

Trade, Growth, and the Environment

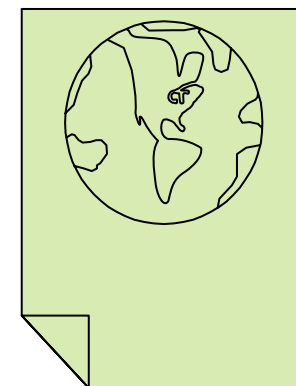
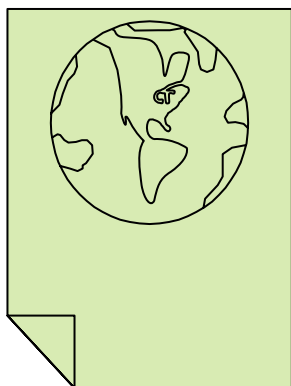
Prof. Jeffrey Frankel, Harvard University

Guest lecture

**Rob Stavins class in
Enironmental & Resource
Economics and Policy**

May 2, 2006

1:10-2:30 pm in L-140



Symmetric fears

- Free traders 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.
- Environmentalists fear that talk about free trade will be used as an excuse to give inadequate weight to environmental goals and excessive weight to maximization of GDP.

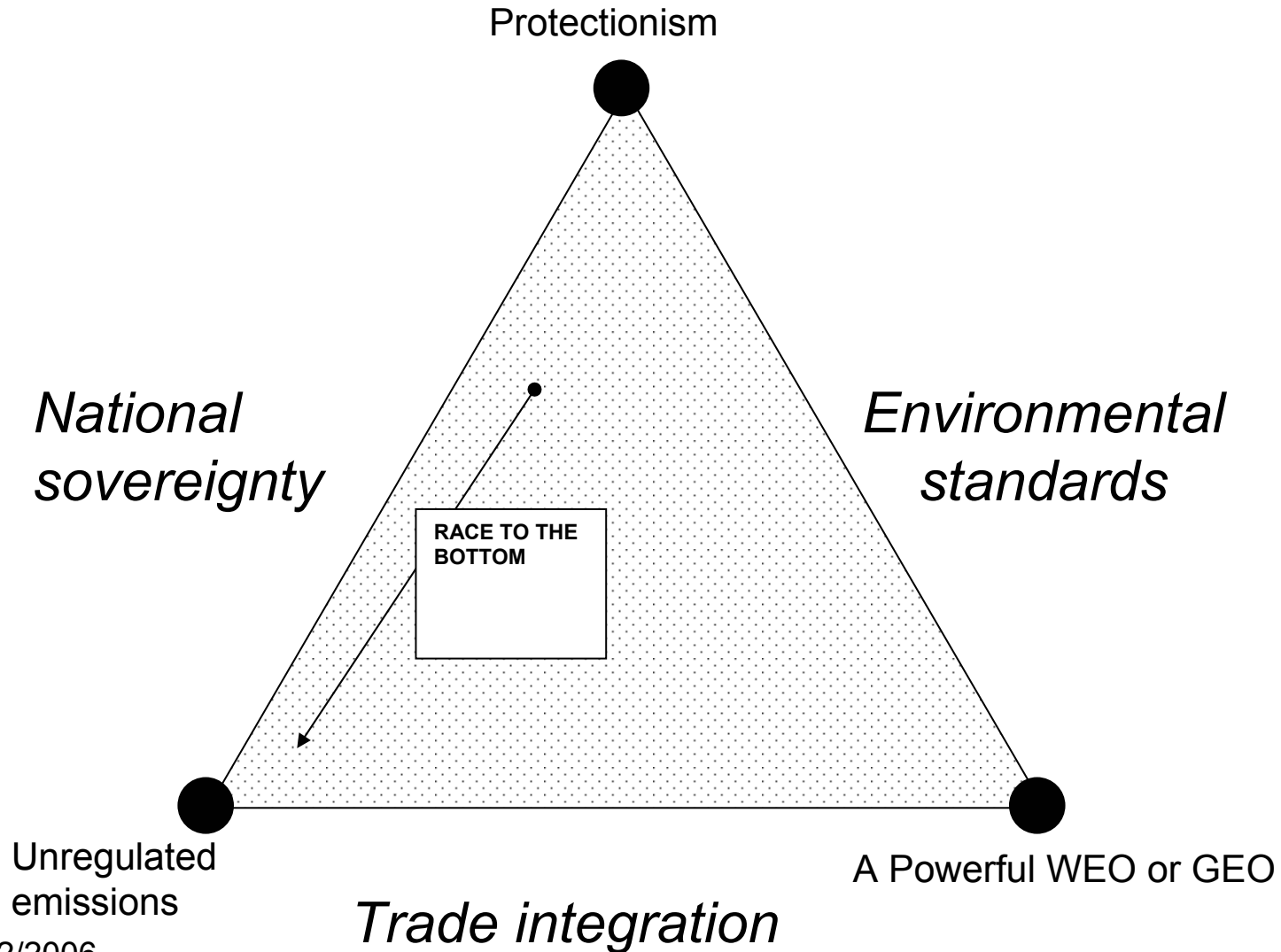
It is widely agreed: openness to trade & other international activity is good for economic growth

