



International Governance and Climate Change

"Social Sciences and Humanities Facing the Climate Change Challenges" conference

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Outline

- I. Let's dream: An all-encompassing Copenhagen agreement.
Design under an efficient international governance
 - ✓ economic instruments
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- ✓ economic instruments
- ✓ commitment problem

II. International political economy

- ✓ border tax adjustments
- ✓ alternative policies
- ✓ Kyoto 2

I. DEFINING A TARGET

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- (1) **Price coherency:** one price
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Some implications

- Environmental taxes, norms and permits must reflect the same carbon price.
- No distinction based on likely speed of accrual of carbon-free substitute technologies.

(2) Long horizon (30 years?)

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✓ Need for *long-term visibility* for

- deployment

[lifetime: 20 to 60 years for power sector; buildings; transportation; forestry; etc.]

- R&D

[long lead time: carbon capture and sequestration, 4th generation nuclear power, hydrogen cells, electricity storage, agriculture and technologies that are robust to climate change, new biofuels for airlines, PV, etc.]

- risk management

[can exist in “0-net supply”, but less liquid market]

(3) Market-oriented

- ✓ Tradable permits.
- ✓ Bankability.
- ✓ Avoidance of distortionary rules
 - no free permits for new entrants/projects,
 - no loss of permits in case of shutdown.

(4) Allocation of permits

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- ✓ Auctioning a good policy. Auctions should not be sector-specific.
- ✓ Redistributive aspects can be dealt with through revenue-neutral auctions (generalization of grandfathering mechanisms).

For example: Firm k pays:

$$p \left(n_k - n_k^0 \frac{n}{n^0} \right)$$

Annotations for the equation above:

- equilibrium price of permits
- number of permits purchased
- initial pollution level
- ratio of pollution cap over historical level
($n = \sum n_k$ and $n^0 = \sum n_k^0$)

-
- ✓ Distinguish
 - allocative efficiency (number n of tradable permits)
 - redistributive issues (n_k^0).
 - ✓ Concerning the latter, n_k^0 need not be historical data:
 - across industries: alternative technologies accrue at different speeds \Rightarrow windfall profits and losses
 - across countries: catching up
 - ✓ No notion of headroom allowance: countries (or rather their industries) choose emission path with regards to their own situation.

(5) A reasonable amount of commitment

- Debate about safety valve (price cap) seems wrong-headed

[If price fluctuations are the concern, bankability and hedging markets may help.]

- Futures markets create price signals, provided that policy will not be opportunistically altered.

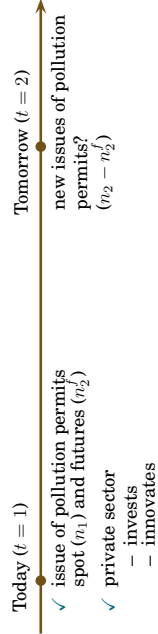
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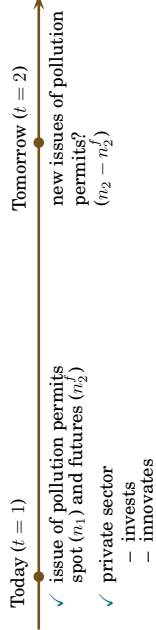
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- Incentive for the authorities to flood the market tomorrow:

- auction income
- placate industry
- expropriate innovations (lowers licences' prices by increasing number of permits)

BUILDING CREDIBILITY: PUT OPTIONS

[Laffont-Tirole *JPubE* 1996a,b.]

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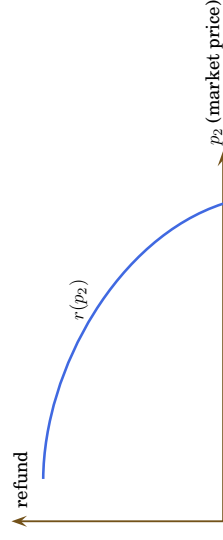
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- Plain vanilla options: Authorities commit to purchase at floor price.
- Criticism: uncertainty (social cost of pollution, etc.)
- Optimal policy: provide authorities with flexibility, but latter commits to compensate permit owners (in cash or Treasury securities).



II. INTERNATIONAL POLITICAL ECONOMY

- ✓ Countries have different incentives/attitudes toward abatement
- ✓ Gaming and general equilibrium effects
 - (1) free riding,
 - (2) leakage problem: production and investment re-allocate, wiping out abatement efforts.

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Leakage problem: • *not* an argument to exempt tradable sectors from permit system,

- is not affected by free allowances (unless latter allows domestic firms to remain solvent): marginal cost of production independent of distribution.

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 - too much pollution
 - wrong allocation of abatement costs
[low marginal cost in non-Kyoto countries. Clean Development Mechanism tries to make up for.]
 - ✓ Regional initiatives. Convergence will create income transfer problems.

Post Kyoto : carrot or stick?

THE TRANSITION: PUTTING PRESSURE TO GET ON BOARD

Country i will get on board if:

$\underbrace{i\text{'s welfare on board}}_{\text{affected by allocation of auction revenue}} \geq \underbrace{i\text{'s welfare outside the agreement}}_{\text{affected by Kyoto-countries' pollution targets, sectoral policies, project-related policies (CDM,...), etc.}}$

1) Border tax adjustment (1)

[Example 1: requirement to purchase permits on European market for imports; grant permits to exporters.

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- solves leakage problem but not overall pollution problem of non-Kyoto countries
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- solves leakage problem but not overall pollution problem of non-Kyoto countries
- *protectionism*
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- *measure of carbon content of imports*
- *penalize virtuous foreign firms.*

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- virtuous foreign firms: no BTA if can demonstrate it.

2) CDM (per project approach)

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Drawbacks

- transaction costs, additionality criterion.
Counterfactual: no project? no CDM?
[white certificates/Greenhouse abatement certificates]
- may trigger rush to invest in high pollution projects/keep high-pollution projects in operation
- reduces incentives to join Kyoto process

3) Gaming during the transition

Inefficient

- Kyoto countries might issue large number of LT permits
[have not done so, though. Potential issue with regional initiatives as well.]
- Non-Kyoto countries make irreversible decisions that reduce their net benefit from joining the Kyoto protocol
[installing carbon-intensive infrastructure, e.g., coal power plants.]

More efficient

- conditionality of abatement effort
[EU: quotas and projects: conditional on “satisfactory” international agreement.]

4) Publicly provided R&D

[Long-term, upstream research, not rewarded by patents.]

✓ *Should a country receive allowances for stand-alone R&D effort?*

- measuring effectiveness of research
[tunneling toward other, profitable research; pork barrel.]
- measuring spillovers.

✓ International consortia

[Not easy to set up: best universities and research centers not scattered uniformly...]

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✓ *Monitoring compliance/enforcement*

Besides standard monitoring approaches (arms treaties,...)

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✓ *Monitoring indebtedness*

[IMF style. Industries might sell permits not because of abatement policies, but in the hope country will renege.]

* [additional permits, lax enforcement, renege on international agreements.]

III. SUMMING UP

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- ✓ *Pre- and post-agreement gaming*
 - Apply least-cost pressure on non-Kyoto countries, while avoiding self-serving moves by Kyoto countries.
 - Expect substantial gaming during transition.
 - Need to think more about incentives for compliance.