

CARBON TAXES AND THE WTO: A CARBON CHARGE WITHOUT TRADE CONCERNS?

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I. INTRODUCTION

Anthropogenic climate change is a rare example of a truly global problem. While pollution may be seen to have had transnational effects, these problems could be limited to neighboring states or countries in the same region (such as in the case of pollution in rivers that cross national boundaries). Climate change, by contrast, represents a situation in which the actions of a country in, say, northern Europe, may have an eventual effect on communities in the Pacific Ocean or South America.

In considering the appropriate means to address climate change, specific responses can be grouped into three broad categories: taxes (often described as carbon taxes),¹ emissions trading schemes (ETS),² and command-and-control (or direct regulation).³

Notwithstanding the variety of policy responses available, very little serious discussion of the relative merits has occurred, especially in the legal literature. This may be partly explained by the seemingly unanimous global support for an ETS as the preferred policy among nations seeking to address climate change in recent years (at least through a market mechanism).⁴ However, the stalling of the ETS in the United States and the lack of concrete outcomes

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1. See, e.g., Keith Kendall, *Exports and Imports under a Carbon Tax in 7 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES* 477 (Lin-Heng Lye et al. eds., 2009).

2. Also often referred to as cap-and-trade schemes; see, e.g., Janet E. Milne, *Carbon Taxes Versus Cap-and-Trade: The Relative Burdens and Risks of Market-Based Administration in 7 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES*, *supra* note 1, at 445.

3. For an overview of these three broad categories, see EBAN S. GOODSTEIN, *ECONOMICS AND THE ENVIRONMENT* (6th ed. 2011), particularly chapters 16 and 17.

4. As of September 2012, the European Union and New Zealand had introduced emissions trading schemes (via Council Directive 2003/87, 2003 O.J. (L. 275) 32 (EC) and the Climate Change Response (Emissions Trading) Act 2008 (N.Z.)). The Australian Government has also implemented a price on emissions effective from July 1, 2012, which will convert to a full ETS in 2015 (*Clean Energy Act 2011* (Cth) and related legislation). A proposal for an ETS in the United States passed the House of Representatives but not the Senate. See American Clean Energy and Security Act 2009, H.R. 2454, 111th Cong. (2009).

from the Copenhagen,⁵ Cancun,⁶ and Durban⁷ Climate Change Summits demonstrate that any such unanimity is illusory at best.⁸

This paper seeks to address some of the gaps in the legal literature dealing with climate change policy alternatives. The overall premise presented is that a carbon tax is the economic instrument that can be designed most readily in conformity with international trade obligations imposed under the World Trade Organization (WTO), so most of the broad discussion focuses on carbon tax. The economic principles described, however, are common to most alternatives, particularly an ETS. Only some of the specific elements of these alternatives require a different frame of discussion.

Section II provides a basic overview of the economics involved with a carbon tax, written for an audience with no training in economics. Such information is readily available in economics literature, although the material tends to be presented in a manner consistent with the assumption that the reader has had formal economics training. Section III then discusses the main policy responses to climate change, including those already identified (a carbon tax, an ETS, and command-and-control policies). This discussion addresses a shortcoming in the legal literature; specifically, the literature often assumes the reader is aware of the various policy alternatives and their functions. Some advantages and disadvantages of the relevant policies are canvassed, with the conclusion that a carbon tax is the preferable alternative.

One of the primary concerns surrounding any new charge by a domestic political policy is the loss of international competitiveness that domestic industry is likely to suffer. Such unilateral imposition of a charge (which will occur under both a carbon tax and an ETS) results in domestic producers facing additional costs not also borne by their foreign competitors.⁹ This loss of competitiveness can be addressed through a border tax adjustment (BTA) similar to that operating under most goods and services/value added tax systems around the world. Under this mechanism, exports have the tax rebated, so they enter the world market free of the carbon charge, with imports being subjected to the same impost as domestically produced goods. In this way, the domestic policy has a neutral effect on a domestic industry's international competitiveness.

Section IV provides a brief overview of the mechanics of a BTA. Section V deals with the legitimacy of such a mechanism as assessed under the WTO requirements. This section also forms the primary thrust of this paper, with

5. 2009 U.N. Climate Change Conference (Dec. 7–18, 2009).

6. 2010 U.N. Climate Change Conference (Nov. 29–Dec. 10, 2010).

7. 2011 U.N. Climate Change Conference (Nov. 28–Dec. 9, 2011).

8. In addition, Congress debated two bills for a carbon tax as well as a separate bill for an ETS in the 110th Congress, demonstrating that support exists in the United States for models other than that presented to the Senate. See Milne, *supra* note 2, at 446.

9. Jan McDonald, *Environmental Taxes and International Competitiveness: Do WTO Border Adjustment Rules Constrain Policy Choices?*, in 2 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES 273, 273 (Hope Ashiabor et al. eds., 2005).

concluding remarks provided in Section VI. The conclusion is drawn that a carbon tax BTA can be designed consistently with the substantive WTO rules. If it is found that a carbon tax BTA does breach the substantive WTO requirements, the exceptions provided for in Article XX (which allows for some deviation from the WTO for environmental regulation) are likely to permit such a design without penalties being imposed, so long as the mechanism is designed appropriately. The fact that policymakers continue to demonstrate a lack of understanding of how a BTA operates, at times equating a BTA with an illegal tariff,¹⁰ demonstrates the relevance of this analysis.

II. CARBON TAX ECONOMICS: A PRIMER

If one accepts that some level of carbon pollution is, at least in the absence of truly viable cost-effective alternatives, acceptable, then the matter of determining the appropriate level of carbon pollution becomes an application of economics. Parties have a tendency to overpollute since they do not bear all the costs associated with the pollution. This is due to the problem of the “tragedy of the commons,” a concept first popularized in 1968.¹¹ In essence, polluters are able to make use of a resource (in this case, the air) without cost, although there is a cost associated with this use. Since the polluter is not paying the cost of using the resource, there is an incentive to overuse the resource. The costs of such use are described as being externalized to society.¹²

A carbon tax is a form of Pigouvian tax—a tax imposed on market actors to rectify some form of market failure, specifically the imposition of negative externalities.¹³ The negative externality of pollution is that it imposes a cost on all members of society (including the polluter) without the benefits being similarly disbursed. In this case, the benefits of lower production costs generally accumulate to the polluter. A carbon tax shifts the burden of this activity away from society to the polluter, thereby more closely aligning actual costs and

10. See, e.g., Hon. Craig Emerson MP, Minister for Trade (Austl.), Address to the Centre for Independent Studies: Markets, Trade and Human Progress 5–9 (Mar. 10, 2011) (transcript available at <http://www.craigemersonmp.com/files/031011%20CIS%20speech%20-%20Markets%20Trade%20and%20Human%20Progress.pdf>). See also Aaron Cosbey, International Institute for Sustainable Development, Background Paper for the Trade and Climate Change Seminar: Border Carbon Adjustment 2 (June 18–20, 2008), available at http://www.iisd.org/pdf/2008/cph_trade_climate_border_carbon.pdf.

11. Garrett Hardin, *The Tragedy of the Commons*, 162 *Sci.* 1243 (1968).

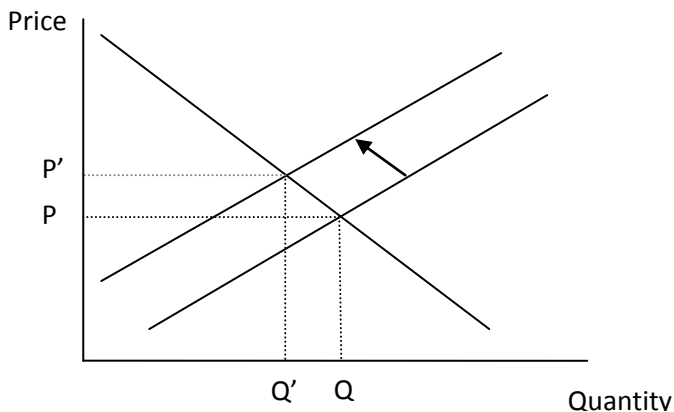
12. GOODSTEIN, *supra* note 3, at 36.

13. The discussion of the economics underlying carbon taxes (which also largely extends to ETSs) provided here is deliberately designed to provide only as much detail as necessary to understand the remaining analysis. A more in-depth discussion may be found in most environmental economics books. See, e.g., BARRY C. FIELD & MARTHA K. FIELD, *ENVIRONMENTAL ECONOMICS – AN INTRODUCTION* ch. 12 (5th ed. 2009); NICK HANLEY, JASON F. SHOGREN & BEN WHITE, *ENVIRONMENTAL ECONOMICS – IN THEORY AND PRACTICE* ch. 4 (1997).

benefits associated with an activity and providing better incentives for private actors to utilize resources in a socially optimal fashion.¹⁴

Extending this analysis, the concept of the polluter in this context may reach beyond the party that emits the carbon into the air. For example, in the case of manufactured products, the consumers of the end products may justifiably be regarded as causing the pollution in question, since it is their demand for the relevant end product that leads to the production process that creates the pollution. The benefits referred to may be passed on in the form of prices lower than they would be in the absence of the externalization of some of the input costs. The analysis is equally applicable, since lower costs (due to the negative externalities) may be passed on to consumers in the form of lower prices, implying overconsumption of the relevant product, which utilizes the common resource.¹⁵ Even if the burden of the Pigouvian tax is passed entirely onto consumers, this still creates the right incentives, since manufacturers produce only in response to consumer demand. If the tax results in a lower demand, this will lead to a reduction in output,¹⁶ requiring less of the common resource as an input, resulting in a more optimal allocation of resources.

These effects are illustrated in the following diagram:¹⁷



For simplicity, assume that a fully costed product, including the cost of externalities caused during its production, sits on the upper supply curve in the

14. ALFRED ENDRES, ENVIRONMENTAL ECONOMICS: THEORY AND POLICY 19–20 (Iain L. Fraser trans., rev. & extended English language ed. 2011).

15. This is a direct extension of Hardin's tragedy of the commons analysis. Hardin, *supra* note 11.

16. See, e.g., HAL R. VARIAN, INTERMEDIATE MICROECONOMICS: A MODERN APPROACH 10–11 (7th ed. 2006) (explaining supply responses to a shift in demand in the market for apartments).

17. Further discussion on this theoretical material can be found in GOODSTEIN, *supra* note 3, at 181–85.

diagram. Under such circumstances, the equilibrium price that would occur in the market would be P' , with a quantity produced of Q' .¹⁸ Given that the costs of pollution are not included, specifically the costs associated with emitting carbon-based by-products into the atmosphere, producers face lower costs and, therefore, are able to sell at the lower price, P .¹⁹ This results in an increase from the socially optimal equilibrium in quantity demanded, to where observed quantity demanded and supplied reaches equilibrium at Q . As Q is higher than Q' , it can be seen that the lower observed price (P) compared with the socially optimal equilibrium price (P') induces overconsumption of the good.²⁰ This leads to inefficiency, in that the resources dedicated to meeting the surplus demand ($Q - Q'$) would be better used in some other fashion and represent what is known as a deadweight loss to society.²¹ Such other uses include not using the resource at all (in this case, the air), allowing regeneration and/or capacity retention for future use (i.e., not polluting today allows an optimal amount of pollution to occur in the future).

A carbon tax has the effect of shifting the demand curve to the left, as demonstrated in the diagram. Note that, since the demand for the product is not perfectly inelastic (i.e., the demand curve is not perfectly vertical), the full incidence of the tax is not passed on to the consumers. That is, the increase in price represented by $P' - P$ is less than the amount of the tax. This does not alter the model, however, since the burden of the tax that falls on the producer will be a factor taken into account from the producer's perspective when determining the quantity that they are prepared to supply at a particular price (i.e., the incidence of the tax on the producer is treated as any other factor of production that is incorporated into the supply curve).²²

It should be noted that retail demand for energy is recognized as being relatively inelastic, with the implication that the behavioral outcomes predicted by this basic model would not eventuate to the extent suggested.²³ Empirical evidence, however, indicates that this inelasticity is only short term, with long-term demand for energy consistently found to be elastic across nations in the Organisation for Economic Co-operation and Development (OECD).²⁴ Consequently, demand for energy in the long run would be expected to be consistent with this model.

Note that a carbon tax, like all Pigouvian taxes, is not designed specifically to reduce the relevant activity (although this is its usual effect).²⁵ The intention is to align the costs of the activity with the benefits, specifically

18. *Id.* at 182–83.

