of Article III is extensive; the provisions apply to virtually all taxes, laws, regulations or similar domestic policy instruments that affect the sale and/or distribution of imported goods after they have cleared customs and

[2] NT provisions may also be found in virtually every trade agreement, including the General Agreement on Trade in Services, Agreement on Trade-Related Intellectual Property Rights and the North American Free Trade Agreement.

entered domestic commerce.[3] In addition to explicitly discriminatory internal measures, the NT provision also includes internal actions that may have an indirect effect on imported goods.[4] Because the breadth of the NT obligation "may (depending on its interpretation) have a profound impact on countries' freedom to choose domestic policies," there have been numerous GATT disputes invoking Article III to address alleged discriminatory taxation.[5]

Many precedential disputes involving alleged tax discrimination concern alcoholic beverages. The degree to which these beverages are horizontally differentiated by the application of appellations draws explicit country of origin distinctions between products that would otherwise be nearly identical, creating a regulatory environment ripe for Article III violations.[6] In particular, this paper will focus on *Brazilian Internal Taxation*, *Japan—Alcoholic Beverages*, *Korea—Alcoholic Beverages*, and *Chile—Alcoholic Beverages*. In each case, the relevant party was alleged to have imposed taxes on imported spirits in excess of domestically produced alternatives. In each case, the adjudicating body found that all pairs of products concerned were directly competitive or substitutable (DCS); in the case of *Japan*, vodka and the domestically produced *shochu* were found to be like products. In addition to the cases concerning alcoholic beverages, I will discuss *EC—Asbestos*, the pivotal case affecting the integration of economic theory into decisions of the adjudicating bodies.

Despite the similar outcomes of each case, the Panel and subsequent Appellate Body decision offered no clear methodology for interpreting the NT obligation. Eric Tsai concludes that post-*Japan*:

> [T]here currently exists a national treatment obligation that is certainly unclear, likely too harsh, and which ultimately will do violence to the General Agreement's

[3] Hudec, Robert E. "GATT/WTO Constraints on National Regulation: Requiem for an 'Aim and Effects' Test." *The International Lawyer* (1998), Vol. 32 No. 3, 619 - 649.
[4] These actions include regulatory measures that make no explicit distinction between foreign and imported products (called "origin neutral"), but which have a disproportionate impact on foreign goods or services that is for some reason viewed as wrong or illegitimate. *See* Hudec, 1998.
[5] Horn, Henrik and Mavroidis, Petros C. "Still Hazy after All These Years: The Interpretation of National Treatment in the GATT/WTO Case-law on Tax Discrimination." *European Journal of International Law* (2004), Vol. 15 No. 1, 39 – 69.
[6] For example, there is an explicit distinction made between French Cognac, Californian Brandy and Chilean Pisco despite the relative similarity of their production processes and end-uses.

> integrity and make the WTO unnecessarily intrusive on national government policy making.[7]

It is clear, however that case law and economic theory point in the same direction regarding the purpose of the provision.[8] Because there is no context-independent definition of what constitutes like or DCS products, there is a need for greater reliance on an economic interpretation of the terms of Article III.[9] Given the reality of imperfect substitutability and heterogeneity of products, the elasticity of substitution and cross-price elasticity present the best economic methods for determining the relative "likeness" of products on a case-by-case basis.

## 2 Existing Literature on Economics of National Treatment

Robert E. Hudec is an indispensable voice in any discussion of international trade law, and several of his works provided the inspiration for this analysis. His account of *Brazilian Internal Taxes* and pervasive discussion of the NT obligation in *The GATT Legal System and World Trade Diplomacy* is among the most insightful in the field. Its sequel, *Enforcing International Trade Law: The Evolution of the Modern GATT Legal System* informed much of my argument and was rightly described by Andreas Lowenfeld as, "an erudite, elegant and sophisticated guide to the methods used by major trading nations to deal with their trade disputes and confrontations for nearly half a century."[10]

Although the literature on trade agreements and their implications is extensive, there has been a relatively limited scholarly attempt at providing an economic rationale for the NT provision. Henrik Horn and Petros Mavroidis in a number of jointly-authored papers offer what is perhaps the best empirical analysis of NT, determining that the GATT is an "obligationally incomplete contract," and that the failure of case law to provide a coherent vision for what trade practices constitute "protection" is the main obstacle to constructing a concise, economic framework for establishing violations of Article III. However,

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[7] Tsai, Eric S. "'Like' is a Four-Letter Word-GATT Article III's 'Like Product' Conundrum." *Berkeley Journal of International Law* (1999), Vol. 17 No. 2, 26 - 60.

