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**Kyoto and Geneva:
Linkage of the Climate Change Regime and the Trade Regime**

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**“Kyoto and Geneva:
Linkage of the Climate Change Regime and the Trade Regime”**

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***Broadening Climate Discussion:
The Linkage of Climate Change to Other Policy Areas***

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Abstract

The multilateral regime to address the problem of global climate change is manifest in the Kyoto Protocol, negotiated in that city in 1997, and likely soon to enter into force. The multilateral regime to address international trade is manifest in the World Trade Organization, established in Geneva in 1995. Are these two regimes likely to come into conflict? This short paper considers some of the potential conflicts, and also some of the potential complementarities. The overall picture is more optimistic than some pro-environment critics of the WTO fear.

“Kyoto and Geneva: Linkage of the Climate Change Regime and the Trade Regime”

Jeffrey Frankel

Global Climate Change (GCC) policy is a large and complicated subject. It cuts across many academic disciplines, agencies, interest groups, and so on. If you live in the world of climate and Kyoto, and you run up against yet another area, such as the world of trade and the WTO, you may be tempted to react along lines like the following: “Things are complicated enough already. Our efforts to address GCC are legitimate and important. If trade policy and the WTO are sincere and legitimate, they should not create obstacles or constraints to what we are doing. So we should be able to ignore them and they should be able to work around us.” Unfortunately, one can’t entirely ignore the interconnections between climate policy and trade policy. They are sufficiently deep and numerous that each needs to be aware of the other, and some amount of coordination is desirable. So the idea for this year’s FEEM/MIT conference is a good one: “The Linkage of Climate Change to Other Policy Areas,” and I am particularly pleased and honored to be leading off the first session with a discussion of the linkage between climate change policy and trade policy.

I used the word “unfortunate” to describe the fact that one cannot ignore the linkages because they do indeed complicate things. But my central message is a positive one: that international trade, and the multilateral institutions we have in place to maintain the liberal trading system, need not be obstacles to effective GCC policy, and can actually be a great help. But some collaboration is required.¹

Let me begin by noting that many of those who live full time in the world of trade policy view environmental policy with an attitude that is symmetric to the suspicions going the other direction: “Trade policy is important, and complicated enough as it is. If environmental policy is sincere and genuine, there is no reason why its instruments should involve discrimination against some countries’ exports. So let them work around us.” Free traders, which includes almost all economists, fear that talk about environmental protection will be used as an excuse by some economic sectors to gain protection for themselves against competition from abroad. That fear is symmetric to the fear of environmentalists that talk about free trade will be used as an excuse to give inadequate weight to environmental goals and excessive weight to maximization of market-measured GDP. Both fears have a significant element of truth to them. Thus both areas of policy need to acknowledge the legitimate concerns of the other. But the good news is that, if they do, then international institutions and multilateral trade can help give us an outcome where we achieve more environmental protection for a given economic cost, or achieve higher GDP for given environmental goals, or some of both.

Is trade itself good or bad for the environment?

I want to say something about whether trade per se is good or bad for the environment, a distinct question from whether aspects of the WTO and the rest of the trade policy regime are good or bad for the environment.

There are many possible effects of trade on the environment. They can be categorized according to whether they operate via GDP, just like investment, technology, and other sources of economic growth, or whether they are peculiar to trade alone, and hold for a given level of GDP. Within each category, there are effects both beneficial for the environment, and detrimental. What is the overall bottom line? It depends on what dimension of environment quality we are interested in. For concentrations of SO₂, statistical studies give a relatively clear answer, on average across countries. Regarding the effect via income, air pollution peaks at a per capita income of around \$5,700 a year, and after that further economic progress results in cleaner air – the famous Environmental Kuznets Curve.ⁱⁱ It is not that the market solves the problem entirely on its own. Rather, as people grow richer, they demand cleaner air and -- in a country with a responsive and competent government – the result is effective regulation. This is the “EKC” cell in the table.ⁱⁱⁱ

Table: Is Trade Good or Bad for the Environment?
(source for estimates: Frankel and Rose, 2005)

Effects of trade on the environment	via growth in income	for a given level of income
Harmful effects	larger scale of economic activity	“Race to the bottom” in national regulation
Beneficial effects	shifts to cleaner techniques and composition of economic activity	“Gains from trade”: ratcheting up of standards, innovation, consumer power
<i>Statistical evidence on bottom line</i>		
for SO₂	EKC, after an income per capita of about, further growth tends to reduce pollution (via national regulation)	other things equal, the favorable effects of trade seem to dominate
for CO₂	No sign that total emissions turn down on their own (presumably because CO ₂ is a global externality: little regulation is possible at national level)	Trade, if anything, may increase emissions even for a given level of income

What about the effect of openness to trade, holding constant the- level of income? Do competitiveness fears put downward pressure on national regulation? In the case of SO₂ the overall effect, across countries, is the opposite. Evidently openness to trade helps reduce air pollution, whether an international ratcheting up of standards, accelerated innovation, empowerment of the consumer, or other channels.^{iv} Happily, a country need refrain from neither trade nor growth, even if it has strong concerns about air pollution.

