Climate Change, Carbon Taxes, and International Trade:

An Analysis of the Emerging Conflict between the Kyoto Protocol and the WTO

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INTRODUCTION

National governments worldwide are joining together in the pursuit of two concurrent objectives: enhancing economic welfare by liberalizing world trade and slowing global climate change by reducing greenhouse gas emissions. The two distinct multilateral efforts—administered by the World Trade Organization (WTO) and the Kyoto Protocol to the United Nations Framework Convention on Climate Change, respectively—operate simultaneously and autonomously to achieve their respective goals. At the intersection of the two efforts, however, lies the potential for conflict between them.

The trade regime is not inherently at odds with climate change mitigation; nor is the climate change regime inherently at odds with trade liberalization. The WTO acknowledges the need for multilateral efforts to protect the environment and the Kyoto Protocol explicitly admonishes against implementing policies that adversely affect international trade.[1] Nevertheless, conflict between the two regimes is likely to arise when certain policies implemented to reduce greenhouse gas emissions in accordance with the Kyoto Protocol inadvertently affect international trade. By doing so, such policies may violate the rules that govern world trade—namely, those of the WTO. In such a case, complying with one legally binding commitment simultaneously undermines the other. Various climate change mitigation policies have the potential to disrupt international trade and thus violate WTO rules, including energy efficiency standards, renewable energy subsidies, and emissions trading schemes.[2] One policy in particular—the introduction of carbon taxes—is perhaps the greatest emerging conflict between the respective objectives of the Kyoto Protocol and the WTO.

CARBON TAXES

Several countries that are parties to the Kyoto Protocol have implemented taxes on carbon in an effort to reduce emissions of carbon dioxide, a key greenhouse gas contributing to global climate change, and more countries are likely to follow. While they offer great potential to help countries meet their commitments under the Kyoto Protocol, taxes on carbon also present potential conflicts with WTO rules by affecting flows of international trade.

SIGNIFICANCE TO THE KYOTO PROTOCOL

The Kyoto Protocol, drafted in 1997 and scheduled to come into effect in February 2005, legally requires participating developed countries to reduce emissions of six greenhouse gases to an average of 5.2 percent below 1990 levels by the period 2008-2012. Since carbon dioxide is the most abundant greenhouse gas, reducing carbon dioxide emissions is a central objective of the Kyoto Protocol. Among the many tools at the disposal of national governments to achieve this goal is the introduction of carbon taxes.

Carbon taxes—that is, excise taxes based on the carbon content of fuel—are central to national efforts to reduce carbon dioxide emissions. Market prices for carbon-based fuels such as coal, oil, and gas do not currently reflect the full social and environmental costs of their production and consumption, which include the future costs of global climate change. Because current fossil fuel prices are deceptively low, they lead to levels of consumption that exceed the socially optimal level. Accordingly, the Kyoto Protocol calls for a "progressive reduction or phasing out of market imperfections…in all

greenhouse gas emitting sectors that run counter to the objective" of the protocol.[3] Taxing the carbon content of fuel remedies the market imperfection by incorporating the negative externalities of fossil fuels into prices and decision-making. By making fuels with higher carbon contents relatively more expensive than cleaner-burning fuels, carbon taxes reduce demand for carbon-based fuels such as coal and petroleum, encourage a substitution toward cleaner fuels such as cleaner-burning natural gas or renewable energy, and spur increases in energy efficiency—shifts that result in decreased emissions of carbon dioxide.