[8] Grossman, Gene M., Horn, Henrik and Mavroidis, Petros C. "The Legal and Economic Principles of World Trade Law: National Treatment." *Research Institute of Industrial Economics* (2012), IFN Working Paper No. 917.

[9] Horn and Mavroidis, 2004.

[10] Lowenfeld, Andreas F. *Review of* "Enforcing International Trade Law: The Evolution of the Modern GATT Legal System" by Robert E. Hudec. *American Society of International Law* (1995), Vol. 89 No. 3, 663 - 666.

while Horn and Mavroidis acknowledge the notion of elasticity of substitution as a possible determinant of likeness/DCS, they do not present a rigorous analysis of this measure's effectiveness given preexisting case law.

Importantly, Horn notes that reliance on economic indicators as a likeness measure, lacking a clear understanding of the legal framework they are being applied to, has the weakness of being completely insensitive to a large class of regulatory problems—those associated with externalities in the production or consumption of the product.[11] This issue first arose in the now-infamous *United States—Taxes on Automobiles*, "gas guzzler" case in which the European Communities argued that differential taxation based on fuel efficiency was inconsistent with Article III and could not be justified under Article XX.[12]

Grossman, Horn and Mavroidis stress that reliance on legalistic analysis in the interpretation Article III.2 needs no motivation—the GATT is an inherently legal document. However, relying solely on this perspective is not sufficient given that the agreement's objectives are primarily economic. Economic analysis is thus integral to a comprehensive examination of the NT provision.[13]

The *International Trade Law Reports* are consulted extensively for their detailed analyses of each case related to alcoholic beverages. The authors provide expert commentary on each decision of the Dispute Settlement Body that places each case in appropriate legal and economic contexts.

## 3 Case Law on Discriminatory Taxation

[11] To illustrate this point, Horn envisions a situation in which the owner of an auto may disregard the fact that his asbestos-containing brakes create health hazards, and would consequently view such brakes as identical to asbestos-free alternatives. Using elasticity of substitution as a likeness indicator in this case would have the consequence of forcing the government to seek an Article XX exception in order to regulate asbestos-containing brakes. *From* Henrik Horn, E-mail to author, 6 October 2015. In these cases it is critical to recognize when economic methods of likeness determination must be accompanied by legal analysis in order to avoid negative regulatory implications.

[12] The United States considered its taxation scheme to be legal under Article III due to the legitimate policy objective of affording lower taxes on autos attaining 22.5 miles per gallon or greater, regardless of origin. The Panel found that the measure was consistent with Article III.2. See *United States—Taxes on Automobiles*. World Trade Organization, https://www.wto.org/english/tratop_e/envir_e/edis06_e.htm.

[13] Grossman, Horn and Mavroidis, 2012.

There are two methods for a complaining party to argue that Article III has been violated. For "like" products, the import must be taxed in excess of or otherwise treated less favorably than the domestically competing product. For products that are DCS, the import must be taxed in excess of a *de minimis* tax differential between the two products, such that the dissimilar taxation operates "so as to afford protection" to domestic production.[14] The role of the adjudicating bodies is to interpret the vague circumstances in which a violation of Article III may occur; this includes determining the "likeness" of products and the threshold at which differently taxed domestic and foreign products affords protection to the former.