19. *Id.*

20. *Id.* at 183–84.

21. *Id.* at 184.

22. GOODSTEIN, *supra* note 3, at 184.

23. ORG. FOR ECON. CO-OPERATION & DEV. [OECD], ENVIRONMENTALLY RELATED TAXES IN OECD COUNTRIES: ISSUES AND STRATEGIES 100 (2001), available at http://www.pebls.org/files/Publications/OECD/OECD_Environmentally_Related_Taxes.pdf.

24. *Id.*

25. RICHARD POSNER, ECONOMIC ANALYSIS OF LAW 503 (8th ed. 2011).

burdening the recipient of the benefits with those costs.²⁶ Since such taxes normally rectify negative externalities, however, they effectively impose costs on parties that had not previously been bearing those costs (in whole or in part).²⁷ Since increasing the cost of an activity normally results in a reduction in that activity,²⁸ a carbon tax may be expected to result in less pollution. It is important that this cost alignment objective is borne in mind, so that any sober analysis of the merits of such a scheme is neither confused by political considerations nor viewed as a revenue-raising opportunity.

A potential criticism of a carbon tax under this analysis is that the rate of the tax needs to be set such that the supply curve shifts the appropriate distance. Due to problems with obtaining sufficient information, it is unlikely that any authority will be able to determine the appropriate rate of tax to achieve this precise objective with absolute certainty.²⁹ Further, given that different products face different demand curves,³⁰ the incidence of the tax is likely to be different across these products.³¹ This could affect the degree to which the specific demand curve shifts (although mitigated by the tax borne by the producer being included as a factor of production).³² These criticisms, however, are not reasons to reject a carbon tax outright in the absence of an alternative that achieves these ends. First, as discussed in Section III, no other available alternative is more likely to result in the optimal level of pollution. Second, attempts to address pollution do not represent an all-or-nothing proposition. Gains can be made even though the relevant measure does not fully resolve any problems. Even if the tax shifts the demand curve only partly toward the socially optimal equilibrium, so long as the resulting demand curve is closer to this target than the present demand curve, efficiency gains have been achieved.

III. CARBON TAX COMPARED TO ALTERNATIVES

A. Centrally Imposed Global Caps

A carbon tax is but one solution dealing with the negative externalities of carbon emissions. One obvious alternative is to impose centrally determined limits on the amount of emissions³³ permitted.³⁴ This, however, raises the

26. ENDRES, *supra* note 14, at 94.

27. *Id.*

28. *See, e.g.,* VARIAN, *supra* note 16, at 24–25.

29. GOODSTEIN, *supra* note 3, at 319.

30. *See generally* ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 33–36 (forthcoming 2013) (discussing elasticities of demand for various products).

31. *Id.* at 345–48.

32. *Id.*

33. In this section, these limits are referred to as “global caps,” as the cap on emissions applies to the total emissions made over a particular area. This is in contrast to individual caps, as discussed in the next subsection.

immediate issue of how such limits might be enforced. Once an aggregate emissions cap is set for a particular area, it is difficult to see how it could be administered effectively. For example, total carbon emissions come from both the consumer and industry sectors.³⁵ Such a cap may create an incentive for actors to emit as much as possible in the early stages of the relevant period (say, a calendar year). For example, a manufacturer of nonperishable goods may increase production early in the year and store the excess. If all manufacturers did this, however, the result would be that the emissions cap would be reached earlier without resulting in a more efficient pattern of emissions. (Indeed, the higher concentration at particular times may even be more harmful than is currently the case.)³⁶

B. Centrally Imposed Individual Caps

A possible refinement to the global cap system is to administer caps on an individual basis; that is, each actor may emit a predetermined amount of carbon. This immediately runs into problems, though. For example, how are such entitlements to be allocated? Should each manufacturer³⁷ be entitled to the same emission limits? It becomes apparent that this position is not feasible when one realizes that, under this solution, a very high emitter would receive the same emission entitlements as a low emitter. There are further issues that arise in this regard. For instance, how would existing entitlements be treated if two firms were to merge into a single entity? Would the merged entity be entitled to twice the emissions? Either situation would create inappropriate merger incentives. The first scenario would encourage conglomerate-type mergers (aluminium smelters taking over clothing manufacturers) that are driven purely by a desire for access to additional emissions entitlements. The second situation would act as a disincentive to otherwise efficient mergers due to an effective reduction in emission entitlements. For instance, economies of scale may be achieved for two aluminium smelters to merge, but the fact that only one set of entitlements would be retained would be a substantial cost of such a merger proceeding. This may be

34. This is the same as what is sometimes referred to in the literature as “ambient standards,” where pollution concentration standards are imposed for particular locations. DAVID A. ANDERSON, ENVIRONMENTAL ECONOMICS AND NATURAL RESOURCE MANAGEMENT 291 (3d ed. 2010).

35. See, e.g., European Env’t Agency [EEA], *End-user GHG Emissions from Energy*, 7–11, EEA Technical Report no. 19/2011 (Dec. 15, 2011), available at <http://www.eea.europa.eu/publications/end-use-energy-emissions/full-report-2014-end-user>.

36. THOMAS H. TIETENBERG, EMISSIONS TRADING: PRINCIPLES AND PRACTICE 109–10 (2d ed. 2006) (noting that, as some pollutants have different consequences, the more quickly they are concentrated, a different policy response is required).

37. For simplicity of analysis, only manufacturers will be referred to in the discussion from this point forward. The principles discussed, however, apply equally to other economic actors, such as consumers, that emit carbon in their activities (such as drivers of automobiles) and service providers.

circumvented if a corporation were set up and acquired both smelters, which would retain their separate corporate identities. Any rules relating to entities with common ownership, however, are likely to prevent this prospect, as the absence of such rules would create an incentive to establish separate corporations to acquire unique sets of entitlements. This leads to the issue of whether entitlements need to be allocated in proportion to the entity's size (which then raises questions about how to measure size).

C. Command-and-Control Processes

A third alternative is for the government (or some other regulatory authority) to impose particular requirements on carbon emissions. This approach is often referred to as command and control. This could include, for example, a requirement that specific technologies be adopted in the manufacturing processes. This command-and-control approach may deal with the issue of reducing carbon emissions in the short term, but creates its own set of problems.³⁸ There is no incentive for improvements to be achieved in this situation.³⁹ As all the impetus for handling the issue of carbon emissions is government-led, private actors have no reason to expend resources in, for example, improving the relevant technology.⁴⁰ Such movements are likely to be achieved under such a system only by further government expenditures, such as central investments in technological research.⁴¹ This is the case whether the government forces the cost of adopting the relevant technology on industry or provides the technology at no or low cost (which, in effect, is a subsidy that creates potential problems under the WTO in its own right, at least for industries in that country's export markets or domestic industries facing import competition).⁴²

D. Emissions Trading Schemes

The previous alternatives canvassed areas characterized by imposed regulation. An alternative is one where some basic rules are established by regulation, and market forces determine each actor's precise behavior. As the following analysis shows, such market-based mechanisms can resolve the problems identified above with regulation-based controls.⁴³

38. See generally FIELD & FIELD, *supra* note 13, at 217–31.

39. See, e.g., GOODSTEIN, *supra* note 3, at 312.

40. *Id.* at 312–13.

41. See FIELD & FIELD, *supra* note 13, at 223–27.

42. See George Johnston, *Subsidies to Airbus and Boeing: WTO Compatibility and the Way Forward*, 6 BUS. L. INT'L 293, 312–13 (2005) (discussing potential EU claims against the United States regarding transfers of technology to U.S. airline manufacturers as subsidies).

43. FIELD & FIELD, *supra* note 13, at 232–70.

If the costs of pollution are internalized so that the polluters bear at least some of the cost,⁴⁴ better incentives are provided than the lack of those currently in place, as discussed above.⁴⁵ In particular, imposing the cost of pollution on the polluter has two distinct benefits: 1) natural forces of demand and supply will act to push the level of activity closer to that which is socially optimal (as discussed); and 2) producers have an incentive to lower emissions through some voluntary means, such as improvements in technology that will lower emissions without changing production processes (such as carbon capture and storage technology) or adopting lower carbon-emitting processes (since lower emissions lead to lower costs).⁴⁶ Only alternatives that incorporate a market mechanism can achieve these ends without imposed government regulation (requiring constant, costly monitoring).

There are two alternatives normally put forward that comply with these requirements: an ETS and a carbon tax.⁴⁷ An ETS is a system where a cap is determined, and emissions permits are allocated and then traded privately among participants.⁴⁸ Ultimately, the expectation is that permits will be utilized by the parties that value them the most.⁴⁹ This is merely a means of ensuring that pollution occurs from sources where it achieves the greatest productivity.⁵⁰ From an aggregate perspective, therefore, given a predetermined level of pollution that is sustainable/desirable, aggregate wealth (a proxy for prosperity or well-being) is maximized, since resources are being put to their most productive use.⁵¹ This may cause reductions in output in certain sectors, which may have private costs (such as higher unemployment and the inability to produce certain goods).⁵² From a social perspective, however, such results are appropriate, because these activities detract from the overall level of prosperity through the emission of carbon over and above that which was socially optimal.⁵³ These private costs represent wealth

44. The closer this burden is to the true total burden, the more effective the measure will be, generating an incentive for the regulatory agency to spend an appropriate level of resources to determine the appropriate burden. As discussed below, benefits are obtained even where only part of the costs is internalized. Consequently, complete accuracy in determining the cost of carbon emissions is not a prerequisite for benefits to be realized.

45. See *supra* Part II.

46. See, e.g., GOODSTEIN, *supra* note 3, at 181–85.

47. See, e.g., *id.*

48. *Id.* at 303.

49. See, e.g., Explanatory Memorandum, Carbon Pollution Reduction Scheme Bill 2010 (Cth) 17 (Austl.) (the predecessor bill to the legislation referred to the *Clean Energy Act 2011* (Cth) (Austl.)).

50. ANDERSON, *supra* note 34, at 294–95.

51. This is an application of social welfare economics based on property rights; see generally POSNER, *supra* note 25, at 105–08.

52. *Id.* at 107.

53. *Id.* This argument is sustainable only if the cap has been determined with as much accuracy as possible, which necessitates the exclusion of political considerations.

transfers and therefore do not detract from the overall level of social prosperity.⁵⁴

The attractiveness of ETSs is shown by its adoption in a number of jurisdictions, most notably the European Union.⁵⁵ Past experience, however, has shown that ETSs may encounter significant practical problems.⁵⁶ The first of these is permit allocation. Traditionally, permits tended to be grandfathered,⁵⁷ meaning permits were distributed to existing emitters at no cost in proportion to their current level of emissions.⁵⁸ This creates two forms of economic problems. First, this creates a barrier to entry in industries that emit large amounts of carbon.⁵⁹ This entrenches current producers in these industries, with the usual concomitant losses arising from the lack of competition (both actual and potential, depending on the industry). Even if new entrants are able to enter the industry, incumbents hold a continuing competitive advantage in the form of lower costs due to costless permits.

Second, and related to the first, such a system creates perverse incentives. Introducing a scheme in which permits are grandfathered may have the opposite effect leading up to the scheme's introduction. Schemes of such wide-ranging effect can be introduced (in nonauthoritarian jurisdictions, at least) only with a period of notice; that is, the government's intention to introduce an ETS will be signalled a significant period prior to the scheme's implementation.⁶⁰ This provides an opportunity for current emitters to increase their current emissions to maximize their allocation of permits. Further, this period of higher (suboptimal) pollution may be elongated due to the inevitable political hurdles that introducing such a scheme will need to overcome (such as passage through the legislature). Howard F. Chang demonstrates how such perverse incentives also arise when a

54. To illustrate, the costs associated with unemployment in adversely affected industries will be more than offset by the social gains associated with lower pollution (assuming that current levels of pollution are above the optimal level).

55. See *supra* note 4 and accompanying text.

56. See, e.g., STEFANO CLO, EUROPEAN EMISSIONS TRADING IN PRACTICE 145–47 (2011) (documenting and discussing problems encountered with the EU ETS).

57. This was the approach adopted in the first attempt at introducing an ETS in the European Union. Javier de Cendra, *Can Emissions Trading Schemes Be Coupled with Border Tax Adjustments? An Analysis vis-à-vis WTO Law*, 15 REV. EUR. COMMUNITY & INT'L ENVTL. L. 131, 133 (2006) (observing that the EU ETS did not reduce emissions to any great extent (1%)).