- In theory: classical comparative advantage (e.g., Ricardo) & more modern theories of trade based on imperfect competition (e.g., Krugman).
- Empirically: many studies.
E.g., Frankel-Romer estimate that every .01 increase in a country's trade/GDP ratio raises income 3 ½ % (over subsequent 20 yrs).
- But what about effect of openness on environmental quality, which is not captured in GDP statistics?

Is trade itself good or bad for the environment, in theory?

Environmental effects of trade	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 standards, innovation, consumer power

THE IMPOSSIBLE TRINITY OF GLOBAL ENVIRONMENTAL REGULATION



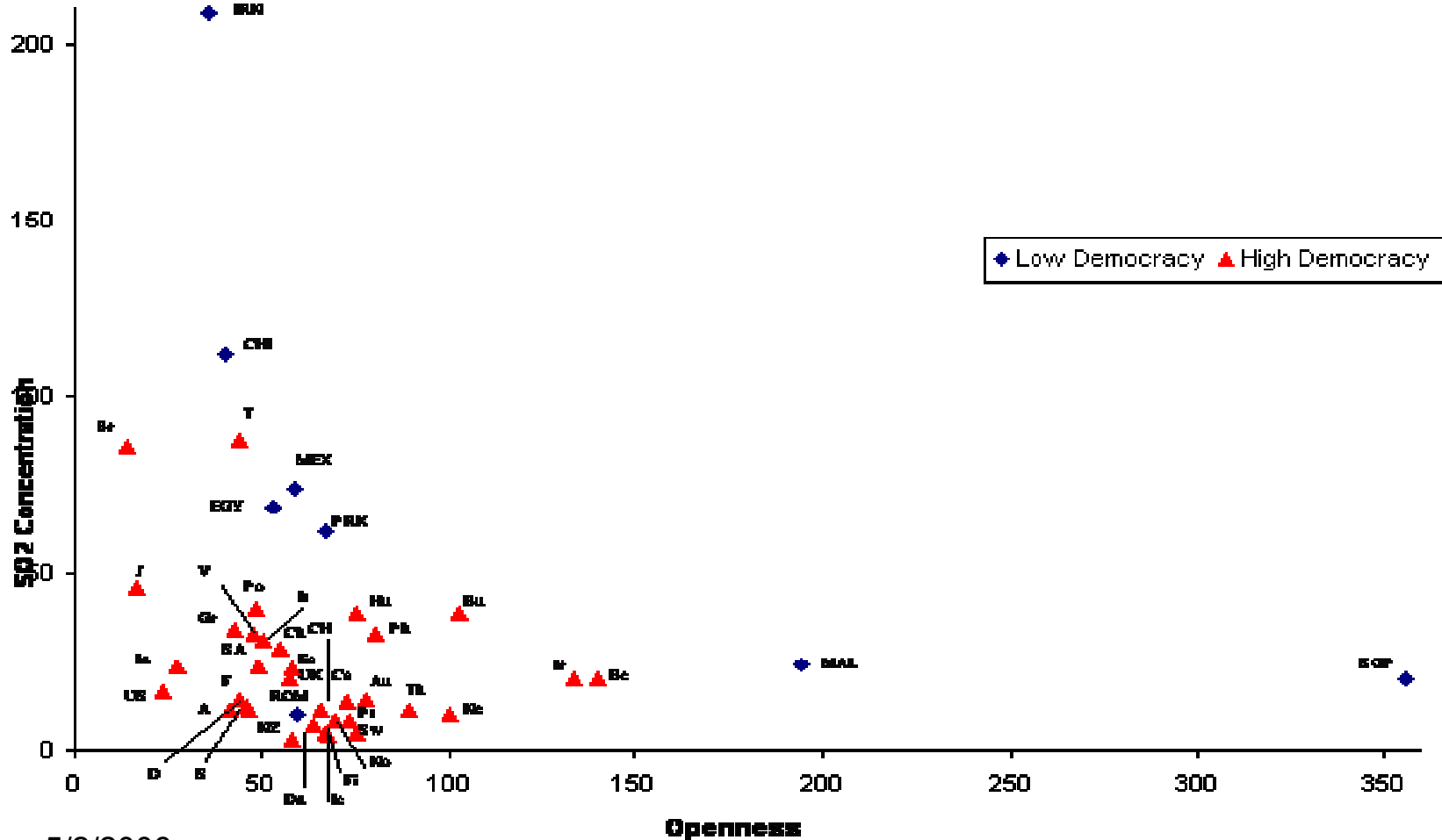
Is trade itself good or bad for the environment, statistically?

