

The Effects of Climate Change Policies on International Trade and Competitiveness: Some Empirical Insights

International Trade, Climate Change and Global Competitiveness

Dialogue organized by ICTSD, UNEP and the World Bank, October 4, 2007, Geneva

Muthukumara Mani
World Bank

Increasing Scientific Evidence...

Climate change is not just a problem for the distant future

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2007)

- “Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increases in anthropogenic greenhouse gas concentrations...”
- New data now show that losses from the ice sheets of Greenland and Antarctica have very likely contributed to sea level rise over 1993 to 2003...
- It is very likely that hot extremes, heat waves and heavy precipitation events will continue to become more frequent...
- Increases in the amount of precipitation are very likely in high latitudes, while decreases are likely in most subtropical land regions...

Key issues: Climate Change and Trade

- The Kyoto Protocol remains the key international mechanism under which the industrial countries have committed to reduce their emissions of carbon dioxide and other greenhouse gases.
- Kyoto Protocol is not perfect:
 - only a few (industrialized) countries are actually required to cut their emissions (United States and Australia have not ratified, China and India do not have to comply).
 - KP does not stipulate specific methods by which the members should design and implement policies to address climate change commitments (no trade sanctions).
- Growing concerns of competitiveness and leakage in countries implementing the Kyoto Protocol.
- Increasing pressure on their governments to ease competitive pressures through measures such as a border tax.

Do Climate Change Measures Affect Competitiveness?

- What are the main policy instruments employed by OECD countries for reducing greenhouse gases and how do they impact the competitiveness of their energy-intensive industries?
- On account of the impact on competitiveness, is there is leakage of energy-intensive industries from OECD countries to developing countries?
- Under what conditions can one justify trade measures under the WTO regime? What are the impacts of levying trade measures on trade flows and emissions?

Do Climate Change Measures Affect Competitiveness?

- Carbon taxes (fiscal measure)--is a tax on the carbon content of fuels
- *How does a carbon tax (or a similar energy input tax) affect competitiveness?* A carbon tax would impact competitiveness by increasing the costs of polluting inputs.
- Hence, a carbon tax may significantly increase production costs, leading to lower profits, either through lower margins or through a reduction in sales (or both).
- The impact of a carbon tax would be different across the different sectors of the economy because of different input combinations and emission profiles.

Do Climate Change Measures Affect Competitiveness?

- Energy efficiency standards (regulatory measure)-- standards and labeling schemes for appliances and equipment.
- The cost and time needed to comply with different energy efficiency program requirements could add to the cost of internationally traded products.
- However, since regulations in principle could be applied equally to imports and locally manufactured products, effects on trade in countries with higher standards could be nullified to some extent.

Competitiveness Results

(Impact of Carbon tax on Bilateral Trade)

	Expected Results	Actual Results (for all industries)	Actual Results (energy-intensive industries)
Carbon Tax	On the exporting country		
Carbon tax by an exporting country	Negative	Not significant	Highly significant (positive)
Carbon tax by an importing country	Positive	Marginally Significant (negative)	Highly significant (negative)
Both exporting and importing countries have carbon tax	Neutral or marginal decline in trade	Not significant	Highly significant (positive)

Competitiveness Results

(Impact of Energy Efficiency Standards on Bilateral Trade)

	Expected Results	Actual Results (all industries)	Actual Results (industries subject to efficiency standards)
Energy Efficiency Standard	On the exporting country		
Energy efficiency standards in the exporting country	Neutral or marginally negative	Highly significant (negative)	Highly significant (negative)
Energy efficiency standards in the importing country	Negative	Highly significant (negative)	Highly significant (negative)
Energy efficiency standards in both exporting and importing country	Neutral or marginal decline in trade	Highly significant (negative)	Highly significant (negative)