58. This is the system used in New Zealand's and Australia's ETSs; Climate Change Response (Emissions Trading) Amendment Act 2008 pt 4 subpt 2 (N.Z.); *Clean Energy Act 2011* (Cth) pt 7 (Austl.).

59. See PINDYCK & RUBINFELD, *supra* note 30, at 376–77 (general nature of barriers to entry).

60. For example, the Australian Government first proposed providing free permits to affected industries in July 2008, while the ETS emanating from that report was not (first) proposed to commence until June 2010. DEP'T OF CLIMATE CHANGE (AUSTL.), CARBON POLLUTION REDUCTION SCHEME – GREEN PAPER (2008). This system has since been incorporated into the ETS that ultimately passed Parliament and is due to become operative as of July 1, 2012. *Clean Energy Act 2011* (Cth) pt 7 (Austl.).

multilateral ETS is introduced.⁶¹ Related to this is the potential for rent-seeking behavior on the part of emitters, as affected industries may lobby for additional assistance.⁶² For example, subsequent to consultation with stakeholders, under the ETS in Australia, affected industries can qualify for up to 94.5% of their permit requirements in free assistance.⁶³ This form of assistance compounds the perverse incentives for entities that qualify for assistance, as there are two categories of assistance, based (in part) on the level of intensity of emissions. In other words, entities face an incentive to *increase* their emissions leading up to the measurement time, because doing so may increase their level of assistance.⁶⁴

To an extent, the problems involved with grandfathering may be resolved by auctioning permits.⁶⁵ While this is likely to lead to considerable political resistance from existing emitters (hence the reason grandfathering appears to lean toward being the rule rather than the exception for permit allocations), this approach is necessary to resolve the economic problems identified. Auctions have the added advantage of generating revenue for the government, which may be used to alleviate some of the costs associated with the introduction of the ETS. For example, the revenue may be used to fund training programs for workers unemployed as a result of the increased costs to industry. Alternatively, the revenue may be used to support research into emissions-reducing technology (furthering any pollution-reducing goal the government may have) or reducing tax burdens in other sectors of the economy. This creates its own set of problems, though. First, the government needs to administer the auction such that the permits represent the approximate cost of pollution. Issuing too many permits is likely to result in the collapse of the market as permits, due to oversupply, trade for next to nothing.⁶⁶ The incentives the ETS are intended to generate will be lost under such a scenario, because a zero price, by definition, means polluters are able to pollute for free—a reversion to the pre-ETS situation.

61. Howard F. Chang, *Carrots, Sticks, and International Externalities*, 17 INT'L REV. L. & ECON. 309, 320 (1997).

62. This is an application of public choice theory; *see generally* POSNER, *supra* note 25, 716–20.

63. Explanatory Memorandum, *Clean Energy Act 2011* (Cth) para 5.17 (Austl.), available at <http://www.comlaw.gov.au/Details/C2011B00166/Explanatory%20Memorandum/Text>.

64. *Id.* Chapter 5 sets out the mechanics of the emissions-intensive trade-exposed assistance scheme under the Australian ETS to which this commentary refers, where entities may receive free of charge between 66% and 94.5% of the total permits required to meet their obligations under the system. *See id.* para 5.17.

65. Auctioning is normally envisaged to be undertaken by a regulatory authority at a regular interval, where parties may bid to purchase permits. The auction process sets the initial price for permits. This is the system that is intended to operate under the Australian system for permits not allocated under the assistance program. *See id.*; *Clean Energy Act 2011* (Cth) pt 4 (Austl.).

66. This was the experience under the first incarnation of the EU ETS. *See* CLO, *supra* note 56, at 75.

Second, a one-off auction (or permits that give emission rights into perpetuity) will generate only a single influx of revenue. This may be resolved through regular (say, annual) auctions, which provide emission rights only until the next auction.⁶⁷ This, however, increases the government's costs associated with holding regular auctions, including the probable need to establish a new bureaucracy to administer both the ETS and the auction process. This would, though, provide the government with the opportunity for subsequent fine-tuning of the scheme. For example, if too many permits were issued in the first auction, subsequent auctions may offer a substantially lower number of permits. Consequently, the problems associated with initial miscalculation are minimized.⁶⁸

E. Carbon Tax

The other major alternative that utilizes market mechanisms is a carbon tax.⁶⁹ Rather than issuing permits to polluters based on a global emissions cap as with an ETS, the government imposes a tax on carbon emitted.⁷⁰ There is no aggregate limit, so, in theory at least, polluters could increase the amount of emissions into the atmosphere.⁷¹ The difference with a tax from the present situation is that the polluter will be required to pay for this activity, with the total price increasing with the total amount of emissions. As a consequence, one would not expect polluters to increase their level of pollution if it were uneconomic to do so, because the costs of polluting (the tax) outweigh the benefits.⁷² All other things being equal, as a carbon tax imposes a cost for a resource that hitherto had been costless, producers should reduce their use of that resource. An individual producer may be found to increase pollution if it increases production to meet demand unmet due to marginal (i.e., less efficient) producers leaving the industry. This, however, should result in an aggregate decrease in carbon emissions (i.e., the increase in the remaining producer's pollution is likely to be less than the reduction resulting from less efficient producers ceasing production).

67. From July 2017, this is the means by which permits will be made available via auction under the Australian ETS to commence in July 2012. See *Clean Energy Act 2011* (Cth.), pt 4 (Austl.).

68. See Reuven S. Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax is a Better Response to Global Warming than Cap and Trade*, 28 STAN. ENVTL. L.J. 3, 37–50 (2009) (undertaking a comparison of the merits of a carbon tax vis-à-vis an ETS with a slightly different emphasis, also concluding that a carbon tax is the preferable option).

69. See, e.g., FIELD & FIELD, *supra* note 13, at 436.

70. *Id.* at 436–37.

71. *Id.* at 437.

72. This is merely another way of saying that the marginal cost of polluting outweighs the marginal benefit of doing so. See ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 26–28 (5th ed. 2008).

An appropriate rate of tax is necessary for an effective carbon tax. This, however, is no less challenging than the requirement that the government set an appropriate cap on aggregate emissions under an ETS. This equivalence becomes clear if one views the government as a monopoly provider of public goods (in this case, the right to pollute the air). A monopolist of any good (or service) can control price or quantity, but not both. Quantities demanded will respond to changes in price and vice versa.⁷³ While governments may be a special form of monopolist, having the unique power to control both price and quantity through the passage of relevant laws or regulations, this would be a departure from a market system and an adoption of a command-and-control regime. As discussed above, a market mechanism is necessary for the provision of appropriate private incentives, such as the private development of emissions-reducing technology. Also as noted earlier, centrally developed technology provided without or below cost to the private sector could constitute an illegal subsidy under the WTO.⁷⁴ Use of a market mechanism, therefore, has several benefits in its own right, both from an economic efficiency and an international law perspective.

The need to set the tax rate accurately is thus not a reason to prefer an ETS to a carbon tax, because both systems require equivalent information. Louis Kaplow and Steven Shavell, however, demonstrate that corrective taxes (such as a carbon tax) are preferable to quantity restrictions on economic efficiency grounds, the latter being the effect of an ETS.⁷⁵ This conclusion holds so long as the government is able either to set a nonlinear tax (the rate of tax adjusts depending on the level of activity) or to adjust the rate subsequent to its introduction, if that rate is found to have been set at a suboptimal level. There is no reason such conditions cannot be met in practice. The WTO has indicated that measures affecting price are economically preferable to quantitative restrictions, noting that the former are more transparent in their operation.⁷⁶

Another potential criticism of a carbon tax is the need to measure emissions to determine the appropriate tax liability and the need to monitor activity levels (most likely through periodic audits).⁷⁷ As with the data requirements to set the appropriate rate, however, these are not reasons for preferring an ETS to a carbon tax, because the same information is needed under both systems. With an ETS, emissions still need to be measured (otherwise, imposing caps through the permit scheme is pointless) to enable the cap to be enforced.

73. RICHARD A. POSNER, *ANTITRUST LAW* ch. 1 (2d ed., 2001).

74. See *supra* text accompanying note 42.

75. Louis Kaplow & Steven Shavell, *On the Superiority of Corrective Taxes to Quantity Regulation*, 4 *AM. L. & ECON. REV.* 1 (2002).

76. WTO Comm. on Trade & Env't, *Taxes and Charges for Environmental Purposes – Border Tax Adjustments*, WT/CTE/W/47 (May 2, 1997) [hereinafter *Taxes and Charges*], available at http://docsonline.wto.org/GEN_highLightParent.asp?qu=&doc=D%3A%2FDDFD%2FDOCUMENTS%2FT%2FWT%2FCTE%2FW47%2EWPF%2EHTM.

77. JONATHAN A. LESSER ET AL., *ENVIRONMENTAL ECONOMICS AND POLICY* 156 (1997).

A carbon tax, however, is likely to achieve economies of scale in many jurisdictions. These economies are achieved by piggybacking off existing bureaucratic infrastructure. A carbon tax can be easily designed to be administratively similar to existing forms of taxation in a jurisdiction, most notably a VAT, which is discussed in more detail in the following section. Experience in various jurisdictions has demonstrated that existing bureaucracy can administer new forms of taxation quite easily if designed properly. For example, the VAT in the United Kingdom is administered by the customs department,⁷⁸ whereas the VAT in Australia⁷⁹ is administered by the central taxing authority,⁸⁰ which also handles other federal level taxes (such as income tax). The latter example demonstrates that the prior existence of a VAT is not necessary for the relevant bureaucracy to be in place for the administration of a carbon tax. The absence of a VAT in jurisdictions such as the United States does not therefore form the basis for an objection to adopting a carbon tax on efficiency grounds; the infrastructure is still in place notwithstanding the absence of a VAT. This should be compared to an ETS, which is likely to need entirely new departments to oversee, because it requires an auction process (or an allocation process) and a secondary market for trading the permits.

A significant advantage of a carbon tax over an ETS, though, is the avoidance of the perverse incentives generated through grandfathering permits. Because—short of declaring a complete or partial exemption for specific actors based on prior emissions—there is no scope under a carbon tax for adjusting burdens based on activity levels prior to the introduction of the tax, there is no incentive for polluters to increase their level of pollution leading up to the introduction of the carbon tax.⁸¹

A further advantage of a carbon tax is that all funds generated through its operation flow into the public purse. This provides a revenue source from which the government may finance other environmental policy objectives. Alternatively, the revenue may finance programs to alleviate the adverse effects of the tax, such as training programs for workers unemployed as a result of the shifted industry cost structure or reducing or replacing less efficient taxes. It should be strongly noted, however, that a carbon tax should not be used as a means of raising

78. H.M. Customs and Excise.

79. Characterized as a goods and services tax (GST). *A New Tax System (Goods and Services Tax) Act 1999* (Cth.) (Austl.).

80. The Australian Taxation Office.

81. Some incentive may exist in the case of nonperishable items depending on the means by which the carbon tax is introduced. If the tax is imposed on only production that takes place after the introduction of the tax, then such producers may increase production in the immediately preceding period and store the excess output in inventory. These incentives can be dealt with through transitional measures. In any event, any advantage obtained in this fashion is unlikely to last beyond the immediate term (a significant constraint is the producer's storage capacity). Therefore, the perverse incentives and other economic distortions created through grandfathering permits under an ETS do not arise to any significant extent under a carbon tax.

revenue; the objective is to enhance economic efficiency through internalizing costs of pollution.⁸² Attempts to use a carbon tax specifically as a source of revenue are likely to create economic distortions; setting too high a rate⁸³ will lead to less than optimal emissions, thereby undermining the legitimacy of such a tax.

This may be compared with the situation under an ETS. Revenue may be raised if an auction system is used to allocate permits. This will be maximized if all permits are auctioned off; that is, there is no grandfathering of permits under the scheme. Any surplus from trades that occur in the secondary market, however, will go to the seller of the permit, rather than the government. This in itself is immaterial from an economic efficiency perspective, although by reducing government receipts from this source, it does reduce the government's ability to undertake other projects, as mentioned above. By allowing such private gains, an ETS may also encourage rent-seeking behavior on the part of some parties, as parties enter the auction for permits in the hopes of selling later at a profit.⁸⁴ From an economic efficiency perspective, this represents a mere redistribution of wealth from the buyers of permits in the secondary market to the sellers, and would, therefore, appear to be immaterial. If parties are dedicating resources to securing permits under such circumstances, though, this could represent another source of inefficiency as resources are expended in deriving economic rents from this activity rather than more productive uses.