One cannot be as sanguine for many other measures of environmental quality, especially CO₂ emissions. The estimates in my paper with Rose found no statistical evidence of a tendency for a country's emissions per capita to peak at some level of income and then to turn down; evidently they just keeps rising (though I should note that others have found signs of a peak^v). Furthermore, openness to trade may exacerbate emissions more than other sources of growth [as in the race to the bottom hypothesis].^{vi}

It is not hard to explain why trade and growth could be beneficial for local air pollution and yet exacerbate emission of greenhouse gases. Because the latter constitutes a global externality, regulation at the national level is inadequate to address it. We need not only the will and economic resources to address global climate change, but also the international cooperation that comes from a multilateral regime of regulation, such as the Kyoto Protocol, which has not been effect during the time span in question. So let us now turn from the subjects of trade and the environment to their institutional champions, the Kyoto Protocol and the WTO.

Mutual respect

Drafters in Kyoto and drafters in Geneva have shown more enlightened consideration for each other than has sometimes been shown by the rank and file of environmentalists and free traders. The text of the Kyoto Protocol says parties should “strive to implement policies and measures...in such a way as to minimize adverse effects on international trade...” and the Framework Convention on Climate Change features similar language in several places.^{vii} Meanwhile, the trade regime is equally solicitous. Article XX of the GATT explicitly allows for exceptions to its trade rules to protect health and conservation of resources; the Preamble to the Marrakech Agreement that established the WTO in 1995 recognizes the importance of seeking “to protect and preserve the environment;” and the Doha Communiqué of 2001 that kicked off a new round of negotiations judged that “the aims of upholding and safeguarding an open and non-discriminatory trading system, and acting for the protection of the environment and the promotion of sustainable development can and must be mutually supportive.”^{viii}

But are these noble sentiments carried out in practice?

Win-win examples

Three examples of win-win situations, that can benefit both free trade and the environment.

First, in late May, *Russia announced it would ratify the Kyoto Protocol* -- and hopefully that is its final answer. Russia had been at best lukewarm about the Kyoto Protocol (perhaps because it considers itself to be one of the few countries that might

actually benefit from global warming). It is pretty clear that Putin decided to go along as a quid pro quo for EU support of Russia's application to accede to the WTO.^{ix} So each party has gotten what it most wants -- Europe wanted Russia inside the Protocol and Russia wanted inside the WTO. A mutually beneficial bargain. I prefer cross-issue linkage of this sort, i.e., at the multilateral level, than trying to do it in the body of bilateral trade agreements. (The Russian decision to ratify is of course no small matter, in that it will mean the difference for the Protocol going into effect. Thus it makes our task at this conference a lot more tangible.)

Second, a multilateral *liberalization of capital equipment and services* used in environmental efforts such as air quality improvement and climate policy (say, waiving of tariffs on trade in windmill turbines) would again serve both kinds of goals, economic and environmental. Indeed the USG in early 2003 proposed that the Doha round of trade negotiations include commitments concerning market access and national treatment in this sector. A precedent: when the United States ended restrictive tariffs and quotas on imports of Japanese automobiles, which tended to be small and fuel-efficient, the consumer pocketbook and air quality both benefited.^x

Third, *a ban on subsidies to fossil fuels* would achieve both the environmental goal of reducing carbon emissions and the economists' goal of removing an economic distortion and contributor to deficit spending. While coal subsidies are not as large as they once were, they are still important. A ban at the national level or, better yet, globally, would satisfy many goals. Indeed, the Kyoto Protocol includes language that specifically mentions as one of the measures that parties could adopt to help achieve their emission targets "progressive reduction or phasing out of market imperfections...and subsidies in all greenhouse gas emitting sectors that run counter to the objective of the Convention..."^{xi} Unfortunately, there are no plans to discuss this issue in the Doha Round.^{xii} A ban on fossil fuel subsidies would be a great initiative for the G-8 and World Bank.^{xiii}

