

**The Political Economy of
International
Environmental Accords: Montreal
versus Kyoto**

**Presentation at the
University of Torino**

By

Gordon L. Brady
*International Centre for Economic
Research*
November 16, 2007

■ *Puzzle*:

Why has the Kyoto Treaty failed while the
Montreal Protocol was by all accounts a
smashing success?

Outline

- Part I – Constrained self-interest model
- Part II – Montreal and Kyoto agreements
- Part III - Montreal Protocol: scientific evidence, European caution, American enthusiasm, and benefit>costs
- Part IV - Kyoto Treaty: American reservations, and benefits<costs
- Part V – Up date. Stern report, calls for emission trading, and AB 32.
- Part VI - Conclusion

Part I – Constrained self-interest model

- Politicians
- Bureaucrats
- Firm managers
- NGOs - grass roots, national organizations, and public interest law firms
- Judiciary as interpreter and administrator

Useful analytical tools

- Benefit-cost analysis – individual versus group
- Prisoners' dilemma
- Rent seeking behavior
- Government predation
- “Bootleggers and Baptists” – strange bedfellows

Part II: the Montreal Protocol and Kyoto Treaty

- The depletion of the ozone layer once was, and climate change now is, widely believed to be the world's most pressing environmental problem.
- Both involve global risks created by diverse nations, and both seem to be best handled through international agreements.

Equity

- *Intergenerational* –
 - across time
 - generations
- *International* –
 - transboundary externalities
 - transactions cost to negotiate and enforce.

Benefit-cost analysis of US involvement

- For the United States compliance with the Montreal Protocol would have been justified even if **no** other country had complied.
- US compliance with the Kyoto Treaty would not have been justified even if **all** other parties had complied.

Similarities

- Scientific concerns about ozone depletion are resolved.
- Climate change first received public recognition with an early paper in 1896 with hints as early as 1827.
- The science of climate change is very much a product of the 1990s. It remains contentious.

Externalities across borders

- Both involve the effects of emissions from man-made technologies that come from diverse nations and that threaten to cause large-scale harm.

Cumulative and difficult to reverse

- Both ozone-depleting chemicals and greenhouse gases stay in the atmosphere for an extremely long time, their effect is cumulative, and the extent to which immediate action is necessary is uncertain. Hence the relevant risks are difficult to reverse; even with action that is both immediate and aggressive, the underlying problems will hardly be eliminated all at once.

Global prisoners dilemma

- These are global problems. No **one** nation is able to eliminate either problem through unilateral action. Indeed, no nation is even able to make significant progress on either problem on its own. Given the diversity of contributors to these problems, the most effective solutions are to be obtained through international cooperation and agreements.

Equity and corrective justice

- Wealthy nations have been the principal contributors to both ozone depletion and climate change.
- Corrective justice consideration would require wealthy nations to pay poorer ones to reduce the underlying risks.
- Compensation to poor nations for cooperation, technical transfers.

Shifting the burden?

- If we do nothing, future generations are likely to face greater risks than the current generation.
- Query: How much should we (present generation) be willing to sacrifice now to benefit future generations.

Intergenerational complication

- Future generations cannot vote on this issue.
- Future generations are likely to be much wealthier than us.
- Expenditures **made** now may decrease national wealth and may harm future generations by reducing the intergenerational wealth to them.

US - the world's biggest emitter most

- Not only in its wealth and power, but the US was a major emitter of ozone-depleting chemicals, and is now a major emitter of greenhouse gases.

Prisoners dilemma

- Neither the Montreal Protocol nor the Kyoto Treaty fits the simple structure of a prisoners' dilemma in which a nation gains from an enforceable agreement, but gains even more if it is the only nation not to comply while all others do, and loses most if it, and everyone else, pursue their own national self-interest.

China and US reject Kyoto

- Both figure benefits < costs and choose non-involvement as a strategy.
- Climate change might present a prisoners' dilemma, in the sense that nations and their citizens, acting in their private self-interest, may produce outcomes that can be avoided with a binding agreement outlining specific obligations.

US is likely to ratify Kyoto-type agreement

- Only if the perceived domestic costs of the relevant reductions decrease, the perceived domestic benefits increase, or both.
- The challenge is to make controls on greenhouse gases more closely resemble controls on ozone-depleting chemicals, i.e., spur technological innovation and greatly reduce the costs of controls through research or institutional change (emission trading).

Part III. The Montreal Protocol Science, policy, and public relations

- Mid-1970s public concern led to inclusion in environmental law.
- Consequences of a hole in the ozone layer.
- Individuals assess benefit versus costs. Fear of skin cancer and options to CFCs and aerosol propellants.
- Industrial response to create profitable substitutes.