Consequently, two approaches for applying the NT provision have arisen—the first stresses a flexible definition of likeness to achieve the purpose of the provision; the second advocates for an intensely literal reading of the article to give each word of the provision its full effect. As a result, the role of the term "like product" in the first approach differs completely from that of the second and has added an additional layer of complication to decisions of the adjudicating bodies.[15]

*Brazilian Internal Taxes* is the precedential GATT-era case on tax discrimination. A piece of Brazilian tax legislation that antedated Brazil's entry into the GATT applied ratioed duties on French armagnac and other brandy in excess of domestically produced spirits. The dispute settlement proceedings were initiated by France and supported by the United Kingdom and United States. Brazil's principal argument was that no trade damage had occurred, so the differential taxation did not constitute a violation of Article III. Additionally, Brazil claimed that in the event trade damage had occurred, the discriminatory taxation qualified for an exemption from the terms of Article III under the Protocol of Provisional Application.[16]

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[14] Horn and Mavroidis, 2004.

[15] Tsai, 1999.

[16] The agreement among the original GATT Contracting Parties to exempt from GATT provisions trade measures established by domestic legislation in force at the time of acceptance of the GATT. The protocol was intended to be temporary, pending implementation of the Havana Charter or definitive acceptance of GATT provisions by the Contracting Parties, but it has remained in effect, and countries that signed it in 1947 continue to invoke it to defend certain practices that are otherwise inconsistent with their GATT obligations. Countries that acceded to the GATT after 1947 have similar provisions incorporated in their protocols of accession. *See* http://goo.gl/Io1ls7

The complainants did not support the trade damage argument, and instead claimed that the effectiveness of a regulation in affording protection to domestic production was irrelevant provided that the intent to do so could be established. In this case, the inner-group consensus prevailed; the economic powers that had written the GATT commanded the prevailing opinion in its interpretation.[17] The question of protective intent would arise frequently in future disputes, namely *Japan—Alcoholic Beverages*.

The goal of the complainants in *Brazilian Internal Taxes* was to use the case as precedent for strong adherence to Article III. However over the course of eight years, Brazil delayed tangible action despite France threatening retaliation under Article XXIII.[18] Brazil completed an overhaul of its tariff schedules in 1956 and the issue was largely resolved in the absence of a formal Panel decision.[19] Because the dispute was never adjudicated, the case instead set a precedent for lengthy proceedings concerning the intent of the NT obligation that would occur continually throughout the GATT- and into the WTO-era.

In *Japan—Alcoholic Beverages*, the Japanese Liquor Tax Law imposed duties on imported spirits such as brandy, cognac, genever, gin, rum, vodka, whiskey and others in excess of the domestically produced *shochu*, a distilled white spirit.[20] For example, the tax on *shochu* was between one-fourth and one-seventh of the tax on imported brandy and whiskey, clearly affording a significant degree of protection to the domestic market.

The complainants—namely the United States, the European Communities and Canada—claimed that Japan's discriminatory Liquor Tax Law operated in violation of Article III by taxing imported spirits in excess of the like domestic product, *shochu*. Japan countered with a highly restrictive definition of "like product" to both the Panel and AB, claiming that the lack of "identicalness" between the product pairs in question implied that Article III.2 could not be

[17] Hudec, 1990.
[18] The Chairman of the Contracting Parties concluded, "Since the Brazilian Government had failed to fulfill its obligations, the provisions of the third sentence of paragraph 2 of Article XXIII seemed to have become applicable." *See* GATT/CP.4/SR.20, p. 7. The sentence referred to is the provision which says that Contracting Parties may authorize retaliatory action under Article XXIII in serious cases.
[19] Hudec, Robert E. "The GATT Legal System and World Trade Diplomacy." (Butterworth Legal Publishers, 1990).
[20] Bhala, Raj. "Modern GATT Law: A Treatise on the General Agreement on Tariffs and Trade." (Sweet & Maxwell Limited: Great Britain, 2005).

triggered, and Japan could tax the imports at any rate it desired.[21] Raj Bhala's analysis of the case interprets Japan's defense as follows:

> Japan almost certainly had to make this argument. Almost any respondent in an Article III case should consider seriously a threshold argument that the National Treatment obligation is inapposite, because the imported and domestic products do not bear the resemblance necessary to one another to trigger the obligation.[22]