Conclusion

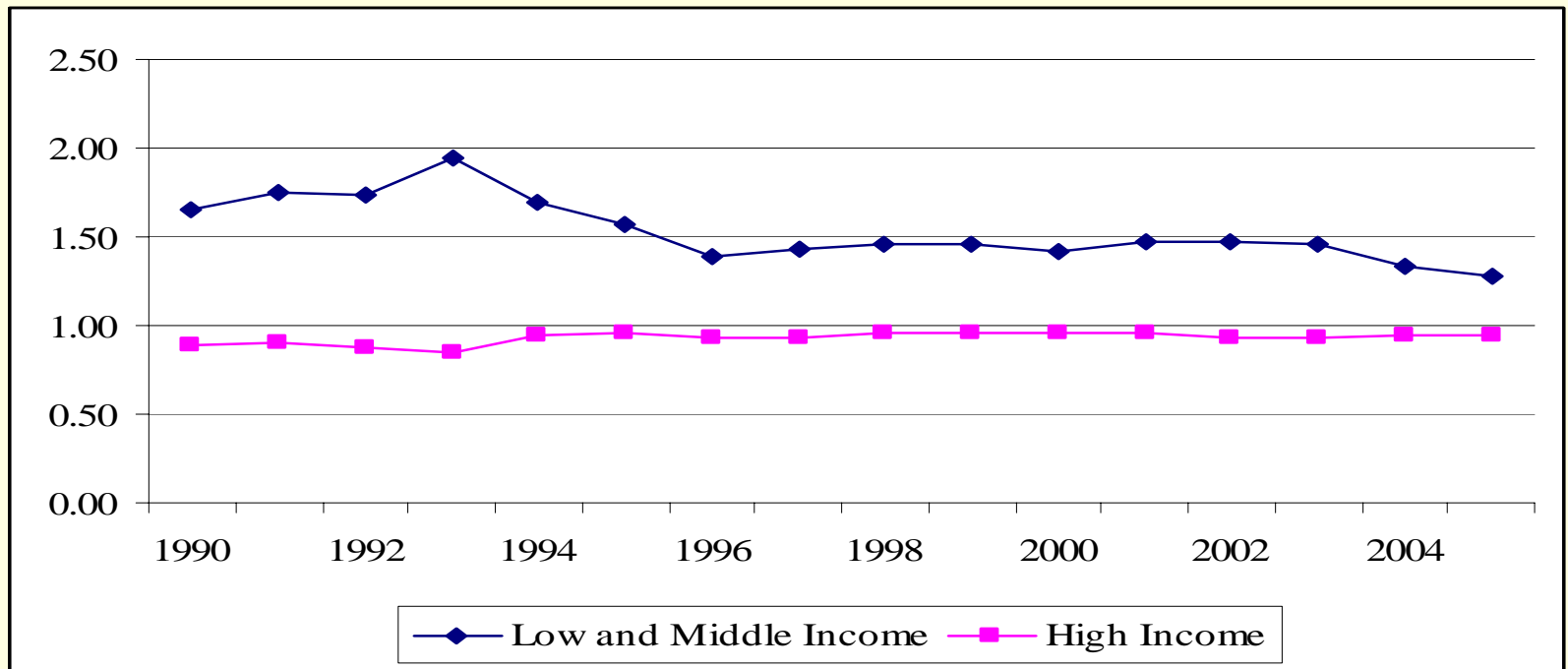
- Carbon taxes do not hurt international competitiveness; energy efficiency standards do.
- Subsidies and other exemptions on energy-intensive industries may be overcompensating the disadvantages arising from the imposition of the carbon tax.

Carbon Leakage?

- "the possible relocation of some carbon-intensive industries to non-Annex I [developing] countries and wider impacts on trade flows in response to changing prices may lead to leakage in the order of 5 to 20 percent" (IPCC 2001).
- Key (mobile) energy intensive industries— pulp and paper, industrial chemicals, iron and steel, nonmetallic mineral products, and nonferrous metals.
- Location is determined by the relative energy prices, land and labor costs and access to raw materials and markets.