Seattle and Geneva

I will shortly get more specific about areas where the trade policy regime and the climate policy regime might come into conflict. Before going into any detail regarding climate issues, I would like to spend another minute at the more general level of the supposed conflict between globalization and the environment. To make things very concrete, let us flash back to November 1999, and the demonstrations in Seattle outside the WTO ministerial meeting. Picture three demonstrators walking down the street arm-in-arm: One a labor union official in overalls who speaks for American workers, one an NGO volunteer claiming to represent the interests of poor countries, and the third wearing a turtle costume, saying he represents environmental concerns, and that he has the proxy for sea turtles in the Indian Ocean. Now I am all in favor of people walking arm-in-arm, and coming together when they agree on a specific issue, even if they otherwise have different backgrounds and interests. But the fact is that these three should not have been marching together, because their constituents have diametrically opposed views on the central issues: what they want the WTO and the trading system to do. (1) The environmentalists are in favor of the Kyoto protocol, (2) the labor unions are against the Kyoto protocol and in favor of keeping out cheap imports from poor countries, and (3) the poor countries are in favor of being able to sell their goods to rich

countries and in favor of the Kyoto protocol if and only if it exempts them from commitments. [To come together at an anti-WTO protest would be like demonstrators coming together outside the Federal Reserve Board to protest monetary policy, the young ones having in mind that interest rates are too high and the retirees that interest rates are too low.]

Typical WTO panel cases

The sort of conflict that is more likely to come up is the adoption, as part of a country's climate change policy, of tariffs or other measures that discriminate against producers in some trading partners, either in favor of other trading partners (a potential violation of the Most Favored Nation principle of Article I) or in favor of "like products" from domestic producers (a potential violation of the national treatment provision of Article III). If a targeted country files a WTO complaint alleging such a violation, the question is then whether the measure in question is permissible under Article XXIV, which allows for exceptions to the non-discrimination principles for environmental reasons (among others), provided that the measures in question are not "a means of arbitrary or unjustifiable discrimination" or a "disguised restriction on international trade."^{xiv}

Turtles, PPMs, and WTO panel decisions

My point goes deeper than the observation that intellectual nuance and consistency are lost in oversimplified public debates and media events. Consider for a moment the shrimp-turtle case. The Seattle demonstrators were concerned that international trade in shrimp was harming sea turtles because shrimp fishermen catch them in nets. They felt that a WTO panel had, in the name of free trade, negated the ability of the United States to protect the turtles, simultaneously undermining the international environment and national sovereignty.

Perceptions regarding the WTO panel ruling on the shrimp-turtle case are not entirely accurate. In reality, the US ban on shrimp imports from countries without adequate regulatory regimes in place was unnecessarily selective and restrictive. The WTO panel and appellate body decided that the US application of the law, in a complex variety of ways, was arbitrarily and unjustifiably discriminatory against the four plaintiff countries (Asian shrimp suppliers). The US had unilaterally and inflexibly banned shrimp imports from countries that did not have in place for all production a specific turtle-protection regime of its own liking [one that mandated Turtle Excluder Devices].^{xv}

The case should in fact have been considered a victory for environmentalists, in that the WTO panel and the appeals body in 1998 explicitly stated that the US could pursue the protection of endangered sea turtles against foreign fishermen. This was an important precedent because of the distinction between *products* and *production processes*. The case clarified support for the principle that the WTO rules allow countries to pass judgment on other countries' Processes and Production Methods (PPMs), even if it means using trade controls to do so, provided only that the measures are not unnecessarily discriminatory.^{xvi} Previously [under the earlier GATT], the trade regime usually assumed that it was no business of one country what production techniques its trading partners followed to produce a given product, that it could only block imports of products that hurt its own environment. Subsequent to the panel ruling,

the United States allowed more flexibility in its regulation, and made good-faith efforts to negotiate an agreement with the Asian producers, which is what it should have done in the first place. The WTO panel and appellate body in 2001 found the new US regime to be WTO-compliant.^{xvii}

But the legal principle that PPMs are fair game is still somewhat fragile. Some developing countries would still like to argue that measures that target their PPMs violate the GATT. When environmentalists fail to realize the progress they have made in these recent WTO panel cases, they may thereby be missing an opportunity to consolidate those gains.^{xviii} Perhaps the precedent is limited to PPMs with environmental effects that cross borders: the turtles swim virtually around the globe. But PPMs with cross-border effects is all I need for present purposes.

Two areas where conflict between the climate regime and the trade regime is less likely

Let us now turn to areas where aspects of the climate regime, particularly the Kyoto Protocol, might conflict with aspects of the trade regime, particularly the WTO. I hasten to state that I am not at all an expert in this area, nor in international law of any sort. What follows relies in part on writings of Steven Charnovitz and Thomas Brewer. They both note that an exhaustive list of potential conflicts between provisions of one agreement and provisions of the other would be a very long list. But not all the conflicts are serious or important. I will concentrate on some of the bigger and more interesting issues.

First, two areas that might have been the most important points of conflict are less likely to come up as issues at all. The first is related to what is perhaps the best feature of the Kyoto Protocol and the other to what is perhaps its biggest shortcoming.