On balance, it appears that a carbon tax would be superior to an ETS on first principles. A further advantage of a carbon tax is that the concepts involved are more compatible with international trade obligations. For example, there are WTO provisions that are directed at the application of domestic taxes to imports and exports (the focus of Section V). As a form of taxation, a carbon tax can be analyzed more easily under the WTO than an ETS.

It is not clear how imports and exports should be treated, though, under an ETS, especially in a manner that is consistent with the WTO. For instance, it is not immediately clear from a legal perspective whether a trading permit is a tax (despite being economically equivalent to a carbon tax) or more in the nature of a property right,⁸⁵ or something else entirely.⁸⁶ If it is not a tax, attempting to apply WTO provisions intended for what are legally regarded as taxes may be

82. POSNER, *supra* note 25, at 503.

83. That is, a rate above the marginal social cost of pollution.

84. *Supra* Part III.D.

85. For example, the Australian ETS characterizes permits as items of personal property, whereas the opposite is true in the proposed scheme for the United States. *Clean Energy Act 2011* (Cth) s 94 (Austl.); American Clean Energy and Security Act, H.R. 2454, 111th Cong., § 721(c)(1) (as passed by House, June 26, 2009). Lack of clarity on first principles necessitates the enabling legislation in these jurisdictions to stipulate explicitly the legal character of the permits.

86. Alternative views as to the legal nature of permits under an ETS (focusing on the EU system, but applicable to other systems in place) is provided in Erich Vranes, *Climate Change and the WTO: EU Emission Trading and the WTO Disciplines on Trade in Goods, Services and Investment Protection*, 43 J. WORLD TRADE 707, 715–20 (2009).

problematic. Further, if imports were to be subjected to charges on importation, these charges would need to be set so that imports from different trading partners are treated consistently (to comply with the most favored nation (MFN) clause of Article I of the WTO)⁸⁷ and are not charged higher rates than competing domestic products (as required under Article III).⁸⁸ Due to the deliberately fluctuating nature of the effective charge imposed on carbon emissions under an ETS, the appropriate (i.e., legal) charge for imports may be particularly difficult to determine. This becomes especially complex because competing domestic products may have had different charges imposed on them, if, for example, one domestic producer acquired permits through an auction, whereas another acquired them on the secondary market. This problem may not be as great with rebating charges on exports (as discussed in the following section), because the rebate is focused only on a single product, and this may be determined with appropriate documentation.⁸⁹ Imports that face multiple competing domestic products, however, are likely to be especially problematic.⁹⁰

The following section focuses on resolving these problems under a carbon tax through a Border Tax Adjustment (BTA) mechanism.

IV. BORDER TAX ADJUSTMENTS

Historically, one of the biggest concerns regarding environmental taxes has been domestic political resistance to the new tax.⁹¹ For environmental taxes, this goes beyond the expected reluctance for taxpayers to pay additional taxation. A unilateral tax imposed on a domestic industry, with no other accompanying action, will have an adverse impact on the domestic industry's international competitiveness. These concerns may be addressed through a BTA mechanism.⁹²

There are essentially two options for BTAs, which have been studied to a large extent with respect to VAT. These are referred to as the origin and the

87. Unless otherwise noted, all subsequent treaty references are to the WTO.

88. These issues were dealt with in the *Superfund* decision. Panel Report, *United States – Taxes on Petroleum and Certain Imported Substances*, L/6175 – 34S/136 (June 17, 1987).

89. For example, the industry assistance scheme under Australia's ETS, which is very similar to other ETSSs that have been implemented, is likely to be technically classified as an illegal subsidy, but possibly one that will not attract sanctions due to the environmental focus. See Daniel Redmond & Keith Kendall, *Emissions Trading Schemes, Domestic Policy and the WTO*, 7 MACQUARIE J. BUS. L. 15 (2010).

90. For further considerations, see Joost Pauwelyn, *U.S. Federal Climate Policy and Competitiveness Concerns: The Limits and Options of International Trade Law* 21–23 (Nicholas Inst. for Envtl. Pol'y Solutions, Duke Univ. Working Paper, 2007), available at <http://www.nicholas.duke.edu/institute/internationaltradelaw.pdf>.

91. FIELD & FIELD, *supra* note 13, at 437.

92. De Cendra, *supra* note 57, at 138.

destination principles.⁹³ Under the destination principle, imports are subjected to the relevant tax upon importation.⁹⁴ Exports have the relevant tax that had been imposed up to the point of export rebated at the border.⁹⁵ The origin principle acts in the opposite fashion, exempting imports from the tax and not rebating the tax on exports as they leave the country.⁹⁶ In the context of a VAT, the destination principle seeks to tax goods and services in the jurisdiction where they are consumed,⁹⁷ with the origin principle being described as “better understood as a tax on domestic production, rather than consumption.”⁹⁸

Given this characterization, it may appear that an origin-based carbon tax is more consistent with the objectives of a carbon tax outlined earlier,⁹⁹ because this form of taxation seeks to impose a burden on production. This oversimplifies matters, though. As described earlier, the incidence of a tax under circumstances where demand is neither perfectly elastic nor perfectly inelastic will be borne jointly by both the producer and the consumer.¹⁰⁰ The economic effect of a carbon tax, therefore, is to be partly a tax on consumption and a tax on production (as is also the case with a VAT), since the incidence is shared. Further, as described below, all production under free-market conditions is ultimately demand-driven (either existing or anticipated). Consequently, a destination-based BTA, as a tax on consumption, is more consistent with the objectives of a carbon tax.

Gilbert E. Metcalf and David Weisbach advocate an origin-based carbon tax with respect to trading partners that also have a carbon tax, but argue for a destination-based BTA vis-à-vis trading partners without such an impost.¹⁰¹ This position is based on pragmatic rather than economic grounds; namely, to avoid problems associated with choosing the appropriate adjustment rate under a destination-based system, rather than any inherent design feature.¹⁰²

The case for a destination-based system, however, can be made primarily on four relevant grounds. First, the main objective is to alleviate loss-of-

93. See Keith A. Kendall, *Using Destination and Origin Principles in Developing VAT Legislation*, 42 TAX NOTES INT’L 983 (2006); see also WTO/UN ENV’T PROGRAM [WTO/UNEP], TRADE AND CLIMATE CHANGE 100 (2009), available at http://www.unep.org/pdf/UNEP_WTO_Trade_and_CC_June_09.pdf.

94. Kendall, *supra* note 93, at 988.

95. *Id.*

96. *Id.* at 987–88.

97. *Id.* at 988.

98. Deborah L. Paul, *Sources of Tax Complexity: How Much Simplicity Can Fundamental Tax Reform Achieve?*, 76 N.C. L. REV. 151 n.214 (1997).

99. Namely, to impose the social cost of polluting on the polluter. See *supra* Part III.E.

100. PINDYCK & RUBINFELD, *supra* note 30, at 346.

101. Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENVTL. L. REV. 499, 546 (2009).

102. *Id.*

competitiveness concerns on the part of domestic industry.¹⁰³ A destination-based system achieves this most clearly when the effect of the system on goods that enter the international trade scene is considered.¹⁰⁴ All goods produced within a particular jurisdiction are subjected to the same tax regime. (Note that this need not be the same rate; the important aspect is that the rate applied is easily determined, which is the case under an appropriately structured tax system with rates that vary in a predetermined fashion.) This tax is then rebated when the goods leave the jurisdiction, so that they enter international territory free of (the relevant) tax.¹⁰⁵ When the goods then enter a different jurisdiction, they are subjected to the same tax treatment as goods that are produced within that jurisdiction.¹⁰⁶ Consequently, goods are treated the same regardless of whether they are produced domestically or imported. (This also negates any incentives producers may face to relocate to other jurisdictions based on differing tax treatment.)

A second argument for using the destination system is that the majority of countries around the world now utilize a destination-based VAT.¹⁰⁷ As should be apparent, the long-term success of any sort of tax that affects international trade, as is the case with a VAT and a carbon tax, is consistency across jurisdictions. If some countries adopt a destination-based tax and others an origin-based tax, there is the potential for both double taxation and nontaxation, depending on the particular flow of goods. For example, goods exported from an origin-based jurisdiction and imported by a destination-based country will be subjected to two levels of taxation: once in the country of origin, because taxes imposed during production were not rebated upon export, and again when imported into the final destination jurisdiction. Similarly, exports from destination-based jurisdictions imported into origin-based countries will not be subject to taxation at any stage due to the respective treatments applied under each system. The former class of goods will suffer competitive disadvantage, whereas the latter obtain a competitive advantage. This situation also creates other incentives, such as where a producer locates its production facilities, which may be at odds with economic efficiency.

Third, the ultimate purpose underlying a carbon tax (or any other charge for carbon emissions) is to affect demand. As explained earlier, this is achieved by imposing a price on the beneficiary of the emission for the cost of those emissions (thereby aligning costs and benefits more appropriately than is currently the case). Given the underpricing that presently takes place, it is reasonable to

103. Wen-Chen Shi, *The Border Tax Adjustment Provisions of the GATT/WTO and Their Implications on the Design of Energy and Carbon Tax*, 14 INT'L TRADE & BUS. L. REV. 53, 81 (2011).

104. The analysis here is restricted to goods for reasons of simplicity and brevity. The principles, however, apply equally to the export and importation of services.

105. Kendall, *supra* note 93, at 988.

106. *Id.*

107. Tim Kyle, *Consumptive Disorder: GST and International Supplies of Things Other than Goods and Real Property*, 17 AUSTRAL. TAX F. 115 (2002).

expect that overuse is occurring; that is, more emissions are being made than is efficient. The emissions are ultimately driven by demand for the output of the relevant production process. Imposition of this charge will either increase the ultimate price the consumer faces or will reduce the producer's profit margin if it absorbs this additional cost. (Most likely, a combination of these two outcomes would occur.) Assuming that the demand for affected products is relatively elastic,¹⁰⁸ demand for the product will reduce in the first scenario, translating to a reduction in output and resulting in lower emissions. Alternatively, an increase in producer costs (as in the second scenario), caused by an inability to pass on the increase in costs due to the demand elasticity, shifts the supply curve for the product to the left, resulting in a reduction in output. In other words, producers reduce the amount supplied due to the lower margins available on this output, resulting in a lower return on their investment. Resources are shifted to other, more profitable, uses, with the same outcome: a reduction in supply. This has the same net effect as the first scenario: a reduction in the emissions due to the reduction in output. Because both of these scenarios produce the same outcome, the more likely occurrence that a combination of the two will take place also results in a reduction in supply and, hence, emissions. Both outcomes are driven by the dynamics of the demand function for the product in question, and, therefore, production (and, hence, emissions) can be seen as demand driven. The impost should, therefore, aim to affect demand. As such, a destination-based BTA, which imposes the tax based on the jurisdiction in which the product is consumed, is more consistent with these considerations, and, therefore, the overriding objective of a carbon tax (or any carbon charge) is to reduce emissions (assuming emissions are currently inefficiently high). This realization meets the objections sometimes raised against carbon tax BTAs that such a mechanism is not environmentally focused but addresses economic competitiveness.¹⁰⁹

As Julia O'Brien notes, much of the global carbon-intensive production, particularly in the developing world, is driven by consumer demand.¹¹⁰ Consequently, raising the price of *all* competing goods in accordance with the *environmental* policy in place (that is, by the amount of tax that would have been charged if those emissions occurred domestically) affects domestic demand in the appropriate fashion. Not imposing a BTA on imports will only shift domestic

108. This assumption is reasonable because, of those products affected by a carbon charge, it is generally energy production that is relatively inelastic (and, in any event, only in the short term), which is not normally subject to international competition and has been recognized by governments when designing relevant carbon charges. For example, this was a major factor in how the United Kingdom allocated the burden of its emissions reductions obligation under the first European Union ETS. PEW CENTER ON GLOBAL CLIMATE CHANGE, THE EUROPEAN UNION EMISSIONS TRADING SCHEME (EU-ETS) INSIGHTS AND OPPORTUNITIES 13 (2005), available at <http://www.c2es.org/docUploads/EU-ETS%20White%20Paper.pdf>.

109. Julia O'Brien, *The Equity of Levelling the Playing Field in the Climate Change Context*, 43 J. WORLD TRADE 1093, 1104 (2009).

110. *Id.*

demand to imports, with no decrease in global emissions. Given that the exporting countries are unlikely to have the same incentives for their industries to adopt low-emission technologies, this scenario could actually *increase* global emissions, because demand shifts to the output from less environmentally friendly production processes.