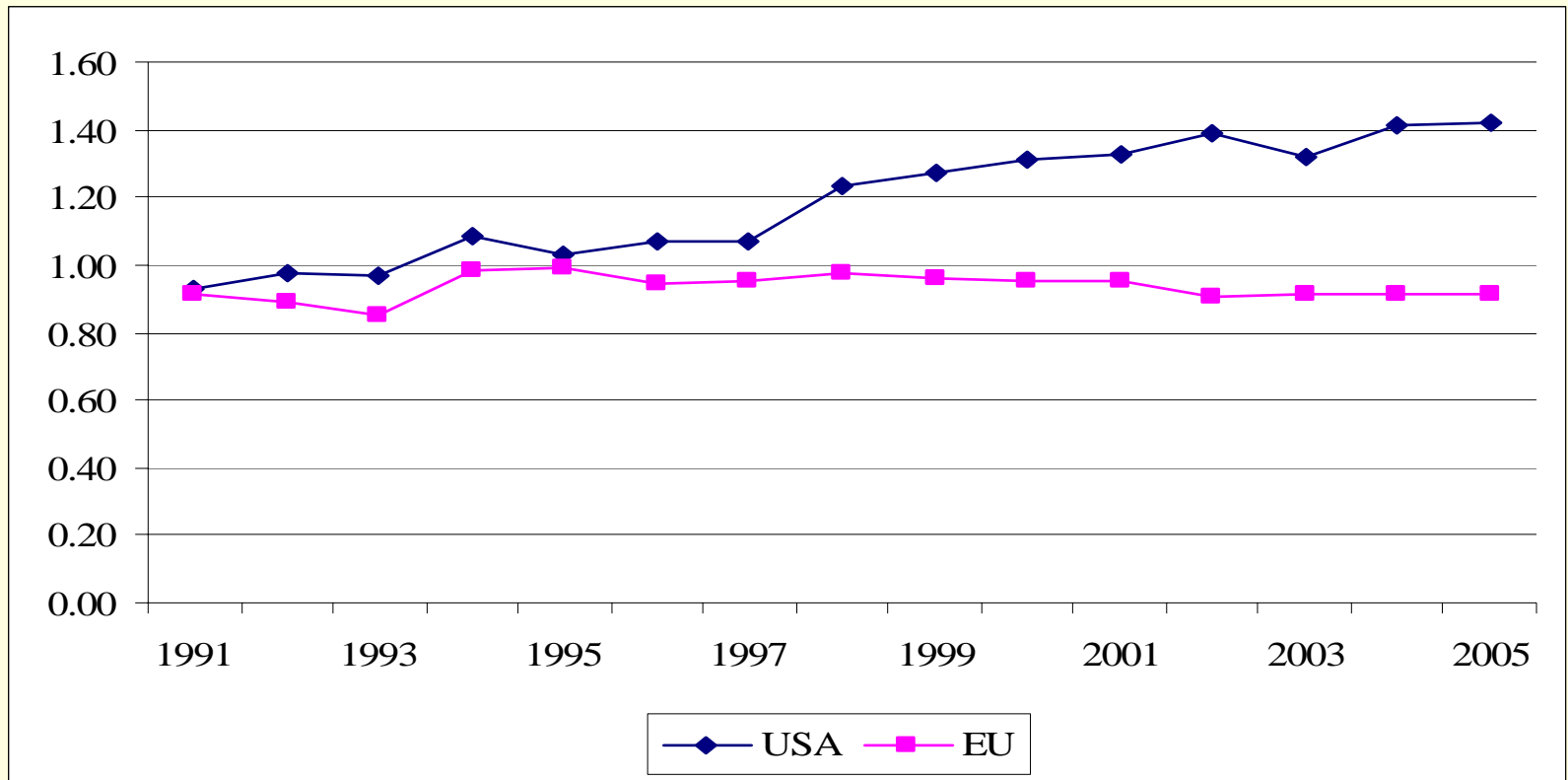
Carbon Leakage?