The first is an area of potential conflict that in my opinion should not be: international trade in emission permits. You might think the subject of international trade in permits constitutes an intersection between the Kyoto Protocol and the WTO is. But the WTO applies only to international trade in goods and services. In my view, and the views of some others^{xix}, an emission permit (like a security) is neither a good nor a service, and so the WTO does not apply to such transactions. Admittedly, some may claim differently.

I would list permit trading as another major example of a win-win situation that has benefits for both the environment and the economy. It is far better to achieve the national targets that were agreed to at Kyoto by allowing firms or governments in countries where it would be expensive to reduce emissions to buy them from countries where it is cheaper to do so. Not only does it mean a lower economic cost of achieving the given economic goal, but by keeping the costs reasonable it also makes it more likely that countries will meet their targets honestly rather than through accounting tricks, that serious emission targets can be agreed to in the subsequent budget periods, and that other countries will be willing to join. So I think this is a very important feature. The reason that I parted company with most American economists and supported the Kyoto Protocol is precisely that it incorporated the flexibility mechanisms such as trading of permits.^{xx}

In this light, I thought that some Europeans were short-sighted in opposing the US position for unrestricted permit trading (for example, at the Hague in 2000).

Next, the issue of trade sanctions or controls. Perhaps the biggest practical shortcoming of the Kyoto Protocol is that so many important countries are not participating, and there is no mechanism to encourage them to join. [The problem is not just that the world's largest and fastest-growing emitters are not members. There may be what is called *leakage*, whereby carbon-intensive industry relocates to the non-member countries. Also the fear of losing competitiveness to the free-riders saps the will of the members to adhere honestly to their targets.] Trade sanctions are perhaps the most powerful multilateral inducement that can be applied to shirkers, short of military force. Thus some might have favored the use of trade penalties against non-joiners as a mechanism to encourage participation, at least for trade controls related to the energy/GHG sector. If there had been any serious political weight behind this proposal, we would now have had to be considering the potential for conflict with the international trade regime. So far as I know, it would have been legal under the WTO, there being nothing in the WTO to block multilateral environmental treaties from adopting trade controls to encourage countries to join.^{xxi} Indeed, the Montreal Protocol on stratospheric ozone depletion has them^{xxii}, ran into no problems under international trade rules, and is generally considered to have been successful in achieving its goals. [Other examples include treaties on hazardous waste, fisheries, and endangered species.^{xxiii} Admittedly there is a lot of resistance to using trade to solve the free-rider problem in environmental agreements. Most governments do not favor international environmental agreements that are so aggressive as to include trade sanctions. The failure does not mean that globalization and global institutions like the WTO are the problem and national sovereignty the victim, as the Seattle demonstrators seemed to believe. Rather, it is the other way around: globalization is the ally, and national sovereignty is the obstacle.] In any case, no government pushed for trade sanctions, or even trade controls, to be written in to the Kyoto Protocol, so the question is largely moot (unless some Party proposes such penalties in future agreements).

Equally absent from the agreement negotiated at Kyoto was any specific mechanism to enforce compliance by members. What penalty is to be applied to a country that misses its targets? Supposedly such the penalty is that the country is to cut its emissions even more in the subsequent budget period; but this has never struck me as at all credible. Trade controls are a logical possibility, which would again require a consideration of WTO implications. But my prediction is that deficient countries will try to fill their emission gaps with generous accounting interpretations of, for example, sinks or CDM/JI projects; and the membership will probably not respond with aggressive sanctions, particularly in light of the fact that the US and other non-ratifiers are getting off "scot free."

Potential WTO conflict from four categories of offsetting border tax adjustments

Even without trade sanctions or controls in the Kyoto Protocol, complaints about violations of the WTO non-discrimination rules are likely to arise if a member country seeks to impose border tax adjustments to offset the effects of specific domestic GHG taxes on the competitiveness of its own industry vis-à-vis foreigners. So far as I am aware, European countries are not busy formulating plans for such offsetting border adjustments. But it seems to me likely that political pressure will eventually push in this direction, coming from industries worried about higher energy costs that burden them domestically, and that give competitors in non-member countries (especially in the U.S.) an unfair advantage.^{xxiv}

There is a whole range of possible examples, depending, first, on whether the discrimination is explicitly against non-members of the Protocol, and depending, second, on the product in question. Here I see four cases, depending on whether the product is:

(i) implicated in raising GHG emissions in the importing country -- such as trade in coal-burning equipment, or trade in coal itself, or

(ii) implicated in GHG emissions in the *exporting* country -- such as the purchase of aluminum that has been smelted in another country or the purchase of electric power generated from coal-burning in a neighboring country (this again is the big WTO question whether it is legitimate to use trade policy to target other countries' PPMs); or