Fourth, not only does a destination-based mechanism resolve the first-mover problem of loss of international competitiveness, it also takes away any necessity to achieve uniformity as to rates. Because the BTA under a destination-based system allows goods to leave a jurisdiction free of the charge regardless of destination, there is no need for the importing jurisdiction to harmonize¹¹¹ its rates with the exporting nation.¹¹² This conclusion is related to the point made previously, that emissions are ultimately demand-driven. Regardless of where production is located, emissions will be made only if there is sufficient demand for the output of the production process. Because the same charge is imposed in a jurisdiction regardless of whether the emissions were made in that state or elsewhere, producers do not have an incentive to relocate due to the carbon tax. As a consequence, a destination-based system is also consistent with notions of sovereignty, because each country is free to set its own rate (including a zero rate) without fear of undermining the global system.

For these reasons, it is important that uniformly (or very close to uniformly) designed taxes are implemented to ensure that international competitiveness is not unduly affected through the tax system and to negate the economic efficiencies that would otherwise arise. A destination-based carbon tax claims two advantages over the origin-based alternative in this context. First, most countries already adopt a destination-based VAT.¹¹³ This means that the

111. It should be emphasized that the harmonization no longer required is with respect to the specific rate of tax; there is a broad need for the design of the carbon tax itself to be harmonized across jurisdictions. In particular, if some states impose a destination-based BTA, while others employ an origin-based system, the potential for double taxation and nontaxation arises. Metcalf & Weisbach, *supra* note 101, at 544.

112. The need to harmonize rates is normally explained by the desire to avoid carbon leakage, being the relocation of industries to jurisdictions that do not impose a carbon charge. *Id.* at 545; Cosbey, *supra* note 10, at 1; WTO/UNEP, *supra* note 93, at 99–100. In the absence of a BTA in importing countries, emitters have an incentive to locate their production process in jurisdictions without the charge, thereby avoiding the charge for emissions altogether. Preliminary economic modeling has found that including a BTA in the design of a carbon tax is an effective means of halting carbon leakage. Joshua Elliott et al., *Trade and Carbon Taxes*, 100 AM. ECON. REV. 465, 469 (2010). For evidence of concerns raised that carbon leakage would actually occur in practice, see Abhinav Maker, *To Cap or to Tax? An Economic and Legal Argument in Favour of Carbon Taxes over a Cap on Trade to Combat Climate Change*, in 7 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES 493, 493–94 (Lin-Heng Lye et al. eds., 2009).

113. The qualifier “most” can be interpreted in two ways, both generating the same conclusion in this context. First, of all the countries that have adopted a VAT, all countries except for some former Soviet states have adopted a destination-based VAT. Even those

relevant bureaucracy is familiar with the mechanics involved with administering a destination-based tax, a legislative model is already in place, and professional advisers and taxpayers are already familiar with its operation. Consequently, there are significant cost savings to be achieved by using the same model for a carbon tax, rather than an origin-based system, particularly during the introductory phase of the tax.

Secondly, and arguably more importantly, a destination-based carbon tax is more likely to be implemented. The central reason for this is that jurisdictions may act unilaterally to introduce the tax, yet not suffer any loss of international competitive advantage, because exports enter the world market free of the tax, and imports have the tax imposed at the border. This should negate any political opposition on the basis of international competitiveness.¹¹⁴ Given the treatment of imports and exports under an origin-based system, only a very broad multilateral agreement to introduce carbon taxes contemporaneously will have the same outcome.¹¹⁵ By permitting unilateral action without a loss of international competitiveness, a destination-based carbon tax creates the prospect that individual jurisdictions may adopt such a tax even without international consensus. The eventual goal may be to have uniform adoption worldwide, but this is not necessary for some countries to commence the process of their own volition.

V. DESTINATION-BASED CARBON TAXES UNDER THE WORLD TRADE ORGANIZATION

The General Agreement on Tariffs and Trade (GATT) was designed to promote international free trade by reducing and ultimately eliminating trade barriers of a protectionist nature.¹¹⁶ The GATT was established in the wake of World War II and was driven by a concern that the protectionist attitudes of the 1930s had created the circumstances necessary for the rise of fascism and the

jurisdictions utilizing an origin-based VAT do so only with respect to trade amongst themselves, thereby creating a type of hybrid system. Second, of all the countries in the world, most have adopted a VAT. Given the preceding point, this means that most countries in the world have adopted a destination-based VAT. It is the second interpretation that is especially important for this discussion.

114. Of course, relevant interest groups may object on other grounds. International competitiveness, however, has appeared to be a primary political concern of industry with respect to prior unilateral attempts to introduce environmental taxes. McDonald, *supra* note 9, at 273.

115. Metcalf & Weisbach, *supra* note 101, at 545–46.

116. General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194 [hereinafter GATT], available at http://www.wto.org/english/docs_e/legal_e/gatt47_e.pdf; see also RAJ BHALA & KEVIN KENNEDY, WORLD TRADE LAW 3–4 (1998).

outbreak of war.¹¹⁷ As the successor to GATT, the WTO is infused with the same base objective.¹¹⁸

Given the WTO's focus on removing barriers to trade, a traditional concern when assessing measures that purport to serve environmental ends has been whether such measures are merely disguised protectionism.¹¹⁹ In the context of a carbon tax, there are three aspects to the obligations that the WTO imposes on its members: Articles I and III affect the imposition of tax on imports,¹²⁰ Article VI affects the rebate on exports, and Article XX provides, *inter alia*, environmental exceptions for measures that otherwise violate the WTO in certain circumstances. These aspects of the WTO are analyzed below.

A. Imports: Articles I and III

1. Article I

Article I contains the MFN clause, requiring that countries not give preferential treatment to one trading partner over another.¹²¹ For example, the United States would not be entitled to impose a tariff that applies only to imports from Japan, because that would afford preferential treatment to imports from other countries, such as Canada. Article I relevantly provides:

General Most-Favoured-Nation Treatment

1. With respect to customs duties and charges of any kind imposed on or in connection with importation or exportation or imposed on the international transfer of payments for imports or exports, and with respect to the method of levying such duties and charges, and with respect to all rules and formalities in connection with importation and exportation, and with respect to all matters referred to in paragraphs 2 and 4 of Article III, any advantage, favour, privilege or immunity

117. JAMES SALZMAN & BARTON H. THOMPSON, JR., ENVIRONMENTAL LAW AND POLICY 238 (2d ed. 2007).

118. See BHALA & KENNEDY, *supra* note 116, at 12.

119. Andrew Green, Faculty of Law and School of Public Policy and Governance, University of Toronto, Was That Really Necessary? Some Implications of Trade Law for Alternative Energy 3 (Apr. 18, 2008) (conference paper, transcript available at http://www.law.northwestern.edu/searlecenter/papers/Green_implications.pdf).

120. GATT, *supra* note 116, arts. I, III. Note that Article XI is sometimes raised in relation to imports as well. See, e.g., CHRIS WOLD ET AL., TRADE AND THE ENVIRONMENT 134 (2005). That article, however, deals with quantitative restrictions applied to imports, rather than taxes and duties. See GATT, *supra* note 116, art. XI. Because a carbon tax is not a quantitative restriction, this part of the WTO does not affect the analysis.

121. RAJ BHALA, MODERN GATT LAW: A TREATISE ON THE GENERAL AGREEMENT ON TARIFFS AND TRADE 58 (2005).

granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties.

A critical element of Article I is its reference to the notion of “like” products. This was the focus of the Article I (and Article III) analysis in the *Dolphin-Tuna I*¹²² decision of the GATT Panel. There, the Panel was required to adjudicate the legality under the GATT of legislative provisions that the United States had passed ostensibly to protect dolphins (which were not an endangered species).¹²³ The method by which tuna was often caught at that time often resulted in the deaths of a high number of dolphins.¹²⁴ U.S. regulations banned the import of tuna caught in this fashion, and similar restrictions were applied to domestic fisheries.¹²⁵ Mexico challenged the provisions as a violation of a number of GATT articles, including Article I.¹²⁶

In determining the meaning of the term “like product,” the Panel held that likeness was to be identified by reference to the product’s physical characteristics, rather than the process by which it was produced.¹²⁷ Because tuna from Mexican fisheries utilizing the banned methods was indistinguishable from tuna caught under the dolphin-friendly methods, banning the former and not the latter represented differing treatment of like products.¹²⁸ This decision has often been interpreted as standing for the proposition that taxes cannot be imposed based on processes and production methods (PPMs)¹²⁹ and has sparked a significant degree of interest in reconciling environmental protection objectives with free-trade concerns.¹³⁰ This conclusion stems from the interpretation that imposition of a tax based on a PPM constitutes a point of differentiation between

122. Panel Report, *United States – Restrictions on Imports of Tuna* WT/DS21/R – 39S/155 (Sept. 3, 1991) [hereinafter *Dolphin-Tuna* Panel Report].

123. *Id.*

124. *Id.*; see also WOLD ET AL., *supra* note 120, at 204–05.

125. *Dolphin-Tuna* Panel Report, *supra* note 122.

126. *Id.*

127. *Id.* para. 5.15; WOLD ET AL., *supra* note 120, at 208.

128. See *Dolphin-Tuna* Panel Report, *supra* note 122, para. 5.15.

129. SALZMAN & THOMPSON JR., *supra* note 117, at 240–41; WOLD ET AL., *supra* note 120, at 249; DANIEL C. ESTY, GREENING THE GATT: TRADE, ENVIRONMENT, AND THE FUTURE 168–69 (1994). Note that much of the discussion in commentaries focuses on Article III (the Panel’s primary focus in *Dolphin-Tuna I*), which deals with the treatment of imports vis-à-vis domestically produced goods, thereby being more central to any protectionist complaints. Article III, however, also raises a number of issues that do not arise on a reading of the text of Article I; hence, the discussion on like products has been dealt with here.

130. Shinye Murase, *Trade and the Environment: With Particular Reference to Climate Change Issues*, 2 MANCHESTER J. INT’L ECON. L. 18, 19 (2005); Thomas J. Schoenbaum, *International Trade and Protection of the Environment: The Continuing Search for Reconciliation*, 91 AM. J. INT’L L. 268, 268 (1997).

two products that qualify as “like” under the GATT/WTO.¹³¹ In the context of a carbon tax, imposing a BTA on imports based on carbon emitted during the production process could result in differing treatment between physically indistinguishable imports from, for example, China (which, in this example, emits a high amount of carbon in its production process) and Germany (which emits little carbon). The different rates of tax imposed at the border, based on the different amounts of carbon emitted, constitute the differing, illegal treatment. Similar logic applies under Article III when comparing imports with domestically produced goods.¹³²

There are a number of factors, however, that should be borne in mind before the *Dolphin-Tuna I* decision is interpreted as settling the matter. The text of the decision belies a very clear concern that the Panel was guarding against protectionist measures masquerading as necessary to address environmental concerns. For example, the Panel mentions that the submission from Indonesia complained that these particular restrictions were the twenty-third time in the preceding sixteen years that the United States had attempted to restrict imports of tuna in some fashion.¹³³ The Panel was clearly concerned that to have found otherwise would have set a precedent effectively allowing countries to unilaterally impose its own environmental policies on trading partners through trade restrictions. In its concluding remarks, the Panel noted that “a contracting party may not restrict imports of a product merely because it originates in a country with environmental policies different from its own.”¹³⁴ The Panel explicitly stated that this was not intended to be a restriction on a nation’s ability to determine its own domestic environmental regulations.¹³⁵ Restricting imports on the basis of differing environmental policies, however, was a violation of the GATT.¹³⁶ These comments indicate that the Panel was not so much concerned with imposing taxes on PPMs per se, but rather the potential of such measures to be protectionist in substance. This is consistent with the objectives of the GATT/WTO.

As a matter of treaty interpretation, though, the Panel’s decision does present problems in relation to designing an appropriate carbon tax that is WTO-compliant. While *Dolphin-Tuna I* was never formally adopted by the parties to the dispute, the interpretation of “likeness” is consistent with an early GATT Working Party report¹³⁷ (although these guidelines are deliberately vague, calling for an assessment on a case-by-case basis, which has been echoed in subsequent

131. WOLD ET AL., *supra* note 120, at 249.

132. *See infra* Part V.A.2.

133. *Dolphin-Tuna* Panel Report, *supra* note 122, para. 4.15.

134. *Id.* para. 6.2.