Costs and Benefits of Montreal Protocol to the United States

- A bargain for the US
- Benefits from joining MP - 3,575 billion (1985)
- Costs – 21 billion
- Net benefits 3,554 billion
- Benefits of unilateral action by US 1,363 billion
- Costs 21 billion
- Net benefits 1,342 billion

Part IV. Climate Change

- Concern gases arose in the same general time period as concern about ozone-depleting chemicals. Many of the major actors have reversed their positions.
- What motivated their behavior? The difference depends on assessments of national interest, public opinion, and the role of powerful private interests.

The road to Kyoto

- The US and EU support in the abstract prior to specifics of emission limitations and roll backs.
- Rio Conference – UN Conference on Environment and Development (1990-95)
- Framework convention ratified by US Senate (1992).
- Berlin Mandate (1995) agreement to restrictions on greenhouse gas emissions.
- Sen. Res. 98 (1997) prohibited US involvement

US opposition?

- The United States opposed mandatory “domestic measures,” such as energy taxes, and sought ample mechanisms to ensure emissions trading, a sensible idea that would have the advantage of driving down costs. Powerful carbon-based energy interests dominate.
- Developing countries (India and China) opposed because benefits < costs.

Costs of Kyoto to the United States

Clinton Adm estimates

- Clinton Administration found “modest” costs -- \$.04 to \$.06 increase in the price of gasoline, and an annual increase in the average family’s energy bill of \$70-\$110 by 2010.
- Department of Energy projected gasoline price increases from \$1.39 to \$1.91, and 20 percent to 86 percent increases in the price of electricity by 2010.

Wharton School study

- This study projected costs far in excess of Clinton Adm estimates—including a loss of 2.4 million jobs and \$300 billion in the nation’s GDP, with an average annual cost of \$2700 per household, including a 65 cent per gallon increase in the price of gasoline and a near-doubling of the price of energy and electricity.

Emission trading to reduce costs

- Emission trading involves setting up a market to trade “bads” rather than “goods.”
- Firm A certifies through an EPA procedure that it reduced emissions below what was allowed.
- The excess emission reduction is available for purchase by Firm B which has higher emission control costs.
- It is win-win situation. Both firms gain and social costs are lower.

Emissions trading to get more environmental improvement

- Firms that meet their permit requirements can do more (create an “ERC”).
- Long the dream of economist.
- Very successful in SO2 control under CAA.
- ERCS are sold to other firms or a government emissions bank.
- Advantages – firms encouraged to go beyond their limits to make profit.

Emission trading advantages

- Total cost of meeting emission limitations is minimized.
- Least cost producers of ERCS drive the market.
- Environmental improvement and protection is greater than under other systems.
- Nordhaus and Boyer estimate reduction in cost for Annex I countries reduced from \$852 billion to \$ 91 billion with most likely cost \$325 billion.

American benefits

- IPCC (2001) estimated 1.4 to 5.8 degrees C rise by 2100.
- Actual effect depends on speed of increase.
- The more abrupt the change, the greater the cost and the more likely catastrophic effects.
- Nordhaus and Boyer estimate 0.03 degrees C by 2100 with meager effect.

Climate change effects on US

- Anticipated benefits of \$12 billion are real, but dwarfed by anticipated costs of \$325 billion.
- If US engaged in emission reductions without other participants, it pays all of the costs and gets none of the benefits from the reductions by the others.

Benefits and cost for world

- Benefits (damages avoided) \$96 billion
- Costs (physical measures, equipment, fuels) \$338 billion.
- Net Benefits – negative \$242 (Without considering the \$112 transfer to Europe and Russia for permits)

Why was Kyoto possible at all?

- Some nations had more to gain than to lose by supporting Kyoto.
- Some nations had more to lose than gain.
- Some may have engaged in “cheap talk” as a signal of environmental concern or willingness to deal.

Where we are

now

- EU compliance has mixed show.
- Only two met targets.
- Only two almost targets
- Targets missed by several of those (e.g., Portugal, Greece) allowed to increase emissions.

Annex 1 countries

- Note European countries did much better than target of – 8%.
- Possibly due to economic decline and simply replacing heavily polluting machinery and cars.

What we have learned

- Montreal Protocol – where domestic assessments strongly favor unilateral action, and where the same assessment suggests that a nation is likely to gain from an international agreement, that nation will favor such an agreement.

Kyoto Treaty reality

- Kyoto Treaty – where unilateral action makes little sense, and the country will lose from an international agreement, that nation is unlikely to favor an agreement --- unless interest groups demand it

Part V – New initiatives

- *Stern report* – UK says full speed ahead.
- *Lomborg's criticism* – worst cases and misstated costs

Trading and pushing the envelope

- *Clean Development Mechanism* – industrialized can buy ERCS from the less developed countries.
- *California out in front again* – but why?
 - Recent campaign
 - Strategy used in Clean Air Act?

Part VI. Conclusion

- On the basis of the Montreal and Kyoto accords, we should expect that domestic self-interest will continue to be an important motivating force.
- US position is unlikely to change unless domestic benefits of emissions reductions are perceived to increase or if the perceived domestic costs decline.
- In order to be promising, B>C.