Japan was well-prepared with a fallback argument invoking Article III.4 in case of an adverse Panel determination of likeness. They claimed that if *shochu* was found to be DCS, the Liquor Tax Law still did not violate the NT obligation because the differential taxation did not operate "so as to afford protection" (SATAP) to domestic production. In other words, Japan argued that Article III could not be violated without the intent to afford protection to domestically-produced DCS products.[23]

The Panel decision, subsequently upheld by the AB, found that *shochu* and each of the imported spirits were in fact DCS, largely on the grounds of similarities in their physical characteristics. Additionally, vodka and *shochu* were found to be like. This determination contributed to the collective understanding of like products by qualifying them as a subset of products that are DCS, an important distinction that would later be reinforced and expanded upon in *Korea—Alcoholic Beverages*.[24] The Appellate Body rendered a meaningless, but apt, metaphor in its final report:[25]

> [T]here can be no precise and absolute definition of what is "like." The concept of "likeness" is a relative one and evokes the image of an accordion. The accordion of "likeness" stretches and squeezes in different places as different provisions of the

[21] Bhala, 20.
[22] Bhala, 19.
[23] The *Japan* decision's discussion of the SATAP criterion dictates that provision of protection need only be separately established for products that are found to be DCS. In the case of like products, differential taxation is *ipso facto* understood to operate SATAP.
[24] In fact the Appellate Body noted: "We do not agree with the Panel's observation in paragraph 6.22 of the Panel Report that distinguishing between "like products" and "directly competitive or substitutable products" under Article III:2 is an "arbitrary decision". Rather, we think it is a discretionary decision that must be made in considering the various characteristics of products in individual cases." (p.21, WTO, 1996b). *See* Mattoo, Aaditya and Subramanian, Arvind. "Regulatory Autonomy and Multilateral Disciplines: The Dilemmta and a Possible Resolution." *World Trade Organization and International Monetary Fund Working Paper Series* (1998), TISD9802.WPF.
[25] Tsai, 1999.

> WTO Agreement are applied. The width of the accordion in any one of those places must be determined by the particular provision in which the term "like" is encountered as well as by the context and the circumstances that prevail in any given case to which that provision may apply.[26]

With regard to Japan's claim that the Liquor Tax Law did not operate SATAP, the Panel's determination was that Article III.1 referred to the actual effect of the tax rather than its intent—the so called "aims and effects" test for NT. The intent of a regulatory instrument is therefore irrelevant when considering its legality under Article III, its effect of affording of protection to the domestic market is the sole agent of establishing a violation of the NT obligation.

*Japan* is an economically significant case because the decision noted that it was not "inappropriate to examine elasticity of substitution" as a means of determining the markets in which products are DCS. [27] This was the first case in which the adjudicating body expressed that an economic approach may be appropriate for determining product likeness given a sufficiently unclear legal framework such as that of NT.[28] In the subsequent WTO case, *Japan—Alcoholic Beverages II*, the Panel referenced an ASI study that "contained persuasive evidence that there is significant elasticity of substitution among the products in dispute.[29]

*Korea—Alcoholic Beverages* followed a similar route. Distilled beverages including whiskey, vodka and gin imported from the United States and European Communities were taxed pursuant to the Korean Liquor Tax Law in excess of the

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[26] *Japan—Taxes on Alcoholic Beverages*, *International Trade Law Reports* (1996), Vol. I Issue 2.

[27] Appellate Body Report, *Japan—Taxes on Alcoholic Beverages*, WT/DS8/AB/R, WT/DS10/AB/R, and WT/DS11/AB/R, §H.1(a) (adopted 1 November 1996).

[28] *Japan* demonstrates that the legal interpretation of likeness in terms of physical similarity creates significant regulatory issues. To see this, consider two pairs of products: one is vodka and *shochu*, which were held to be like products in *Japan*, and the other is two chemicals that are much more similar than vodka and *shochu* in their physical constitution, but such that one is harmless and the other is extremely dangerous. No one would suggest that these chemicals are like products; it is therefore clear that the issue of likeness is distinct from the issue of physical similarity. *See* Howse, Robert and Regan, Donald. "The Product/Process Distinction—An Illusory Basis for Disciplining 'Unilateralism' in Trade Policy." *European Journal of International Law* (2000), Vol. 11 No. 2, 249 - 289.