While carbon taxes are but one component of broader national strategies to reduce greenhouse gas emissions, they offer several advantages over alternative approaches to cutting emissions. By providing a market-based incentive for firms to shift away from carbon-intensive production, they are more efficient and cost-effective than regulatory measures such as uniform efficiency standards. Carbon taxes are also more effective and less costly than general taxes on energy because they only target those fuels that contribute to climate change.[4] In addition, carbon taxes not only remedy the negative externalities associated with fossil fuels; they also generate revenue. Carbon tax schemes are generally intended to be revenue neutral—that is, all revenue collected from the tax is to be recycled back into the economy in an effort to enhance welfare. For example, because energy taxes may be regressive, part of the revenue can be used to offset the burden on lower-income households by reducing other regressive taxes.[5] Revenue can also be used to ease the transition of certain energy-intensive industries and to fund investment in new technologies.[6] In addition, increased revenue from carbon taxes can be used to reduce other taxes such as those on labor and capital. In certain cases, such a

scheme can produce a "double dividend" by curtailing fossil fuel consumption while simultaneously increasing overall employment and welfare, thus achieving both environmental and economic goals.[7]

As a result, many countries have adopted carbon taxes as part of their strategies to meet Kyoto Protocol commitments. Carbon taxes have been introduced in Denmark, Sweden, Norway, Finland, Italy, the Netherlands, and the United Kingdom,[8] while Germany, Austria, Belgium, and Japan have adopted broader energy taxes.[9] Since their adoption, carbon taxes have proven to be largely effective. For example, Denmark's carbon tax policy, which includes using revenue from the tax to finance energy efficiency investment, reduced carbon dioxide emissions by four percent between 1992 and 2000.[10] Finland's carbon tax, enacted in 1990, is credited with reducing carbon dioxide emissions seven percent by 1998,[11] while Sweden's carbon tax is estimated to have reduced carbon dioxide emissions roughly twenty percent between 1991 and 2000, in part by spurring a significant substitution of biomass energy for fossil fuels.[12] Because of their success, carbon taxes are likely to become increasingly common as part of national efforts to reduce greenhouse gas emissions in accordance with the Kyoto Protocol.

But while carbon taxes offer an effective means of complying with the Kyoto Protocol, they also have significant implications for international trade. In the absence of an internationally uniform tax, the imposition of a carbon tax in any particular country or subset of countries will lead to a loss of economic competitiveness of domestic industries vis-à-vis foreign competitors not subject to taxation. Domestic producers will bear the burden of increased energy taxes which will increase their costs of production while foreign producers incur no additional costs. The consequences of such an asymmetry

would be especially severe for energy-intensive sectors such as iron and steel, aluminum, chemicals, glass, and paper. In these sectors, energy prices comprise a significant share of total production costs, making them particularly vulnerable to the competitive disadvantage of a carbon tax and thus likely to resist the implementation of such taxes. Accordingly, carbon tax proposals in the United States, the European Union, and Australia in the 1990s failed largely because of the opposition of energy-intensive sectors and other business interests fearing losses of international competitiveness. Because of such opposition, no national government is likely to implement a carbon tax without offering concurrent measures to lessen the burden on energy-intensive sectors.[13]

The presence of international trade also threatens the environmental objectives of the tax. In the absence of counteracting measures, reductions in domestic carbon emissions may simply be offset by increased emissions in countries without a carbon tax—a phenomenon known as carbon leakage, in which global emissions do not diminish but simply relocate.[14] Thus, national governments must craft carbon tax policies that address both the economic and environmental consequences of international trade. Because such measures may disrupt trade flows, these offsetting policies constitute the central point of tension between the goals of the Kyoto Protocol and the rules of the WTO.

To offset the economic burden of a carbon tax, national governments have three principal options. First, governments can neutralize the burden by exempting energy-intensive sectors, which has hitherto been the most common approach. For example, as part of the carbon tax schemes implemented in Denmark, Sweden, and Norway, energy-intensive sectors are either compensated heavily or exempted altogether from the carbon

tax. However, such exemptions diminish the efficacy of the tax by limiting the incentive to reduce emissions to a subset of sectors. Instead, governments may opt to recycle the tax revenue by lowering other taxes or providing refunds to firms in order to ease the burden on adversely affected sectors. While revenue recycling is preferable to exemptions because it maintains the incentive to reduce emissions, it may be inefficient and firms may still incur a loss of competitiveness under such a plan. The most effective way to maintain international competitiveness without compromising the efficacy of the tax is to adjust the taxes of energy-intensive goods at the border.[15] Border tax adjustments (BTAs) consist of imposing carbon taxes on imports at the domestic rate in order to maintain competitiveness domestically while relieving exports of taxation, allowing them to compete untaxed in international markets. By removing the asymmetry between foreign and domestic producers, BTAs offer a solution to the loss of competitiveness arising from carbon taxes. But because they serve as barriers to trade, they also present a potential conflict with the rules of the WTO.

