Learning from Experience: An Overview of Greenhouse Gas Trading Design Issues

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and

Resources for the Future

New Prospects for Climate Change Regulation

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Background and Context

- Kyoto Protocol has come into force without U.S. participation -- effects on climate change will be trivial
- But scientific and economic consensus point to need for a credible international approach that is scientifically sound, economically rational, and politically pragmatic.
- Kyoto Protocol is *none* of these.
- Promising *alternative* international policy *architectures* exist, but that's *not* our topic for today.

Background and Context (continued)

- Instead, while international discussions continue, a topic of increasing importance is how *will* the United States respond
  - *When and if* it adopts national targets to reduce net emissions of greenhouse gases (GHGs).
- What means -- what instruments of public policy – should the government use to bring about GHG reductions?

Domestic Policy Instruments for Climate Change

- Because of great advantages at keeping costs low in the short term, and bringing costs down even lower in the long term, most attention has focused on market-based instruments (MBIs).

- Although there are sound arguments for the use of **carbon taxes**, particularly in the long term, most MBI proposals have featured **tradeable permit systems**.
  - Partly because of theory
  - Largely because of experience…..

Experience

- Great success of *SO_2 Allowance Trading Program* (CAA of 1990) is widely acknowledged.

- Question: Does that success indicate that a *similar* cap-and-trade system is necessarily the best approach for CO_2 and other GHGs?

  – *No, differences* between *SO_2/acid rain* and *fossil fuels/climate change* suggest much *caution* before rushing to any such judgment.

  – But the *differences* – as well as some *similarities* – can inform answers to key questions of *policy design* for a domestic GHG trading system.

- My purpose is to identify some of those *key design issues* for a domestic GHG cap-and-trade system.

Key Design Issues for a Domestic GHG Cap-and-Trade System

- [What scope of coverage?]
- ***What point of regulation?***
- ***What point of allocation?***
- ***What rules for allocation?***
- [What about temporal flexibility: banking & borrowing?]
- ***What about enforcement?***
- [Are there needs for government brokerage?]
- [Are there competitiveness concerns? Barriers to entry?]
- ***Should there be linkages with international systems?***
- [At a minimum, how can foolish design elements be avoided?]

What Point of Regulation (Compliance)?

- Possibilities include:
  - Downstream (CO_2 emission sources) -- CO_2 emission permits
    - Similar to SO_2 allowance trading
    - Very successful program
  - Upstream (producers and importers of fossil fuels) – carbon rights linked with carbon content of fossil fuels
    - Similar to EPA Lead Trading in 1980s
    - Very successful program – phased leaded gasoline out of the market in 5 years, low transaction costs, cost savings of $250 million/yr
- How can one decide among the alternative points of regulation?

Criteria for Identifying the Point of Regulation

- **Breadth of coverage**
  - *Downstream* CO_2 emission permits would likely include electricity generators; and likely *exclude* motor vehicles, home furnaces, etc.
  - *Upstream* carbon rights provide *complete* coverage of CO_2 emissions, *but* non-combustion uses of fuels are affected (need compensating credits)
  - What about carbon management (separation & removal of CO_2 from stack gases) and biological carbon sequestration?
- **Number of regulated entities** (monitoring & enforcement requirements favor small number of entities, but competitiveness concerns with very small market)
- **Monitoring** – required for market confidence, but CEM very costly

What Point of Allocation?

- **Important:** the point of *allocation* need *not* be the same as the point of *regulation – these are separate design issues*
  - For example, upstream regulation can – in theory -- be combined with mid-stream or downstream allocation of tradable permits
- **Possibilities for point of allocation** include:
  - Downstream (CO_2 emission sources or even further downstream, e.g. electricity users)
  - Upstream (producers and importers of fossil fuels)

What rules for allocation?

- **Most important: auctioned, given w/o charge, or a mix?**

- **Politics: rules for allocation and regulation (compliance) *affect* distribution of costs, *but actual burden is typically <u>not</u> the same as the statutory incidence (allocation/compliance).***

  – Burden depends upon market conditions: supply and demand elasticities

What about enforcement?

- **MBIs, such as cap-and-trade systems, are *not deregulation*, but rather *more enlightened* regulation – government enforcement is still *required.***

- **Stiff penalties provide effective incentives for compliance, but *excessive* penalties are not credible**

  – In SO_2 program, penalty is $2,900/ton of excess emissions (compared with marginal abatement costs that have been 10% of that); result – near perfect compliance

  – SO_2 program also requires emissions offset in subsequent year. If this is eliminated, penalty is a tax on "excess emissions," and we have a **"safety-valve" on costs** (NCEP, Sen. Bingaman). Another major design issue.

Should there be Linkages with International Systems?

- Back to where I began, a domestic trading program should be part of a sensible global climate agreement (that provides for trades across national boundaries).

- But in the meantime, should a domestic cap-and-trade program be linked with other countries?

  - First, linking with CDM or JI projects **problematic**

    - Relative baseline, unobservable counterfactual means all claims of reductions very questionable
    - Perverse incentives exist for both parties to take credit for what would have happened anyway – cap is loosened, environmental integrity destroyed

  - Second, only countries that ratify KP can trade with EU system (now)

- ***Conclusion: Devil is in the details***

For More Information

http://www.stavins.com

“What Can We Learn from the Grand Policy Experiment? Lessons from SO_2 Allowance Trading”

“Beyond Kyoto: Getting Serious About Global Climate Change Policy”