135. *Id.*

136. *Id.*

137. GATT Working Party, *Border Tax Adjustments*, para. 18, B.I.S.D. 18S/97 (Dec. 2, 1970) [hereinafter *Border Tax Adjustments*]. The Working Party, noting that this term was vague and created considerable uncertainty, called for the language to be improved. No improvement was ever agreed by the Working Party, and the matter remains unresolved.

Appellate Body decisions)¹³⁸ and subsequent Panel/Appellate Body decisions.¹³⁹ While there may be some scope to argue for legality of a carbon tax BTA based on a purposive interpretation of *Dolphin-Tuna I*, the interpretation of Article III on other matters in the same case creates other significant, but not insurmountable, hurdles.

2. Article III

Article II:2(a) makes clear that an internal tax on a like domestic product may be imposed on an import, so long as it is done consistently with Article III:2. Article II:2(a) states:

2. Nothing in this Article shall prevent any contracting party from imposing at any time on the importation of any product:

a) a charge equivalent to an internal tax imposed consistently with the provisions of paragraph 2 of Article III in respect of the like domestic product or in respect of an article from which the imported product has been manufactured or produced in whole or in part

....

This Article is, therefore, authority that a BTA may be imposed on an import that is in line with like domestic products. This principle, though, is heavily qualified by the need to be consistent with Article III:2.

Article III contains the “national treatment” clause. Where Article I aims to achieve parity between imports from different trading partners, Article III seeks to ensure that imports are treated at least as favorably as competing domestic products.¹⁴⁰ This is consistent with the WTO’s fundamental objective to prevent

138. See, e.g., Appellate Body Report, *European Communities – Measures Affecting Asbestos and Asbestos-Containing Products*, WT/DS135/AB/R (Apr. 5, 2001).

139. Appellate Body Report, *Japan – Taxes on Alcoholic Beverages*, WT/DS8/AB/R (Nov. 1, 1996) (finding that a variety of easily distinguishable alcoholic drinks produced by a variety of means and from a variety of bases (e.g., vodka, whiskey, brandy, gin, and rum) were “like” products within the meaning of the WTO’s text).

140. Unlike Article I, Article III does not attempt to secure equal treatment for competing products, which is evident from the language used in Article III’s text; for example, the use of “in excess” (rather than equal) in Article III:2. As a result, imports can be treated more favorably than domestically produced goods and still be compliant with the WTO. Consequently, in addressing the problem of how to treat imports under the WTO, an ETS can exempt imports while still imposing the charge on domestic producers. While this may create problematic economic incentives, it would resolve potential issues related to international trade obligations. Of course, import exemption will also give rise to the political resistance from domestic industry due to the loss of international competitiveness.

protectionism, because disadvantaging domestic production does not accord with the notion of restricting international trade. Nations acting in their short-term self-interest would be expected to favor domestic production over imports; therefore, the opposite situation should not be of concern to the WTO.

Article III relevantly provides as follows:

National Treatment on Internal Taxation and Regulation

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.

The WTO's general concern about protectionism is apparent from the wording of Article III:1, explicitly requiring that any domestic regulation (including taxes and charges as well as quantity restrictions and other forms of regulation) "should not be applied . . . so as to afford protection to domestic

production.” Article III:2 incorporates this objective into its own text through a cross-reference in the last sentence. As noted earlier, disparate treatment that favors imports over domestic production is allowed if the imports are the beneficiaries of the disparity. This is apparent under Article III:2, which sets a cap only on internal taxes and charges on imports equal to that of like domestic production (“shall not be subject to [charges] in excess of those applied . . . to like domestic products”), implying that any charge below that cap would be legal. Further, Article III:4 calls for imports to “be accorded treatment no less favorable than that accorded to like products of national origin,” implying again that more favorable treatment for imports is permissible.

Article III raises several matters that have an effect on the design of a carbon tax and the treatment of imports. The first is the reference to “like domestic products.” As discussed earlier, with respect to the parallel phrasing dealing with competing imports (rather than competition between imports and domestic products) under Article I, the Panel interpreted the concept of likeness with reference to the physical characteristics of the product, rather than the process by which it was produced.¹⁴¹ Because there was no physical distinction between dolphin-safe and -unsafe tuna, the Panel decided that the products were “like” within the meaning of Article III, and therefore the varying treatment violated the GATT.¹⁴²

Article III:2 also raises the distinction between taxes that are applied “directly or indirectly” to products. Gavin Goh notes that this is different from the nature of the charge in question—whether this happens to be (in the case of taxes) a direct tax or an indirect tax.¹⁴³ This phrase was introduced in the original GATT text due to the need to accommodate an official French translation; difficulties had been encountered with the original wording, which incorporated “applied on or in connection with like products.”¹⁴⁴ In considering the meaning of this phrase, however, the 1970 Working Party noted “that there was a convergence of views to the effect that taxes directly levied on products were eligible for tax adjustment,”¹⁴⁵ and “certain taxes that were not directly levied on products were

141. *Dolphin-Tuna* Panel Report, *supra* note 122, para. 5.15.

142. An interesting observation is that consumers in the United States (and presumably other jurisdictions) do distinguish between products that are produced by different PPMs that are physically indistinguishable, at least to the naked eye (for example, organic fruits and vegetables, battery hen eggs, and dolphin-safe tuna). Gavin Goh, *The World Trade Organisation, Kyoto and Energy Taxes at the Border*, 38 J. WORLD TRADE 395, 408 (2004). The Panel, however, has demonstrated a preference for adopting a legalistic interpretation, and there has been no precedent as of yet for likeness to be determined by effects rather than physical characteristics, although commentators are increasingly calling for different tests of likeness to be adopted, particularly in the case of PPMs. WON-MOG CHOI, ‘LIKE PRODUCTS’ IN INTERNATIONAL TRADE LAW – TOWARDS A CONSISTENT GATT/WTO JURISPRUDENCE 155 (2003).

143. Goh, *supra* note 142, at 410.

144. Maker, *supra* note 112, at 499–500.

145. *Border Tax Adjustments*, *supra* note 137, para. 14.

not eligible for tax adjustment.”¹⁴⁶ The latter category is usually interpreted as being taxes levied on the producer, which are therefore not eligible for BTA treatment, although this issue has not been resolved entirely.¹⁴⁷ In this respect, it should be highlighted that the Working Party did refer only to “certain” direct taxes.

The Working Party identified specific excise duties, cascade taxes, sales taxes, and VAT as being in the category of indirect taxes eligible for BTA. (VAT was singled out as being equivalent to a sales tax, regardless of its technical construction.) Direct taxes identified as not generally eligible for BTA were social security charges and payroll taxes.¹⁴⁸

Of significant interest in this context is that a divergence of views was noted on *taxes occultes*, or hidden taxes.¹⁴⁹ These include taxes on capital equipment and auxiliary materials and services “used in the . . . production of other taxable goods.”¹⁵⁰ Of particular note is that the Working Party identified energy taxes as being “among the more important taxes which might be involved.”¹⁵¹ Unfortunately, the Working Party did not see fit to clarify this matter, given the lack of complaints that had arisen up to that point on this issue.¹⁵² The WTO Committee on Trade and Environment noted this uncertainty, yet also did not resolve the issue.¹⁵³ By the time of this report (1997), the intersection of international trade and the environment had become readily apparent (the *DolphinTuna I* decision coming down in 1991). The Committee indicated, however, that there was some prospect that indirect taxes could also cover taxes on the production process, rather than the product itself, although it expressed no conclusion on the matter.¹⁵⁴

The Committee did acknowledge the potential effect in *United States – Taxes on Petroleum and Certain Imported Substances*, known as the *Superfund* decision.¹⁵⁵ In that decision, the United States passed legislation designed to raise revenue to fund clean-up efforts aimed at rectifying pollution caused by the use of petroleum and other products. (The term “Superfund” comes from the name of the fund into which revenues were deposited under this scheme.)¹⁵⁶ The measures were a new corporate income tax, higher excise taxes on petroleum products, a

146. *Id.* Note, though, that the 1997 WTO Committee on Trade clarified that to interpret the 1970 Working Party’s comments as allowing a BTA for direct taxes would be contrary to the negotiating history of the GATT/WTO. WTO Committee on Trade and Environment, *supra* note 76.

147. WOLD ET AL., *supra* note 120, at 203.

148. *Border Tax Adjustments*, *supra* note 137, para. 14.

149. *Id.* paras. 15(a), 27.

150. *Id.* para. 15(a).

151. *Id.*

152. *Id.*

153. *Taxes and Charges*, *supra* note 76.

154. *Id.* para. 68 n.41.

155. Panel Report, *United States – Taxes on Petroleum and Certain Imported Substances*, para. 1.1, L/6175 - 34S/136 (June 5, 1987) [hereinafter *Superfund*].

156. *Id.* para. 2.1.

separate excise on other chemicals, and higher taxes on certain imported substances (including petroleum products).¹⁵⁷ Taxes on imported products were subjected to higher rates than “like domestic products.”¹⁵⁸ The United States did not dispute this assertion, but justified the higher rate as imposing an equivalent burden on imported products as the cumulative tax on domestic products (because domestic producers did not receive a rebate on taxes paid for inputs into their production processes).¹⁵⁹

The Panel decided that the tax levied on petroleum imports violated Article III:2, because the net effect was such that imports were taxed at a higher rate.¹⁶⁰ The United States argued that because the net excess charge amounted to USD 0.0002 per litre, which was immaterial in the context of daily price movements of petroleum, it could not be expected to have an adverse effect on international trade of petroleum and therefore did not violate GATT objectives.¹⁶¹ The Panel rejected this argument, noting that the text of Article III did not refer to the effects a tax or charge is shown to have on international trade (unlike other aspects of GATT), but focused only on whether charges on imports exceeded those on like domestically produced goods.¹⁶² As these charges were in excess of the domestic tax, the tax on imports of petroleum was invalid.¹⁶³ This holding reinforces the expectation that the Panel is likely to adopt a formal, legalistic approach when interpreting the WTO as it currently stands, rather than interpreting in the context of its overall purpose.¹⁶⁴

Of greater relevance to the specific issue of whether a BTA may be imposed on a PPM basis, the Panel upheld the higher charge on other imported products.¹⁶⁵ This was on the basis that the intended effect of the imposition was to simulate the cumulative domestic taxes on like domestic products.¹⁶⁶ The Panel stated:

The tax on certain imported substances equals in principle the amount of the tax which would have been imposed under the Superfund Act on the chemicals used as materials in the manufacture or production of the imported substance if these chemicals had been sold in the United States for use in the

157. *Id.* paras. 2.1–2.4

158. *Id.* paras. 3.2.1–3.2.5.

159. *Id.* para. 3.2.5.

160. *Superfund*, *supra* note 155, para. 5.1.9.

161. *Id.* paras. 3.1.2–3.2.3.

162. *Id.* para. 5.1.9.

163. *Id.*

164. A similar approach was adopted later in the *United States – Gasoline* decision. Appellate Body Report, *United States – Standards for Reformulated and Conventional Gasoline*, WT/DS2/9/R (May 20, 1996). This tendency, particularly in more recent years, to adopt a more legalistic approach in interpreting the WTO when disputes arise has been noted in other contexts as well. See CHOI, *supra* note 142, at 153–54.

165. *Superfund*, *supra* note 155, paras. 5.2.7–5.2.8.

166. *Id.* para. 5.2.8

manufacture or production of the imported substance. In the words which the drafters of the General Agreement used in the above perfume-alcohol example: The tax is imposed on the imported substances because they are produced from chemicals subject to an excise tax in the United States and the tax rate is determined in principle in relation to the amount of these chemicals used and not in relation to the value of the imported substance. The Panel therefore concluded that, to the extent that the tax on certain imported substances was equivalent to the tax borne by like domestic substances as a result of the tax on certain chemicals the tax met the national treatment requirement of Article III:2, first sentence.¹⁶⁷

The Committee noted that this could be interpreted as effectively allowing a tax imposed on a production process:

Thus, the panel considered that taxes on substances entering in the composition of the final product could be adjusted at the border. However, it is not clear, in this particular case, whether those substances were still physically present in the final product, or whether they had been exhausted in the production process, and the panel made no distinction to that effect.¹⁶⁸

If the *Superfund* decision could be interpreted as allowing for taxes to be imposed on substances consumed during the production process for imported goods, as per the Committee's second reading, this may open the door for allowing PPMs to be subjected to a BTA. This would legitimize a BTA mechanism under a carbon tax (since carbon emissions are not incorporated into the end product itself). While the *Superfund* decision predates the *Dolphin-Tuna I* hearing, the Committee's interpretation was made with full knowledge of that latter decision. (*Dolphin-Tuna I* is cited in other areas of the report.) This may be taken as evidence that the *Dolphin-Tuna I* decision does not categorically rule out the prospect of BTAs being applied to PPMs associated with imports.¹⁶⁹

167. *Id.*

168. *Taxes and Charges*, supra note 76, pt. IV.