CONFLICT WITH WTO RULES

Through the World Trade Organization, national governments agree on and enforce the rules of world trade in an effort to increase economic welfare worldwide. The WTO is founded on the principle of nondiscrimination as articulated in the "national treatment" provision of Article III of the General Agreement on Tariffs and Trade. According to the provision, countries must treat foreign products just as favorably as "like" domestic products.[16] In the case of climate change mitigation policies, WTO rules are intended to ensure that such policies do not unfairly disadvantage imports, thus

constituting disguised protectionism rather than legitimate efforts to address climate change.[17] However, WTO rules stipulate that products can be considered "like" when they differ in the way they are produced. Thus, countries cannot discriminate against products based on their method of production. Because production processes are central to efforts to reduce carbon dioxide emissions, the WTO's prohibition of discrimination based on production methods is the main source of tension between border tax adjustments for carbon taxes and WTO rules.

The legality of imposing carbon taxes on imports under WTO law is ambiguous, chiefly because no WTO dispute panel has yet ruled on the matter. BTAs are not categorically illegal; on the contrary, many BTAs are consistent with WTO rules. Determining the legality of BTAs for a particular tax involves a series of distinctions. First, WTO law distinguishes between product taxes and process taxes—that is, taxes on a final product versus taxes on inputs involved in the production of a product. Border tax adjustments on final products are not controversial; they are legal as long as imports are taxed no more heavily than equivalent domestic products. Taxing imported gasoline at the domestic rate, for example, is permissible. However, determining the legality of process-based BTAs, such as BTAs for carbon taxes, is more complicated and involves making further distinctions.[18]

WTO law distinguishes between taxing inputs that remain physical components of the final product and taxing inputs that are not incorporated into the final product. In the case of the former, BTAs are consistent with WTO rules. However, no dispute panel has yet ruled on the legality of taxing inputs such as energy that are not incorporated into the final good. Nevertheless, WTO law and previous dispute panel rulings suggest that BTAs

for carbon taxes would be prohibited under WTO rules. In the *Tuna/Dolphin* case of 1991 and the subsequent *Tuna/Dolphin II* case of 1994, dispute panels ruled that countries cannot discriminate against products based on the way they are produced. Because a carbon tax is a tax on inputs not incorporated into the final product—in other words, a tax on the production process alone—a dispute panel would likely prohibit BTAs for carbon taxes. However, BTAs for carbon taxes could still be found to be legal under Article XX of the General Agreement on Tariffs and Trade, which permits trade restrictions for environmental reasons under certain conditions. One such condition is that trade restrictions be "necessary" to achieve the environmental goal. A dispute panel would likely find BTAs for carbon taxes to be unnecessary, however, because the purpose of BTAs is not to reduce greenhouse gas emissions, but instead to offset the loss of competitiveness arising from domestic carbon taxes. As a result, BTAs for carbon taxes are likely to be deemed illegal under the rules of the WTO.[19]

The inconsistency between BTAs for carbon taxes and WTO rules is not universally acknowledged, however, largely because rulings in previous WTO cases have ambiguous implications. For example, a dispute panel ruled in the *Superfund* case of 1987 that the United States could legally tax imported goods based on chemicals used during production—that is, that a process-based BTA was legal—as long as it was nondiscriminatory. But the panel did not determine whether countries could tax imports based on inputs unincorporated into the final product, leaving the implications for carbon taxes unclear.[20] In the *US Auto Taxes* case of 1994, the dispute panel ruled that automobiles differing in fuel economy were not "like" products and therefore taxes based on fuel economy were legal as long as they did not discriminate against imports. [21] In