Source: Frankel and Rose, R.Econ.& Stats., 2004

Environmental effects of trade (1990)	via growth in income	for a given level of income
for SO₂ concentrations	EKC: after an income of about \$5,700/cap., further growth tends to reduce pollution (via national regulation)	The favorable effects of trade seem to dominate
for CO₂ emissions / capita	No sign that total emissions ever turn down. (CO ₂ is a global externality: little regulation is possible at the national level)	Trade may also increase emissions even for a given level of income

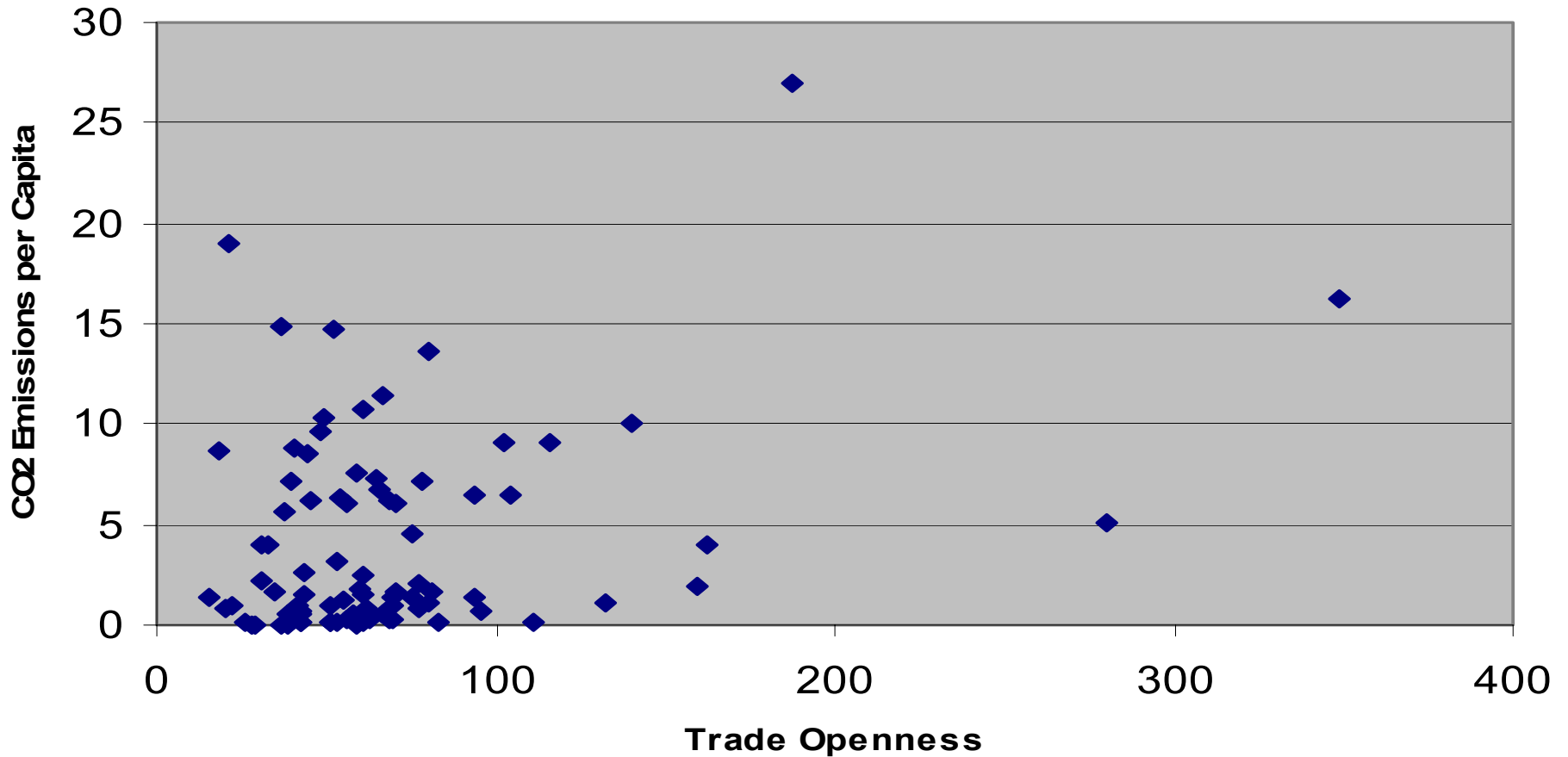
SO₂ concentrations tend to fall with openness

Openness vs SO₂ Concentration, in Low vs High Democracy Regimes, 1990



CO₂ emissions/cap tend, if anything, to rise with openness

CO2 Emissions vs. Trade Openness (ave data 1991 and 1992)



Do harmful or beneficial effects of trade dominate for environmental goals? Bottom lines:

- For SO₂
 - at low incomes, harmful effects (via faster growth -- EKC) work against beneficial effects (via innovation, ratcheting up of standards etc.)
 - at high levels of income, trade helps through both channels. <= People want to use their greater wealth to clean the air; but it requires that national governments can effectively implement the popular will.
- For CO₂
 - Even at high levels of income, trade continues to hurt. <= Absent an effective multilateral treaty, the popular will cannot be enacted.

Economic/environmental win-win examples

- **Kyoto Protocol**
 - **International trade in emissions permits:** an important win-win feature
 - **Russia announced May 21 it would ratify the Kyoto Protocol** as a quid pro quo for EU support of its application to accede to WTO
- Potential to use **trade sanctions in multilateral agreements**, as in Montreal Protocol on stratospheric ozone depletion
- **Multilateral liberalization of capital equipment and services used in environmental sector**
 - USG proposal in 2003 for the Doha round
 - Precedent: end of restrictive tariffs & quotas on Japanese auto imports benefited both consumer pocketbook and air quality
- **A ban on subsidies to fossil fuels** would achieve both enviro goal of reducing carbon emissions and economists' goal of reducing deficit spending and an economic distortion.
 - “Ban on Fossil Fuel Subsidies”: a great initiative for G-8 & World Bank

Seattle & Geneva: WTO protests.