[29] Panel Report on *Japan—Alcoholic Beverages*, *supra*, para. 6.29. *From* Dispute Settlement Reports, World Trade Organization (1999), Vol. I.

domestically produced *soju*.[30] The European Communities and United States stressed the similarities of the Korean taxation scheme to that of Japan, which was found to be inconsistent with Article III in *Japan* and *Japan—Alcoholic Beverages II*. Korea argued that there was no like or DCS relationship between *soju* and the imported products, so the discriminatory taxation was legal under Article III. Addressing Article III directly, Korea argued for a narrow interpretation of the provision in order to protect the sovereignty of Members over the structure of their respective tax systems.[31]

The Korean Liquor Tax Law established 10 categories of distilled spirits and assessed tariffs at *ad valorem* rates depending on the category of product, according to the table below:

| **Category of Alcoholic Beverage** | ***Ad Valorem* Tax Rate (Percent)** |
|---|---|
| Diluted *soju* | 35 |
| Distilled *soju* | 50 |
| Liqueur | 50 |
| Other liquors (brandy, whisky, gin, rum, tequila, vodka and mixed distilled drinks) | 80-100 |

The taxation scheme reveals that *soju* is taxed at 35-50 percent and imported distilled beverages at 80-100 percent, making market access for imports effectively impossible.

In formulating its decision, the Panel examined physical characteristics, end uses, price relationships and advertising. *Korea* is the first case in which consumer perceptions of a product, as influenced by advertising, were considered to be determinants of a competitive relationship; this is significant when taking a quantitative approach to likeness determination, as advertising is likely to influence the degree to which consumers regard products as substitutable. The Panel decision found *soju* and the imported spirits in question to be DCS, and that the tax differential between the two exceeded the *de minimis* threshold, establishing the SATAP criterion required for an Article III violation. There was insufficient evidence, however to validate the argument of the complainants that

[30] *Korea—Taxes on Alcoholic Beverages*, *International Trade Law Reports* (1999), Vol. IV Issue 4.
[31] *ITLR*, 1999.

*soju* and vodka were like products. Notably, the findings on this claim were not appealed to the Appellate Body.

In the *Korea* decision, the Panel recognized the merits of a quantitative determination of product likeness, but was justifiably hesitant to rely unduly on it. Special weight was placed upon the modifier "directly," as an indication that the principal determinant of a DCS relationship is the extent to which there exists a competitive relationship between products, as perceived by consumers.[32] With respect to substitutability, the Panel noted that a high degree of substitution as demonstrated by cross price elasticity or elasticity of substitution, is indicative of a potential DCS relationship, however the Panel did not directly consider any economic evidence. In their economic analysis of the case, Aubrey Silberston and Mahmud Nawaz conclude that:

> Using economists techniques for assessing the closeness of products in demand and supply - bread and butter work of any national competition authority case which employ economists and expert witnesses all the time - WTO disputes can begin to achieve more rigour and consistency in decision making, in what are always highly political and sensitive cases.[33]

In *Chile—Alcoholic Beverages*, the complainants alleged that the Chilean Additional Tax on Alcoholic Beverages law applied discriminatory taxes to imported distilled beverages in favor of domestically produced *pisco*. In particular, the law categorized all spirits into three *ad valorem* tariff columns: whisky, *pisco* and all others, where *pisco* was taxed at the lowest rate.[34]

Chile argued that its taxation scheme was legal under Article III because the imported spirits and *pisco* were not like or DCS, mainly due to slight differences in their alcoholic content. The European Communities claimed that:[35]

> The [Additional Tax on Alcoholic Beverages]…is contrary to GATT Article III:2, second sentence, because it provides for the imposition of lower internal taxes on

[32] *ITLR*, 1999.
[33] *ITLR*, 1999.
[34] *Chile—Taxes on Alcoholic Beverages*, *International Trade Law Reports* (2000), Vol. V Issue 1.
[35] The European Communities noted that in its panel request, it also claimed a violation of GATT Article III:2, first sentence, which stated that even though certain spirits exported from the EC to Chile may be considered as being "like" to pisco, it decided not to pursue that claim, given that those spirits were in any event DCS with pisco, due to *Japan* establishing that like products are a subset of DCS products.