addition, the *Shrimp/Turtle* case of 1998 indicates that the strictness of the WTO's "product-process" distinction may have subsided since it first appeared in the 1991 *Tuna/Dolphin* case and that discrimination based on process and production methods may be permitted to achieve environmental goals.[22] Because of these cases, some observers contend that WTO law does indeed permit process-based BTAs, even in the case of taxes on unincorporated inputs such as carbon taxes.[23] However, the implications of these cases remain ambiguous. Complicating matters, WTO dispute panels are not bound by precedent when making decisions. In sum, the decisions in these cases do not prove that carbon taxes are legal, but do underscore the uncertainty surrounding the issue.

Still, most evidence indicates that WTO rules prohibit border tax adjustments for carbon taxes. On its website, the WTO states, for example, that "WTO rules discipline the way in which governments impose internal taxes and charges on traded goods, when imposed on imported products or rebated on exports" including "taxes on environmentally sensitive inputs to production, such as energy (i.e. carbon taxes)."[24] The WTO further states that unlike product taxes, process taxes "by and large cannot" be adjusted at the border, and that "a tax on the energy consumed in producing a ton of steel (a tax on the production process) cannot be applied to imported steel, even if it is charged on domestically produced steel, which could make the imported steel cheaper (and presumably less environmentally friendly)."[25] While no challenge has been brought to a dispute panel to formally decide the matter, the WTO's own explanation seems straightforward: border tax adjustments for carbon taxes are inconsistent with WTO rules.

The controversy over carbon taxes exemplifies the conflict between the objectives of the Kyoto Protocol and the rules of the WTO. By prohibiting BTAs for carbon taxes,

WTO rules present an obstacle to the international effort to mitigate climate change. Because carbon taxes will not be imposed without compensation for vulnerable domestic sectors, countries that remain committed to imposing carbon taxes will need to offset losses in competitiveness with less effective methods than border tax adjustments. As a result, countries may be less likely to adopt carbon taxes at all. WTO law thus constrains national climate change mitigation strategies, making compliance with the Kyoto Protocol more difficult.[26]

POTENTIAL SOLUTIONS TO THE CONFLICT

The memberships of the WTO and the Kyoto Protocol are substantially similar, with 148 countries belonging to the former and 129 countries being party to the latter. Efforts to harmonize the goals of the Kyoto Protocol and the WTO are in the interest of all participants of both regimes. With respect to the conflict between carbon taxes and WTO rules, some possible solutions may exist.

The ideal way to impose a carbon tax without the need to impose concurrent trade barriers is to harmonize national carbon taxes across countries. An internationally harmonized tax would negate losses in competitiveness by ensuring that all trading partners faced the same taxes on carbon. It would also bolster the effort to reduce carbon dioxide emissions by ensuring that all countries were involved in the effort. Given prevailing political constraints, however, the likelihood of such a plan emerging is minimal. The European Union's attempt to implement a multilateral carbon tax in 1992, for example, failed partly because of concerns that an international tax violated national sovereignty.[27]

A more straightforward way to resolve the conflict between carbon taxes and WTO rules may be to reform the rules themselves. Because of the conflict between WTO law and environmentally motivated process-based taxes such as carbon taxes, the WTO has acknowledged "the importance of further work on the extent to which WTO rules need to be reviewed to accommodate environmental taxes and charges."[28] Such an acknowledgment signals the possibility that WTO rules could be amended to permit carbon taxes.