■ Import/Export Ratio of Energy-Intensive Products



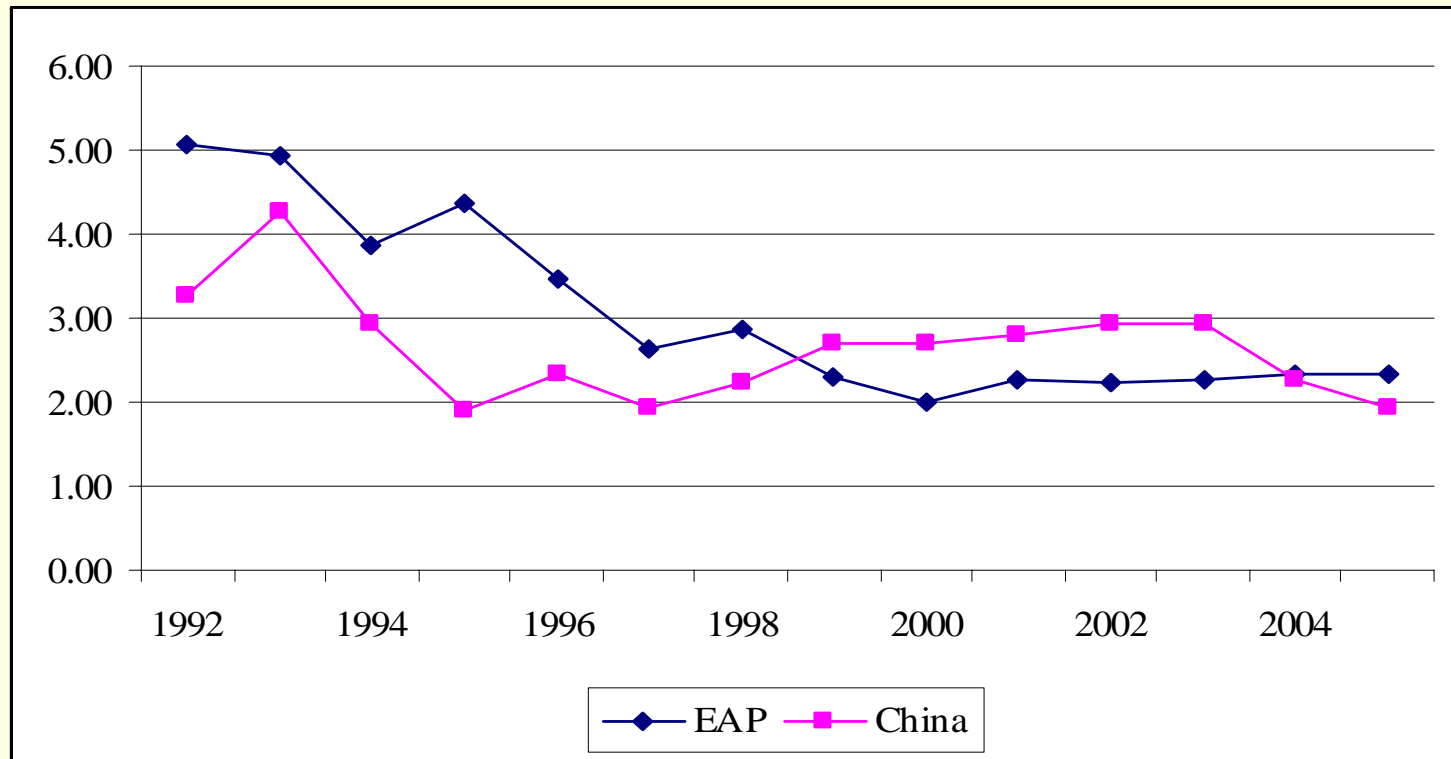
Carbon Leakage?

■ Import-Export Ratio of Energy-Intensive Products in the U.S. and EU



Carbon Leakage?

Import/Export Ratio of Energy-Intensive Products in East Asia and China



Conclusions

- Convergence (of import/export ratio) suggests some evidence—although not very pronounced—of leakage of carbon/energy-intensive industries.
- Some relocation of energy-intensive could be attributed to climate change policies.
- The ratio is still greater than 1 for developing countries and less than 1 for developed countries, suggesting that developing countries continue to be net importers of energy-intensive products.

EU Kyoto Tariff—Impact on US Exports

	% Loss in total US Exports	% loss in US Energy Intensive Exports
10 percent	2.3	10.2
20 percent	4.5	20.4
30 percent	6.8	30.5

Emerging Issues: Climate Change and Trade

- By 2030, developing country share in world GDP could reach 60 percent in purchasing power parity terms and their share in world trade almost 50 percent.
- The growth of carbon emissions in the next decades will come primarily from developing countries.
 - Between 2020 and 2030, it is projected that developing country emissions of carbon from energy use will exceed that of developed countries.
- Any Post-Kyoto regime cannot ignore these startling facts.
- Access to clean energy technologies is critical for developing countries.