Why did they march together in 1999?

Category of demonstrator	Claimed constituency	True position of constituency
Protestor in turtle costume	Environment	In favor of the Kyoto Protocol
Labor union official	Organized labor	Against the Kyoto protocol; in favor of keeping out cheap imports from poor countries
NGO volunteer	Poor countries	In favor of selling their goods to rich countries; in favor of Kyoto protocol only if it exempts them from commitments.

Typical WTO panel cases

- Tariffs or other measures that discriminate against producers in some trading partners,
 - either in favor of other trading partners (potential violation of MFN principle of Article I) or
 - in favor of “like products” from domestic producers (potential violation of national treatment provision of Article III).
- If targeted country files a WTO complaint alleging such a violation, the question is then whether the measure in question is permissible under Article XX
 - Which allows for exceptions to the non-discrimination principles for environmental reasons,
 - provided that the measures in question are not “a means of arbitrary or unjustifiable discrimination” or a “disguised restriction on international trade.”

The true meaning of WTO panel decision on shrimp-turtle case, 1998

- New ruling that environmental measures can target, not only exported products (Article XX), but also partners' Processes and Production Methods (PPMs)
- Subject, as always, to non-discrimination (Articles I and III)
- US was able to proceed to protect turtles, without discrimination against Asian fishermen
- Environmentalists have failed to notice/consolidate the PPM precedent.

Appendix 1

- **Equations to be estimated**
 - *Growth equation (using gravity variable as IV for trade openness)*
 - *Environmental quality equation (using factor endowment variables as IV for growth)*

Measures of environmental damage

- SO₂: sulphur dioxide, mean (in micrograms per cubic meter), 1995
- NO₂: nitrogen dioxide, mean (in micrograms per cubic meter), 1995
- PM: Suspended Particulate Matter, mean total (in micrograms per cubic meter), 1995
- Water: Rural Access to Clean Water
- Def: annual deforestation, average percentage change, 1990-95
- Energy: Energy depletion, in percent of GDP (“genuine savings”)[1]
- CO₂/capita: Carbon dioxide emissions, industrial, in metric tons/cap

[1] Energy depletion is a measure computed for the World *Bank's World Development Indicators*. It is equal to the product of unit resource rents and the physical quantities of fossil fuel energy extracted (including coal, crude oil, and natural gas). Table 3.15, http://www.worldbank.org/data/wdi2001/pdfs/tab3_15.pdf.

Appendix 2: Potential conflict areas between Kyoto Protocol & WTO

Disclaimer: I am neither an expert in this area nor a lawyer.

Who actually knows something about this subject?

- Thomas Brewer
- Steven Charnovitz
- Gary Sampson
- Jacob Werksman

Mutual respect

- Drafters in Kyoto and Geneva have shown more consideration for each other than the rank & file of environmentalists and free traders.
- The Kyoto Protocol text:
 - Parties should “strive to implement policies and measures...in such a way as to minimize adverse effects..on international trade...” ;
 - FCCC features similar language
- WTO regime is equally solicitous of environment:
 - Article XX allows exceptions for health & conservation
 - Preamble to 1995 Marakesh Agreement establishing WTO seeks “to protect and preserve the environment;”
 - 2001 Doha Communique starting new round of negotiations: “the aims of ... open and non-discriminatory trading system, and acting for the protection of the environment ... must be mutually supportive.”.

International trade in emission permits

- Another win-win situation that benefits both the environment and economy.
- Such “flexibility mechanisms” are why I support the Kyoto Protocol.
- In any case, it seems to me that WTO does not apply: emission permits are neither goods nor services. No conflict.