(iii) relevant for the *reduction* of emissions in the importing country -- such as the purchase of alternative-technology autos or of goods and services used in the generation of renewable energy or in carbon sequestration, or

(iv) not particularly relevant to emissions, except in the respect that the exporting country is not abiding by the Kyoto Protocol. One could always put up tariffs against any export of a non-member country and claim the justification that the product uses energy or other inputs where the cost has been unfairly reduced by the country's refusal to participate in climate change mitigation. In all four cases, if the measure explicitly discriminated against exports of non-members, at least part of the motivation, inevitably, would be to punish the trading partner, and give it an incentive to join in the future. In the latter two cases, this would be the only motivation. In the first two cases, there would be an additional motivation, more directly related to the environmental goal. In other words, both motivations would be present, no doubt imprecisely mixed together under the rubric of "fairness" [or, worse yet, "competitiveness"]; but there is nothing inherently wrong in having multiple motivations for one policy.

How should we think about the legitimacy of these four kinds of trade barriers? The Montreal Protocol on stratospheric ozone depletion is a good precedent. Its trade penalties had both motivations: first, to encourage countries to join, and second, if substantial numbers of countries had nevertheless remained outside the Protocol, the trade sanctions would have minimized leakage, the migration of production of banned substances to nonparticipating countries.^{xxv} [One might say that the Protocol also worked to bolster the principle that PPMs were not necessarily incompatible with the GATT, in that the agreement threatened non-participants not only with a ban on trade in

ozone-depleting chemicals themselves, but also a potential ban on trade in goods manufactured with such chemicals, in the sense that governments were required to determine the feasibility of such a ban; but it never went further than that.]

So let's go back over the list of four categories, and try to reach a judgment regarding the "right answer," although I must repeat the disqualifier that I am neither an expert in this area nor a lawyer. In case (i), barriers against imports of dirty products such as coal, the relevance to climate change mitigation is direct and obvious. I am not saying that a country could put up tariffs against coal imports if domestic coal production were not similarly taxed. But as part of a regime of penalizing coal, it would be legitimate. Even if the importing country does not produce coal, it would still be allowed to apply tariffs, notwithstanding that the country might have been less keen to take the penalize-coal route to achieving its emission goals were it a coal producer, politics being what they are. A precedent is the WTO panel decision supporting France's policy of keeping out asbestos on environmental grounds, denying a complaint from exporter Canada.

In case (ii) the environmental motivation is to avoid leakage: the main goal of the Kyoto Protocol will be subverted if all the carbon-producing activities such as coal-burning and aluminum-smelting simply relocate to non-member countries, thus offsetting the reduction in emissions among members. As I have mentioned, the usual view is that under the WTO it is much less clear that a country can in the name of the environment target others' PPMs than others' export products. But one could argue that the precedent of the WTO shrimp-turtle panel establishes the validity of measures targeting PPMs. Indeed, it seems to me that the case is particularly strong in the case of PPMs that create global externalities such as ozone-depleting chemicals or greenhouse gases. One could ask what business it is of one country whether another wants to exploit its prison labor or pollute its own water or air. But in the case of the global externalities, it is quite clearly everyone's business. Paradoxically, the case seems to me in a sense even stronger to target greenhouse gas emissions in the exporting country, even though that it is a PPM issue, than the first case. For a member to ban imports of coal from a non-member would do little to advance the goal of the Protocol, in the sense that the member's emissions are already capped. [In fact, boycotting such coal will lower its world price and cause more to be burnt by non-members.] Discouraging leakage of emissions to non-members, on the other hand, is essential to the goals of the Protocol, and the WTO recognizes the legitimacy of such goals.

Cases (iii) and (iv) seem to me more dubious. Here no direct environmental goal is accomplished, beyond attempting to punish the non-member and perhaps encouraging it to join the regime. The record shows that unilateral sanctions are seldom successful. Furthermore, the parties at Kyoto specifically declined the opportunity to put multilateral sanctions into the Protocol, which is a strike against the legality of unilateral sanctions.^{xxvi} Admittedly, it is hard to say where is the dividing line between a barrier against the import of aluminum from a non-member, if the smelting uses carbon-intensive power generation, and a barrier against exports from a non-member that are removed by several stages from the emissions created by the energy or other inputs. It is important to realize that there are limits to the argument that the inputs were polluting. Imagine a very clean product [say hydrogen that is produced in a non-polluting way and is destined for use in a hydrogen-powered vehicle]. One would not want to allow a ban on its imports under the

argument that some of the workers in the other country commuted to work by means of carbon-emitting transportation.^{xxvii} If a non-member “unfairly” gains competitiveness in sectors that are more carbon-intensive than the average, it also loses competitiveness in the least carbon-intensive sectors. [This non-intuitive result of trade theory follows because the expansion of the former sectors eventually pulls labor and other resources away from the latter.]