169. Note, however, that Wold and his co-writers draw a distinction between taxes on energy inputs not physically incorporated into a product and carbon emissions. This distinction appears to rest on the basis that the energy input is a separate consideration from any by-product, which use of that energy produces. This is a fine distinction between the physical input itself, which may or may not be incorporated into the final output, and the relevant by-product. In the context of carbon emissions, because the primary source of such emissions is the use of fossil fuels, an argument may be made (and is here) that this is a spurious distinction not supported by the text of the WTO. Consequently, if a BTA is allowed on energy inputs that are not physically incorporated into imported products, this

An alternative basis for allowing PPMs to be subjected to a BTA ties back to the “like products” issue discussed in Section V.¹⁷⁰ While acknowledging the authority that *Dolphin-Tuna I* provides to the argument that “like product,” as used in Article III, focuses on the physical properties of the products in question, Ole Kristian Fauchald presents alternative bases on which PPMs may be taken into account in considering the likeness of products.¹⁷¹ One such basis is distinguishing products based on how they serve differing markets.¹⁷² In one sense, this is not far removed from Won-Mog Choi’s market-based paradigm for determining likeness.¹⁷³ Fauchald holds up this approach as allowing PPMs to be taken into account indirectly in determining likeness, which is achieved because the market being served is based on the PPM.¹⁷⁴ The example Fauchald uses is organic vegetables, which may be physically indistinguishable (and, therefore, considered a “like” product in a *Dolphin-Tuna I* sense) from nonorganic produce.¹⁷⁵ An application entailing more recent developments is the possibility of branding products that have been subjected to a carbon charge as “carbon-neutral” or the less specific “carbon-friendly,” in the same manner that organic vegetables may be labelled as such. In this way, labelling is able to provide otherwise unobservable information whereby consumers who wish to distinguish between products based on PPMs are able to do so.¹⁷⁶ Of course, distinguishing products in this way does not immediately resolve practical questions such as the amount of tax to be imposed on imports, but it does address the threshold matter of whether a tax, irrespective of amount, may be imposed at the border and be WTO-compliant.

B. Exports: Article VI

The concerns about BTAs with respect to exports under the WTO are very similar to those relating to imports discussed above. The main issue is whether a rebate of the domestic taxes imposed upon an export constitutes an illegal subsidy. As far back as 1960, rebates of indirect taxes have been

should pave the way for allowing a BTA on carbon emissions. WOLD ET AL., *supra* note 120, at 249–52.

170. See *supra* Part V.A.1.

171. OLE KRISTIAN FAUCHALD, ENVIRONMENTAL TAXES AND TRADE DISCRIMINATION 130–34 (1998).

172. *Id.* at 133.

173. CHOI, *supra* note 142.

174. FAUCHALD, *supra* note 171, at 133.

175. Goh, *supra* note 142, at 408 (noting that consumers do, in fact, make such distinctions in some circumstances).

176. Any possible objection regarding the ability to mimic the positive behavior (in this case, labeling products as carbon-friendly without having been subject to a carbon charge) could be met in a number of ways—the most obvious being domestic laws against false advertising.

recognized in the context of GATT/WTO as not being a subsidy.¹⁷⁷ A 1960 GATT Working Party report noted the term “subsidy” in Article XVI¹⁷⁸ included the following:

(c) The remission, calculated in relation to exports, of direct taxes or social welfare charges on industrial or commercial enterprises;

(d) The exemption, in respect of exported goods, of charges or taxes, other than . . . indirect taxes levied at one or several stages on the same goods if sold for internal consumption; or the payment, in respect of exported goods, of amounts exceeding those effectively levied at one or several stages on these goods in the form of indirect taxes¹⁷⁹

The note appended to Article XVI provides further clarification:

The exemption of an exported product from duties or taxes *borne by the like product when destined for domestic consumption*, or the remission of such duties or taxes in amounts not in excess of those which have accrued, shall not be deemed to be a subsidy.¹⁸⁰

This introduces the term “like product” into the analysis, establishing further parallels with the treatment of imports. In essence, the rebate of charges that have attached to a product up to the point of export may be rebated at the border without qualifying as a subsidy. Article VI relevantly provides:

1. The contracting parties recognize that dumping, by which products of one country are introduced into the commerce of another country at less than the normal value of the products, is to be condemned if it causes or threatens material injury to an established industry in the territory of a contracting party or materially retards the establishment of a domestic industry. For the purposes of this Article, a product is to be considered as

177. Paul Demaret & Raoul Stewardson, *Border Tax Adjustments Under GATT and EC Law and General Implications for Environmental Taxes*, 28 J. WORLD TRADE 5, 10 (1994).

178. Article XVI deals with information requirements when a subsidy is applied to exports. The concepts applying to Article XVI also are relevant to other WTO Articles dealing with subsidies, in particular for the analysis here, Article VI. GATT, *supra* note 116, arts. VI, XVI.

179. Report of the Panel, *Subsidies: Provisions of Article XVI:4*, para. 5(c)–(d), L/1381 (Nov. 19, 1960) GATT B.I.S.D. § 09S/185-188 (9th Supp.) at 2–3 (1961).

180. GATT, *supra* note 116, Annex I, at 68 (emphasis added).

being introduced into the commerce of an importing country at less than its normal value, if the price of the product exported from one country to another

- a) is less than the comparable price, in the ordinary course of trade, for the like product when destined for consumption in the exporting country, or,
- b) in the absence of such domestic price, is less than either
 - i. the highest comparable price for the like product for export to any third country in the ordinary course of trade, or
 - ii. the cost of production of the product in the country of origin plus a reasonable addition for selling cost and profit.

Due allowance shall be made in each case for differences in conditions and terms of sale, for differences in taxation, and for other differences affecting price comparability.

....

4. No product of the territory of any contracting party imported into the territory of any other contracting party shall be subject to anti-dumping or countervailing duty by reason of the exemption of such product from duties or taxes borne by the like product when destined for consumption in the country of origin or exportation, or by reason of the refund of such duties or taxes.

Article VI:1 establishes the general prohibition against dumping; that is, the practice of treating domestic producers such that they are capable of charging for goods exported at lower prices than what would otherwise be sustainable. As with the Note Ad to Article XVI, Article VI:1(a) and (b) utilize comparisons with like products in the exporting jurisdiction when determining what would be a sustainable exporting price. Article VI:4 makes explicitly clear that the rebate of taxes that are otherwise borne by the like product when consumed domestically does not constitute a subsidy.

From this language, it is apparent that the critical issue is whether a carbon emissions tax is to be categorized as a direct or indirect tax. As noted with the earlier discussion about imports,¹⁸¹ this issue is far from settled. It essentially comes down to whether the tax attaches to the product itself or the producer.

181. See *supra* Part V.A.

Conceptually, the comparison with like products destined for domestic consumption illustrates where some difficulties may arise. For example, two domestic competitors produce identical products, utilizing exactly the same production process, with Producer A servicing the domestic market and Producer B serving the export market. A, however, utilizes carbon capture and storage technology, resulting in less carbon being emitted. Consequently, A pays a lower carbon tax. If B is entitled to a rebate of the carbon tax upon export of its output, how much should this rebate be? If B is entitled to a rebate, this would appear to be the entire amount of the carbon tax levied during the production process. After all, this would result in the product entering the world market free of domestic tax, allowing the export to compete on an even basis with competing products in those export markets, as discussed earlier. This is also consistent with the notion that the tax attaches to the product, rather than being imposed on the producer, because the rebate occurs only when the product is exported.

The comparison drawn under Article VI (and Article XVI) between exported products and like domestic products, however, may cause problems in this analysis. The exclusion provided for in Article VI:4 refers to taxes borne by the like (domestic) product, not the exported product. This could be interpreted as meaning that the taxes borne by the like domestic product act as a cap on the rebate available for exported products. In the example provided above, this would mean that B would be entitled to a rebate that is equal to only A's (lower) tax liability. This would mean that the exported product enters the world market still bearing some of the tax (which may result in cascading if the importing jurisdiction imposes a carbon tax of its own without reference to any prior carbon tax component in the import price). The analysis becomes even more complex if there is a third producer, C, who utilizes a different PPM that emits less carbon than B's process, but more than A's process. Which level of emissions should determine B's rebate? If A's emissions act as a cap for B's rebate, then this equates to exporters being entitled only to rebates equal to the tax paid by the lowest tax producer. This may be seen as preferable, given the objectives of a carbon tax, because it provides a strong incentive for exporters to adopt the lowest emission technology available.

This does have the potential to result in anomalous situations, though. For example, what if A were to export its entire production?¹⁸² In this case, B's rebate cap would rise to C's tax paid. This demonstrates that the incentive for exporters to adopt lowest emission technology is not perfect, but some benefit is still retained. The anomaly, though, arises with respect to A. What should A's rebate be? One would initially expect that this should be the amount of tax that A has paid. As noted, however, Article VI determines rebate limits by reference to

182. If B exports only part of its production, then in the illustration given, the like domestic product referred to in Article VI would be those products B uses to serve the domestic market. This would result in a rebate on the export of the tax that B pays on its domestically consumed output (per unit), which is not an anomalous outcome. GATT, *supra* note 116, art. VI.

like products bound for domestic consumption.¹⁸³ In this case, this would be C's output, where C's per unit carbon tax liability is higher than A's. Would A be entitled to a rebate equivalent on a per unit basis to C's liability? If so, then A is, in substance, receiving a subsidy due to its use of lower emitting technology. While this may be beneficial as a further incentive for exporters to adopt lowest emitting technology, this is almost certainly contrary to the principles underlying the WTO.

These concerns, however, can be met with reference to the practice as adopted and accepted as WTO-compliant with respect to VAT. Using the same relationships as in the previous illustration (i.e., B is less efficient than C who is less efficient than A) and assuming that each producer operates on the same profit margin expressed as a percentage of input costs, the same results as set out above could occur. That is, A's (lower) VAT paid acts as a cap on the rebate that B may claim where A services at least some of the domestic market, and A could effectively claim a subsidy equal to the difference between the VAT it pays and that paid by C if A were to export its output. This, though, does not occur in practice. Each exporter is entitled to a rebate calculated as the VAT that they actually paid. This result is consistent with the intention behind the WTO, in that the product enters the world market free from (appropriate) domestic taxation. As illustrated, however, it is not completely obvious that this result would be the outcome with respect to a carbon tax.¹⁸⁴

The related Agreement on Subsidies and Countervailing Measures (SCM Agreement) addresses these issues as well.¹⁸⁵ It is unnecessary to discuss the development of the SCM Agreement, save to say that it was developed much later than GATT, meaning that the drafters of that agreement had the benefit of having seen technologies and regulatory responses developed since the GATT's implementation, particularly in the environmental protection arena. Consequently, the SCM Agreement was drafted with such developments in mind.

The SCM Agreement is designed not as a stand-alone agreement, but rather as a mechanism for enabling countervailing duties against actionable subsidies. The qualifier "actionable" is significant, because it denotes that not all measures that technically qualify as subsidies give rise to a right in affected member states to implement countervailing measures. A BTA on an indirect tax is not prohibited under the SCM Agreement, which arguably includes taxes on energy consumption, because indirect taxes may be levied on production processes under the wording of the SCM Agreement.¹⁸⁶ It should be noted,

183. *Id.* art. VI:1(a).

184. The VAT has had the benefit of being specifically addressed in negotiations for a significant amount of time, with little disagreement on the appropriate treatment. Therefore, even if this treatment may not stand up under a literal reading of the text of the WTO, extrinsic materials support this position. No such guarantees apply to carbon taxes. See, e.g., *Taxes and Charges*, *supra* note 76, pt. II.