Trade controls or sanctions

- Trade controls (on relevant sectors) more likely ok than sanctions (on unrelated trade)
- Multilateral more likely ok than unilateral
- To punish non-members
 - Kyoto Protocol did not incorporate it.
 - So moot for now.
 - May come up in future rounds.
 - Undercuts legality of unilateral attempts.
- To enforce compliance
 - Seems unlikely, given
 - Lots of scope to stretch numbers on sinks, CDM, JI ...
 - US and others not in at all, so why punish members?

Precedent of Montreal Protocol on stratospheric ozone depletion

- Trade controls had two motivations:
 - (1) to encourage countries to join, and
 - (2) if major countries had remained outside, would have minimized leakage, the migration of production of banned substances to nonparticipating countries
 - In the event (1) worked, so (2) not needed
- No reason why Kyoto Protocol could not have done the same.

What about PPMs?

Can measures be directed against CO₂ emissions in other countries, as embodied in electricity, or in goods produced with it?

- I don't see why not
 - PPM principle already established (turtles)
 - Especially for global externality -- CO₂ or CFCs
 - Leakage to non-members could negate goal of KP
 - Paradoxically, the need to keep out coal-generated electricity or aluminum from non-members > need to keep out coal itself
- But
 - enviros need to build on PPM precedent
 - hard to determine carbon content of manufactures.
 - KP missed chance for multilateral trade controls

Sort of case that *is* likely to come up:

- A country's border tax adjustments to offset effects of specific domestic GHG taxes on competitiveness of its industry vis-à-vis foreigners.
- Legitimate when applied against
 - coal itself, or
 - carbon content of electricity (tho it's a PPM), or perhaps even
 - carbon/energy content of manufactures
- Not when applied, solely as punishment for free riding, against
 - unrelated products of a non-member, or
 - Clean inputs, e.g., a ban on US turbines used for CDM projects
 - Unless perhaps KP members multilaterally agree on such rules for screening CDM credits

Potential conflicts with other aspects of WTO regime

- Efficiency standards as part of a country's program to reduce emissions, e.g., fuel standards for autos
 - Permissible under WTO, even if with side-effect of benefiting, e.g., Japanese products over EU or US exports, provided no needless discrimination.
 - But there is also a more restrictive Technical Barriers to Trade agreement, favoring widely accepted international standards.

Potential conflicts with other aspects of WTO regime, cont.:

Agreement on Subsidies and Countervailing Measures

- Possible conflicts 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

Potential conflicts with other aspects of WTO regime, cont.:

Agreement on Agriculture

- It is anticipated that the Doha Round, if it is truly successful, would involve limits on massive agricultural subsidies.
- Payments under environmental programs should be “in the green box”: exempt from ban on subsidies.
 - Subsidies for carbon sequestration in forestry okay
 - or for the reduction of methane emissions in agriculture
 - but it seems to me that exemptions for handouts to favored sectors such as ethanol subsidies should not be allowed unless found scientifically to be environmentally beneficial in reality rather than in name alone.

Potential conflicts with other aspects of WTO regime, cont.:

Labeling requirements

- TBT agreement (Technical Barriers to Trade) clearly allows non-discriminatory labeling, 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.
- 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 labeling is politically manipulated.
- But it is less intrusive than import restrictions. (EU labeling of GMOs, while perhaps without adequate scientific foundation, is a 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.

Conclusion: some priorities

- In Kyoto Protocol -- top priority should be to facilitate a uniform approach to taxation of energy/GHGs, particularly re border adjustments for exports and imports.
- The WTO -- should renew now-expired Subsidies Agreement provision, originally negotiated in the Uruguay Round, that allowed subsidies for adaptation of facilities to new environmental regulations
- In the WTO, or G7/World Bank -- negotiations to ban subsidies of fossil fuels would be one excellent win-win initiative.
- In the Doha Round -- negotiations to liberalize trade in climate-friendly goods and services would be another.
- In these and other ways, the trade and climate regimes can be made to work in harmony.