Some applications to specific climate mitigation measures

Now let’s go through some of the more specific institutional contexts in which these four cases might come up.

1. A member country, which implements its reductions in domestic carbon emissions, let us say, through an efficient carbon tax, seeks off-setting border measures to tax imports from non-members (and to exempt exports). The case is clear for applying the same tax to the burning of imported coal as domestic. [Whether the tax on domestic coal is applied when it comes out of the mine and when it is burned in a power plant should determine whether the tax on imported coal is applied when it crosses the border or when it is burned.] The case is almost as clear for taxes on gas-guzzling automobiles (low-mileage cars are not “like” high-mileage cars.^{xxviii}) And for fuels according to carbon content. It seems to me, as I have said, that there is a good case for applying a tax to imports of electricity that has been generated in a carbon-emitting way, notwithstanding that it is a PPM. I might even allow a tax at the next stage, e.g., on the carbon-content of imported aluminum, particularly if it were a border tax adjustment applied by a country that was itself taxing its own industry on the energy content of its production.^{xxix} But at subsequent stages of production, the carbon content becomes sufficiently indirect that no penalty against imports should be allowed. In any case, it would be highly desirable to work out a multilateral set of rules as to what sort of border adjustments are allowed. And more fundamentally, I hope that the Kyoto Parties have by now determined who gets the credit for reductions in the carbon content of electricity that is generated in one member country and transmitted to another?
2. Many countries adopt energy efficiency standards as part of their programs to reduce emissions, for example, fuel efficiency standards for automobiles. These are permissible, even if they have the side-effect of benefiting, e.g., Japanese products over EU or US exports, providing there is no needless discrimination. [Beyond the non-discrimination articles of the WTO, there is a Technical Barriers to Trade agreement that is more restrictive, favoring the use of widely accepted international standards.]^{xxx}
3. There has been a proposal to punish free-riding countries by screening CDM projects according to whether the capital goods, say turbines to be installed in a power plant in China, are produced in a member country.^{xxxi} If this proposal were enacted as a sort of multilateral trade sanction, in the Protocol itself, I don’t necessarily see a problem.^{xxxii} The idea would be to help generate a sorely needed business

constituency in potential new members like the US. But I don't think individual national governments can do it. And I have never been a big fan of the CDM, because I think that the requirement that emission reductions be *additional* is impossible to implement in a country that has not agreed to targets in the first place. [Thus I would be skeptical of any attempt to say what would be the appropriate penalty for the carbon content of imported inputs to a CDM project.] In any case there is a need that multilateral rules governing CDM be developed so as to be as consistent as possible with the WTO.

Other potential conflicts

There are other aspects of the WTO that could come into play besides those relating to discrimination against countries' exports.^{xxxiii} There is a WTO Agreement on Subsidies and Countervailing Measures [which went into force in 1995]. When Kyoto parties exempt particular favored industries from an energy tax, or give out domestic emission permits in a non-neutral way, or reward their companies with credits for CDM and JI projects, they might be liable to complaints under the subsidies agreement. (Credits and permits are virtually equivalent to money.^{xxxiv}) There is also an Agreement on Agriculture, which brought agricultural protection and subsidies inside the WTO; and it is anticipated that the Doha Round, if it is truly successful, would involve substantial limits on what are currently massive agricultural subsidies. Payments under environmental programs are exempt from restrictions on subsidies. Subsidies for carbon sequestration in forestry or for the reduction of methane emissions in agriculture should be permitted (in the "green box"), but it seems to me that exemptions for handouts to favored sectors such as ethanol subsidies should not be allowed unless they have been found scientifically to be environmentally beneficial in reality rather than in name alone.

Then there is the issue of labeling requirements. The TBT agreement (Technical Barriers to Trade) clearly allows non-discriminatory labeling of products, e.g., according to energy efficiency; but WTO law could be interpreted as not allowing a government to require labels specifying greenhouse gas content in the production process.^{xxxv} I am a believer in letting consumers decide some issues with the aid of eco-labeling, rather than leaving no options in between voting and window-breaking for people who want to express their views. There is always the risk that the labeling is politically manipulated. But it is less intrusive than import restrictions. (EU labeling of GMOs, while perhaps without adequate scientific foundation, is a much better way of venting strong European feeling on the subject than outright bans on imports from the US.) It would be desirable for the WTO to establish rules for labeling.