> pisco than on other directly competitive or substitutable imported spirits which fall within the tax categories of "whisky" and "other spirits", so as to afford protection to Chile's domestic production[36]

Taking the same interpretive route as in *Korea*, the Panel disagreed with Chile's defense, and found the product pairs in question to be DCS. The Panel report concluded that "substitutability and competitiveness refer to the ability of products that may be dissimilar in some respects to satisfy a particular consumer want."[37] To determine this ability, the Panel focused on common end-uses by examining a number of factors, *inter alia*, the existence of a positive elasticity of substitution between them.[38] Additionally, the Panel noted that "a high degree of cross-price elasticity is a clear indicator of direct competitiveness or substitutability."[39] Chile did not seek to rebut this conclusion in its appeal, and instead focused on defining the *de minimis* tax differential that was determined to have afforded protection to domestic production.

The inclusion of economic theory in decisions of the adjudicating bodies changed fundamentally with *European Communities—Asbestos*, which represents one of the highest profile disputes handled by the WTO panel and Appellate Body.[40] In 1996, the French Government banned the manufacturing, sale, possession and import of all forms of asbestos and products containing asbestos fibers, citing its toxicity and carcinogenicity as a significant health risk. Canada claimed that the French ban was illegal because a specific type of asbestos, chrysotile, was safe under properly controlled use and was therefore being afforded less favorable treatment than like domestic products.

The criteria for likeness considered by the Panel included physical characteristics, consumers' tastes and habits, the product's end-uses in a given

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[36] Following the precedent set by *Japan* with respect to correctly establishing a violation of Article III, the complaint of the European Communities independently suggests that i) the dissimilar taxation between *pisco* and imported distilled spirits exceeds the *de minimis* threshold set by the interpretive note attached to Article III.2 and ii) the dissimilar taxation operates so as to afford protection to domestic production. *See* Panel Report, Chile—Taxes on Alcoholic Beverages, WT/DS87/R and WT/DS110/R, (15 June 1999).

[37] Panel Report, para. 7.80.

[38] A positive elasticity of substitution suggests that products are substitutable; an elasticity of substitution equal to one suggests perfect substitutability, indicative of product likeness.

[39] *ITLR*, 2000.

[40] *European Communities—Asbestos*, *International Trade Law Reports* (2003), Vol. VI Issue 4.

market and tariff classification. The presence of asbestos in a product is largely inconsequential in these regards, despite the obvious health risks that it poses. Thus, the Panel found that health is not a determinant of product likeness pursuant to Article III.4, essentially declaring chrysotile asbestos and its asbestos-free substitutes, including polyvinyl alcohol, cellulose and glass fibers, like products.

The case was appealed to the AB, which reversed the Panel decision and noted that "fundamental human interests such as health" should be considered in decisions of product likeness.[41] The AB upheld its favorable view of the economic approach in making this decision; when evaluating the competitive relationship between products in the relevant marketplace, all evidence should be taken into account.

## 4 Economic Analysis of Product Likeness

Cross-price elasticity shows the percentage increase in demand for good *i* as a result of a percentage increase in the price of good *j*. The mathematical definition of cross-price elasticity is given as:

$$\varepsilon_{i,j} = \frac{\partial C_i / C_i}{\partial p_j / p_j} = \frac{\partial C_i}{\partial p_j} \frac{p_j}{C_i}$$

If goods *i* and *j* are substitutes, the cross-price elasticity will be positive, as an increase in the price of good *i* will cause consumers to increase their demand for good *j*. A positive cross-price elasticity indicates that goods are substitutes, whereas a negative cross-price elasticity indicates that goods are complements.