185. See generally WOLD ET AL., *supra* note 120, Ch. 8.

186. J. ANDREW HOERNER & FRANK MULLER, ENVTL. TAX PROGRAM, CTR. FOR GLOBAL CHANGE, UNIV. OF MD., CARBON TAXES FOR CLIMATE PROTECTION IN A

though, that this certainty is not unanimous; some commentators maintain that the position is “uncertain.”¹⁸⁷

C. Exceptions: Article XX

The WTO contains a fallback position in Article XX for measures that technically violate its provisions, yet serve some unrelated legitimate purpose. Article XX provides the following on environmental outcomes:

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

....

b) necessary to protect human, animal or plant life or health;

....

g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption

The most important decision dealing with Article XX is the Appellate Body’s decision in *United States – Import Prohibition of Certain Shrimp and Shrimp Products (Shrimp-Turtle)*.¹⁸⁸ In that case, the United States issued regulations consistent with domestic legislation aimed at protecting endangered species that required all U.S. shrimp trawlers to use devices designed not to harm specific species of endangered turtles known to migrate to U.S. controlled

COMPETITIVE WORLD, 35 (1996). This report was prepared for the Swiss Federal Office for International Economic Affairs, which attributes the uncertainty under the WTO to a historical concern over cascading taxes (which were much more prevalent when the original GATT was drafted, but have largely become extinct since the worldwide evolution of the VAT) that has carried over to energy taxes. See also Ludivine Tamiotti & Vesile Kulaçoğlu, *National Climate Change Mitigation Measures and Their Implications for the Multilateral Trading System: Key Findings of the WTO/UNEP Report on Trade and Climate Change*, 43 J. WORLD TRADE 1115, 1136–37 (2009).

187. Magnus Lodefalk & Mark Storey, *Climate Measures and WTO Rules on Subsidies*, 39 J. WORLD TRADE 23, 38 (2005).

188. Appellate Body Report, *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R (Oct. 12, 1998) [hereinafter *Shrimp-Turtle Appellate Body Report*].

waters.¹⁸⁹ The United States then sought to impose these restrictions on imports of shrimp to the United States.¹⁹⁰ The regulations went to great lengths to ensure that the restrictions imposed on imports were comparable to those burdens on domestic trawlers.¹⁹¹ The United States justified the restriction notwithstanding the GATT provisions as an allowable exception under Article XX(g).¹⁹²

The Appellate Body held that the restriction was potentially permissible under the exceptions in Article XX, but ultimately constituted arbitrary and unjustifiable discrimination and, therefore, did not qualify for protection under Article XX.¹⁹³ The decision mainly focused on interpreting the chapeau; in particular, what constitutes the purpose of the Article, “unjustifiable discrimination,” and “arbitrary discrimination.”¹⁹⁴ Notably, the Appellate Body was satisfied that the turtles’ migratory patterns bring them within U.S. jurisdictional waters, even if temporarily, and therefore was a sufficient nexus for the purposes of Article XX(g).¹⁹⁵

Several important points arise from the *Shrimp-Turtle* decision. The first is that the Appellate Body confirmed the role of the chapeau as making clear that the exceptions contained in Article XX(a) to (g) are limited and conditional qualifiers on the substantive obligations imposed by the remainder of GATT.¹⁹⁶ In particular, this means that the measure under investigation cannot constitute arbitrary or unjustifiable discrimination and must not be a disguised restriction on international trade.

Second, the Appellate Body emphasized the need for multilateral discussions to resolve nontrade issues that may have an impact upon international trade (such as protection of the environment). In finding that the measures constituted unjustifiable discrimination as set out in the chapeau to Article XX, the Appellate Body highlighted the United States’s lack of consultation with its trading partners.¹⁹⁷ This was particularly so in light of a negotiated treaty to which the United States was a signatory also dealing with the protection of sea turtles.¹⁹⁸ As such, the Appellate Body decided that the United States had not exhausted all possible options before imposing unilateral measures.¹⁹⁹

Finally, the fact that the Appellate Body was prepared to find a sufficient nexus between the United States’s interests and the turtles (as an “exhaustible

189. *Id.* paras. 2–3.

190. *Id.*

191. *Id.* paras. 4, 27.

192. *Id.* paras. 24–27.

193. *Shrimp-Turtle* Appellate Body Report, *supra* note 188, para. 187.

194. *Id.* paras. 177–86

195. *Id.* para. 133.

196. *Id.* para. 157.

197. *Id.* paras. 166–72.

198. Inter-American Convention for the Protection and Conservation of Sea Turtles, May 2, 2001, 1996 U.S.T. Lexis 61, 2164 U.N.T.S. I-37791, *available at* <http://www.iacseaturtle.org/English/download/Texto%20CIT%20ENG.pdf>; *Shrimp-Turtle* Appellate Body Report, *supra* note 188, para. 169.

199. *Shrimp-Turtle* Appellate Body Report, *supra* note 188, paras. 170–71.

natural resource”) based on the turtles’ migratory patterns bringing them temporarily within U.S. jurisdictional waters is significant. This demonstrates that the threshold to establish the requisite nexus to come within Article XX (at least XX(g)) is not particularly high (although, as *Shrimp-Turtle* demonstrates, the overriding requirements of the chapeau prevent members from imposing restrictions under inappropriate circumstances).

These observations have implications for a carbon tax if a carbon tax incorporating a BTA mechanism as described violates the substantive provisions of the WTO. First, because carbon pollution is a truly transnational problem where carbon emissions in one country can have repercussions in another, often distant, jurisdiction, satisfying the nexus requirement to qualify under Article XX should not be difficult.

Second, even in the face of a substantive WTO violation, a carbon tax appears to be likely to qualify for an exception under Article XX if it is backed by a multilateral agreement. Based on the Appellate Body’s comments, even if the tax affects WTO members that are not signatories to this multilateral agreement, so long as the treaty was negotiated and has been implemented in good faith, the measure has a very reasonable prospect of successfully qualifying for exception. This assumes that there are no other viable alternatives to achieving the same objective. This is a reasonable assumption, given the demonstrated difficulties in achieving multilateral agreement on most matters, especially environmental concerns.²⁰⁰

The more recent Appellate Body decision in *Brazil – Measures Affecting Imports of Retreaded Tyres*²⁰¹ casts a further gloss on Article XX’s application. The importance of this decision stems from the interpretation of the overarching chapeau, which Arwel Davies describes as focused on uncovering country-based discrimination.²⁰² Such an interpretation is consistent with the apparent objective of the chapeau, to ensure that the Article XX exceptions are not abused to achieve protectionism cloaked in more moral sentiments. Country-specific discrimination, under the Appellate Body’s formulation, is illegal per se (as compared with the Panel’s initial decision, that such discrimination is illegal only if “unjustifiable”).

Such an approach would support a carbon tax destination-based BTA mechanism coming within the exceptions as described, in the event that such a mechanism breaches the substantive provisions. So long as the BTA is imposed on neutral grounds, being the amount of emissions made during the exporter’s production process, and is not linked to any country-specific criteria, Article XX should be satisfied. This is the case even if the practical outcome is that imports are affected more heavily (which may be the case for countries employing more carbon-intensive processes), because appropriate changes to the production

200. See, e.g., Gerry Nagtzaam, *What Rough Beast? Copenhagen and Creating a Successor Agreement to the Kyoto Protocol*, 36 *MONASH U. L. REV.* 215, 215–18 (2010).

201. Appellate Body Report, *Brazil – Measures Affecting Imports of Retreaded Tyres* WT/DS332/AB/R (Dec. 17, 2007).

202. Arwel Davies, *Interpreting the Chapeau of GATT Article XX in Light of the ‘New’ Approach in Brazil-Tyres*, 43 *J. WORLD TRADE* 507, 509 (2009).

process will result in a changed impost under a properly designed BTA, demonstrating the requisite country-neutral element. As Peter van den Bossche notes, the Appellate Body has indicated that the usual narrow approach to interpreting a treaty exception does not apply to Article XX; rather, the decision-maker will attempt to find a balance between the goals of trade liberalization and the relevant competing social concern.²⁰³ This perspective is much more likely to produce a favorable ruling regarding a destination-based carbon tax BTA than a more traditional legalistic, narrow view of the exceptions clause.

VI. CONCLUDING REMARKS

This paper has demonstrated that a carbon tax is preferable from an economic perspective to the alternatives normally considered in addressing control of carbon emissions. While a carbon tax may have difficulties in being WTO-compliant, these problems arise at least to the same extent under those alternatives. For example, an ETS may encounter significant difficulties in identifying the appropriate BTA to apply to imports under Article III due to the constantly fluctuating nature of the prices (representing the charge imposed). A command-and-control approach mandating the use of emission-reducing technology provided by the government at no or reduced cost may represent an illegal subsidy under Article VI.

The major hurdle for a carbon tax to be legitimate under the WTO is its uncertain status as an indirect tax—that is, as a tax on a product rather than on the producer (or the PPM). There are strong arguments in both directions, making this the major hurdle in terms of introducing an economically appropriate carbon tax.

There is strong potential, though, that even if a carbon tax BTA were found to violate the substantive provisions of the WTO, it may qualify for one of the exceptions under Article XX. Based on comments in the *Shrimp-Turtle* decision, the chances of this occurring are maximized if it can be demonstrated that there are no viable alternatives to meeting the relevant objectives and that attempts have at least been made to reach a multilateral agreement (even if such an agreement is not forthcoming).

In the long term, however, it is clearly preferable that a carbon tax be compliant with the WTO. If the tax (more specifically, the BTA mechanism) is legitimate under the WTO's substantive provisions, this obviates the need to rely on the exceptions contained in Article XX. This, in turn, takes away the necessity for multilateral agreements to serve as evidence that there is broad-based support for the measure and that the tax is not arbitrary or unjustifiably discriminatory. Further, unilateral adoption of a carbon tax is more likely if it does not result in a loss of international competitiveness for that jurisdiction's domestic industry,

203. PETER VAN DEN BOSSCHE, *THE LAW AND POLICY OF THE WORLD TRADE ORGANIZATION: TEXT, CASES AND MATERIALS* 618 (2d ed. 2008).

which is attainable through a destination-based BTA as described. If such unilateral action is legitimate under the WTO, then it is more likely that other countries will begin to adopt similar taxes once initial action has been taken. Because unanimous agreement is not required for the viability of a carbon tax, the usual hold-out problems that occur with multilateral agreements are less likely to arise. As more nations adopt a carbon tax, international pressure will increase on those that have not adopted such a tax, without any immediate cost to those already complying (reducing the prospect for rent-seeking normally associated with hold-outs).²⁰⁴ This is likely to generate quicker action to address carbon emissions than would occur if a multilateral agreement needed to be negotiated, drafted, and ratified.

A potential criticism of a carbon tax such as that proposed here is that the rebate on exports acts as an incentive for producers to export their production. Where a country introduces a carbon tax unilaterally, its producers do not have to bear the costs of pollution as described. The presumption, though, is that this cost will be re-imposed upon import into the destination country, but this will not happen if the importing country does not also have a carbon tax. This is tempered by the fact that this will not have any effect on overseas demand, so while producers may prefer to export their output under these conditions, the demand needs to exist for such a move to be worthwhile. Also, domestic demand will not disappear; the model presented predicts some fall in domestic demand, but not elimination. To the extent that the domestic market continues to be served, the costs of such pollution have been internalized. In any event, if the need to internalize pollution costs is taken as a given, then this scenario only further demonstrates the need for a widespread system to be implemented as soon as possible to remove such potentially distorting incentives. Initial unilateral action is more likely to promote a faster resolution than waiting until implementation of a multilateral agreement.

These considerations demonstrate the need for clarification of the status of a carbon tax under the substantive provisions of the WTO. Ideally, this would involve an amendment to the wording of the WTO itself. As the WTO is also a multilateral agreement, however, this is likely to be a slow and cumbersome process, with no guarantee of any eventual, let alone timely, resolution. Therefore, authority may be derived from a Working Party designed specifically to address the issue of carbon tax BTA compliance. Past efforts, most notably in 1970 and 1997, have explicitly left the issue unresolved and acknowledged that the authorities are equivocal, usually concluding with a call for further investigation. No official forum associated with the GATT/WTO looking into BTAs, though, has been established since 1997. Such a forum could provide sufficient authority for members to proceed with the implementation of a carbon tax that is economically and environmentally efficient without the concern that the

204. In relation to multilateral international environment agreements on this matter, see Howard F. Chang, *An Economic Analysis of Trade Measures to Protect the Global Environment*, 83 *GEO. L.J.* 2131 (1995).

initiative will be later deemed illegal under the WTO, with concomitant sanctions arising. This does not represent a change in the WTO per se, rather, a clarification of the existing language. Because a properly designed carbon tax BTA is tenable under the existing WTO, as demonstrated in this paper, there is no necessity for any formal changes to be implemented.