A few priorities

Within the Kyoto Protocol membership, the most important priority regarding the linkage to trade should be to facilitate a uniform approach to taxation of energy and greenhouse gas emissions, particularly with respect to border adjustments for exports and imports.^{xxxvi} This will help avoid the perception and reality that climate measures might be used as an excuse for protectionist discrimination. Forums outside Kyoto are relevant as well [particularly in the case of the United States, should it in the future choose to take

any positive steps to try to reverse its current complete abdication of leadership in this area]. In the WTO and other multilateral fora, negotiations to ban subsidies of fossil fuels would be one excellent win-win initiative. If I were a G-8 sherpa, I would propose that the rich countries take the lead, and encourage the rest to do so via the World Bank. [The WTO should also renew the now-expired subsidies agreement provision, originally negotiated in the Uruguay Round, that allowed subsidies for adaptation of existing facilities to new environmental regulations.^{xxxvii}] In the Doha Round, negotiations to liberalize trade in climate-friendly goods and services would be another.^{xxxviii} In these and other ways, the trade and climate regimes can be made to work in harmony.

References

Antweiler, Werner, Brian Copeland and M. Scott Taylor, 2001, "Is Free Trade Good for the Environment?" American Economic Review, 91, no. 4, September, 877-908.

Bierman, Frank, and Rainer Brohm, (forthcoming). "Implementing the Kyoto Protocol Without the United States: The Strategic Role of Energy Tax Adjustments at the Border, *Climate Policy*.

Brack, Duncan, 1996, International Trade and the Montreal Protocol (The Royal Institute of International Affairs and Earthscan Publications, Ltd.: London).

Brewer, Thomas L. 2003. "The Trade Regime and the Climate Regime: Institutional Evolution and Adaptation," Climate Policy,3,4: 329-341.

Brewer, Thomas, 2004a, "Multinationals, the Environment and the WTO: Issues in the Environmental Goods and Services Industry and in Climate Change Mitigation," in Sarianna Lundan, Alan Rugman and Alain Verbecke, eds., *Multinationals, the Environment and Global Competition*. Elsevier.

Brewer, Thomas, 2004b, "The WTO and the Kyoto Protocol: Interaction Issues," Climate Policy, forthcoming.

Charnovitz, Steve, 2002, "The Law of Environmental 'PPMs' in the WTO: Debunking the Myth of Illegality," The Yale Journal of International Law, 27, no. 1, Winter, pp. 59-110.

Charnovitz, Steve, 2003, "Trade and Climate: Potential Conflicts and Synergies," in *Beyond Kyoto: Advancing the International Effort Against Climate Change*, Pew Center on Global Climate Change, pp. 141-167, December.

Charnovitz, Steve, and Michael Weinstein, 2001, "The Greening of the WTO," Foreign Affairs 80, no. 6, 147-156.

Fontaine, Peter, 2004, "Global Warming: The Gathering Storm," *Public Utilities Fortnightly*, August, 50-55

Frankel, Jeffrey, 1999, "Greenhouse Gas Emissions," *Policy Brief* no. 52, The Brookings Institution, Washington, DC, June.

Frankel, Jeffrey, 2004a, "You're Getting Warmer: The Most Feasible Path for Addressing Global Climate Change Does Run Through Kyoto," Fondazione Eni Enrico Mattei, Milan, May 17, 2001; Forthcoming in Trade and the Environment in the Perspective of the EU Enlargement (Edward Elgar Publ., Ltd., UK), edited John Maxwell, with Marialuisa Tamborra.

Frankel, Jeffrey, 2004b, "Globalization and the Environment," NBER Working Paper No. 10090, November 2003; forthcoming in *Globalization: What's New*, edited by Michael Weinstein, Council on Foreign Relations (Columbia University Press: New York).

Frankel, Jeffrey, and Andrew Rose, 2004, "Is Trade Good or Bad for the Environment? Sorting Out the Causality," NBER WP No. 9201. Revised as RWP03-038, Harvard KSG, Sept. 2003. Forthcoming, *Review of Economics and Statistics*, 2005, issue 1.

Government of Sweden, National Board of Trade [Kommerskollegium] (2004). *Climate and Trade Rules – harmony or conflict?*

International Energy Agency, 1999, "Looking at Energy Subsidies: Getting the Prices Right.," in *World Energy Outlook 1999 Insights*, Paris: IEA.

Sampson, Gary, 1999, "WTO Rules and Climate Change: The Need for Policy Coherence," Chapter 4 in *Global Climate Governance: A Report on the Inter-Linkages Between the Kyoto Protocol and Other Multilateral Regimes*, edited by Bradnee Chambers (United Nations University: Tokyo).

Schmalensee, R., T. M. Stoker and R.A.Judson, 1996, "World Carbon Dioxide Emissions: 1950-2050," *Review of Economics and Statistics*.