*Korea* established a parallel between the economic notion of substitutability and the legal concept of likeness under Article III. Products that are perfect substitutes may be considered like; imperfect substitutes may be considered DCS. It is important to note that there are not clear distinctions drawn between either of these categories, and analysis on a case-by-case basis remains necessary. As Frieder Roessler observes, "A fox and an eagle are like animals for a hare but not for a furrier."[42]

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[41] *ITLR*, 2003.

[42] Roessler, Frieder. "Domestic Policy Objectives and the Multilateral Trade Order: Lessons from the Past Symposium on Linkage as Phenomenon: An Interdisciplinary Approach." *University of Pennsylvania Journal of International Law* (2014), Vol. 19 No. 2, 513.

To establish product likeness from an economic perspective, the cross-price elasticity of demand must be calculated using time series data that includes prices of each product before and after the application of the alleged discriminatory taxation. Taking an economic view of the *Korea* determination, Mattoo and Subramanian conclude:

> it would be necessary to establish that the difference in taxation is sufficient to induce substitution between products given the level of consumer responsiveness, measured, for instance, by the cross-price elasticity of demand. This may mean little more than establishing that differences are greater than a de minimis level, but this level would be defined on the basis of an economically meaningful and justifiable criterion rather than an arbitrary interpretation of dissimilarity.[43]

To create such an economically meaningful and justifiable criterion, consider the market for distilled spirits in Japan. A complete pivot in demand from vodka to *shochu* following a price increase of imported vodka would indicate that the two are perfect substitutes, and therefore like products under Article III. In the case of a spirit such as cognac, consumer demand would shift only partially to preferring *shochu* following the application of differential taxation, indicating that the products are imperfect substitutes. Provided that the differential taxation meets the *de minimis* threshold and operates SATAP, the products may be considered DCS.

**Consumption of Vodka and *Shochu* in Japan, 2006-2010[44]**

| | **2006** | **2007** | **2008** | **2009** | **2010** |
|---|---|---|---|---|---|
| Import volume of vodka, kL | 3060 | 3036 | 2768 | 2954 | 2805 |
| Price of vodka, $m | 16.738 | 19.263 | 19.342 | 20.985 | 21.342 |
| Price of vodka, $/L | 5.47 | 6.34 | 6.99 | 7.10 | 7.61 |
| Volume of *Shochu*, kL | 1000 | 1005 | 973 | 961 | 1096 |

[43] Mattoo and Subramanian, 1997.

[44] This model will assume that all vodka consumed in Japan has been imported, that all *shochu* has been domestically produced and that there is no markup between the import price of vodka and the price consumers pay.

From the above formula, we calculate the cross-price elasticity for the most recent change in price, 2009-2010 to be:

$$\varepsilon = \frac{1096 - 961}{7.61 - 7.1}\frac{7.61}{1096} = 1.838$$

Because consumption of *shochu* increased following the rise in the price of vodka, the cross-price elasticity between the spirits is positive, indicating that they are substitutes. Japanese consumers still exhibited demand for vodka, so it is unlikely that vodka and *shochu* are perfect substitutes. Quantitative methods are useful in determining whether products are imperfectly substitutable and therefore DCS, however the like product determination requires a subsequent legal interpretation of the data.

## 5 Conclusion

*EC-Asbestos* radically changed the economic interpretation of the NT obligation by exposing regulatory externalities that arise when traditional determinants of product likeness are evaluated in a vacuum. When considering product characteristics such as cross price elasticity and elasticity of substitution post-*Asbestos*, implications affecting, *inter alia*, health of consumers that are not reflected in the quantitative analysis must be properly acknowledged.

It is important to note that virtually no two goods are "like" in terms of being perfectly substitutable. As Horn states and case law confirms, context-independent reliance on the elasticity of substitution as the sole measure of product likeness introduces a large class of regulatory externalities; the goal of Article III is therefore not to reduce itself to identifying purely identical products. There exists a spectrum of substitutability for which it is appropriate to use economic methods built upon the current legal understanding of NT to place products upon.

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