More generally, coordination should be promoted between the international trade regime and the international climate change regime, which are both founded on the notion that multilateral solutions are preferable to unilateralism. The WTO has stated, for example, that it "endorses and supports multilateral solutions based on international cooperation and consensus as the best and most effective way for governments to tackle environmental problems of a transboundary or global nature."[29] The United Nations Framework Convention on Climate Change, likewise, recognizes the need for coherence between the respective goals of the climate change regime and the international trade regime.[30] Accordingly, representatives of both regimes should work to reduce tensions between the two efforts. [31]

CONCLUSION

As evidenced by the case of carbon taxes, conflicts are likely to emerge between the Kyoto Protocol and the World Trade Organization in the coming years that could limit the success of both regimes. In order to ensure that they both succeed, the international community must reconcile the inconsistencies between them. Policymakers

implementing climate change mitigation policies need to be cognizant of WTO law when drafting policies and aim to minimize potential breaches of trade rules. Similarly, WTO negotiators must seek to resolve the tensions between WTO rules and national efforts to mitigate climate change under the Kyoto Protocol. Increased consistency, coherence, and compatibility between the two regimes would benefit both. By preventing conflicts before they materialize, the trade and climate change regimes can facilitate the success of their respective efforts.

Notes

[1] Kyoto Protocol to the United Nations Framework Convention on Climate Change (1997) Article 2, Section 3.

[2] Steve Charnovitz, "Trade and Climate: Potential Conflicts and Synergies," Beyond Kyoto: Advancing the International Effort against Climate Change (Pew Center on Global Climate Change) 145.

[3] Kyoto Protocol, Article 2, Section 1(a)(v).

[4] ZhongXiang Zhang and Lucas Assuncao, "Domestic Climate Policies and the WTO" (2001) 17.

[5] Bernard P. Herber and Jose T. Raga, "An International Carbon Tax to Combat Global Warming: An Economic and Political Analysis of the European Union Proposal," American Journal of Economics and Sociology (1995).

[6] Duncan Brack, Michael Grubb, and Craig Windram, International Trade and Climate Change Policies (London: Royal Institute of International Affairs, 2000) 74.

[7] J. Andrew Hoerner and Frank Muller, "Carbon Taxes for Climate Protection in a Competitive World" (1996) 44-46.

[8] J. Andrew Hoerner and Benoit Bosquet, "Environmental Tax Reform: The European Experience" (Washington DC: Center for a Sustainable Economy, 2001) 11-27.

[9] Frank Biermann and Rainer Brohm, "Implementing the Kyoto Protocol without the United States: The Strategic Role of Energy Tax Adjustments at the Border" (Potsdam: The Global Governance Project, 2003) 9.

[10] Brack 64.

[11] Lester R. Brown, "Shifting Taxes," Plan B: Rescuing a Planet under Stress and a Civilization in Trouble (New York: W.W. Norton & Co., 2003).

[12] Bengt Johansson, "Economic Instruments in Practice 1: Carbon Taxes in Sweden" (Swedish Environmental Protection Agency) 8.

[13] Hoerner, "Carbon Taxes" 12-14.

[14] Biermann 12.

[15] Brack 73-75.

[16] General Agreement on Tariffs and Trade (1947) Article III, Section 2.

[17] Gary P. Sampson, "Rules that Govern World Trade and Climate Change: The Importance of Coherence" (United Nations University 2000) 2.

[18] Brack 81-83.

[19] Brack 84-89.

[20] Biermann 20-21.

[21] David Vogel, "International Trade and Environmental Regulation," Environmental Policy: New Directions for the Twenty-First Century, ed. Norman J. Vig and Michael E. Kraft, 5th ed. (Washington DC: CQ Press, 2003) 375.

[22] Vogel 378.

[23] Hoerner, "Carbon Taxes" 26.

[24] World Trade Organization, "Taxes for Environmental Purposes" <http://www.wto.org/english/tratop_e/envir_e/envir_backgrnd_e/c3s3_e.htm>.

[25] World Trade Organization, "CTE on: How Environmental Taxes and Other Requirements Fit in" <http://www.wto.org/english/tratop_e/envir_e/cte03_e.htm>.

[26] Brack 90.

[27] Zhang 22-23.

[28] World Trade Organization, "Taxes for Environmental Purposes."

[29] Zhang 24.

[30] United Nations Framework Convention on Climate Change, "Cooperation with Relevant International Organizations: World Trade Organization" (Bonn: 2003) 2.

[31] Aaron Cosbey, "The Kyoto Protocol and the WTO: Seminar Note" (1999) 6.