Werksman, Jacob (1999). 'Greenhouse Gas Emissions Trading and the WTO', *Review of European Community and International Environmental Law*, 8,3: 251-264.

ENDNOTES

ⁱ Sampson (1999).

ⁱⁱ Among those finding the Environmental Kuznets Curve for SO₂ are Grossman and Krueger (1993, 1995), Sedlen and Song (1994), Shafik (1994), Bradford, Schlieckert and Shore (2000), and Frankel and Rose (2004).

ⁱⁱⁱ The table is based on the estimates in Frankel and Rose (2004).

^{iv} In theory there is the possibility of a pollution haven effect, that trade raises pollution in poor countries and lowers it in rich countries, with no necessary effect on the global total. Frankel and Rose (2004) and Antweiler, Copeland and Taylor (2001) find the opposite for the case of SO₂, perhaps because rich countries are more capital-intensive.

^v Schmalensee, Stoker and Judson (1998), find a EKC for CO₂, though they do not choose to emphasize this result. There is also an argument that emissions of CO₂ follow a Kuznets Curve, but that the peak is not reached until higher levels of income than yet experienced by rich countries: Holtz-Eaken and Selden (1995).

^{vi} The results are from Frankel and Rose (2004), which includes IV estimates to correct for endogeneity of trade and income.

^{vii} Article 2.3 of the Kyoto Protocol, and Articles 3.5 and 4.2 of the FCCC respectively. Brewer (2003), p. 332.; and Charnovitz (2003, p. 142)

^{viii} Cited by Brewer (2003), p. 332.

^{ix} *NYT*, 5/22/2004, p. B1.

^x Brewer (2003), p. 330.

^{xi} Article 2.1. Cited in Brewer (2003,) p. 334.

^{xii} They apparently are, however, talking about restricting fishing subsidies, a comparable win-win initiative.

^{xiii} Re six developing countries, see IEA (1999). But the G-8 needs to lead the way.

^{xiv} Or, in the case of services, GATS Article XIV.]

^{xv} For example, the Asian suppliers had been given only four months' notice, thus discriminating against them and in favor of Caribbean suppliers.

^{xvi} For a full explanation of the legal issues, see Charnovitz (2002a). Also Michael Weinstein, "Greens and Globalization: Declaring Defeat in the Face of Victory," *NY Times*, April 22, 2001.

^{xvii} Charnovitz (2002a, p. 98-99).

^{xviii} Charnovitz and Weinstein (2001)

^{xix} Werksman (1999).

^{xx} Thus, even if the Protocol were to fail, it would be a step forward because it would establish the utility of the flexible mechanisms. Frankel (2004a).

^{xxi} But evidently some believe that even multilateral trade penalties against non-members might not be permissible under the WTO – Sampson (2000, p. 87), cited by Charnovitz (p. 156).

^{xxii} It prohibits trade in controlled substances with countries that do not participate -- Frankel (2004b, p. 154). But Charnovitz (2003, 156) emphasizes the distinction between trade controls, which fall on environmentally relevant sectors, versus trade sanctions, where the targeted products are arbitrary and unrelated to the non-compliant act (and are used multilaterally only by the WTO and UN security council). The Kyoto Protocol has neither.

^{xxiii} One of the early precedents establishing the principle that Multilateral Environmental Agreements are compatible with the GATT even if they restrict trade was CITES in 1973.

^{xxiv} Bierman and Brohm (forthcoming) and Government of Sweden (2004).

^{xxv} Brack (1996). In the event virtually all relevant countries joined.

^{xxvi} Appleton (2001), cited in Charnovitz, p. 153-54.

^{xxvii} In the shrimp-turtle case allowing the targeting of PPMs, the WTO Appellate Body emphasized the importance of a "close and real" causal relationship between the import ban and the harmful PPM, as opposed to general punitive trade barriers. Charnovitz p. 154.

^{xxviii} 1994 GATT panel ruling. Charnovitz 92003, p. 146).

^{xxix} Fontaine (2004).

^{xxx} Brewer (2004, p. 12-13), Charnovitz, p. 149.

^{xxxi} Muller (2002), as described by Brewer (2004), p. 7.

^{xxxii} "The question would require considerable analysis." Charnovitz, p. 155.

^{xxxiii} Brewer (2004, pp. 9-12), Charnovitz (p. 147, 151).

^{xxxiv} Though there is an argument to the contrary: Petsonk, 1999, cited by Charnovitz, p.152.

^{xxxv} Appleton (2001), cited by Charnovitz (p.151).

^{xxxvi} Brewer (2003, 2004); Charnovitz (2003, p.142-43, 160).

^{xxxvii} Charnovitz, 161.

^{xxxviii} Brewer (2004a).