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Policies for a Sustainable and Secure Electricity Market**

ELECTRICITY MARKETS AND CLIMATE CHANGE

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I. Single country or efficient international governance

- ✓ economic instruments
- ✓ commitment problem

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II. International governance

I. ONE COUNTRY/EFFICIENT INTERNATIONAL GOVERNANCE

1. INSTRUMENTS

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	CO_2	EU ETS 2005-2008, 2008-2012

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Emissions Trading System

- ✓ short horizon: 2012 (CAAA : 30 years),
- ✓ free permits for new entrants/projects (up to a limit. FCFS!)
- ✓ in most countries, loss of permits when plant shuts down.

[last two points important; e.g., European power sector has to build 862 GW capacity, for a current stock of 723 GW, by 2030.]

- ✓ subsidiarity, political process
- ✓ non credible penalties

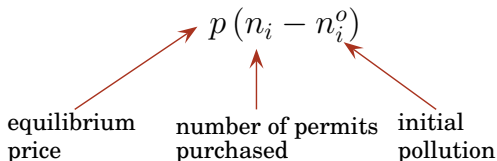
[next ceiling = 130 %, but renegotiation.]

✓ Grandfathering

[auctions hardly more prevalent under CAAA: 2,8 % initially]

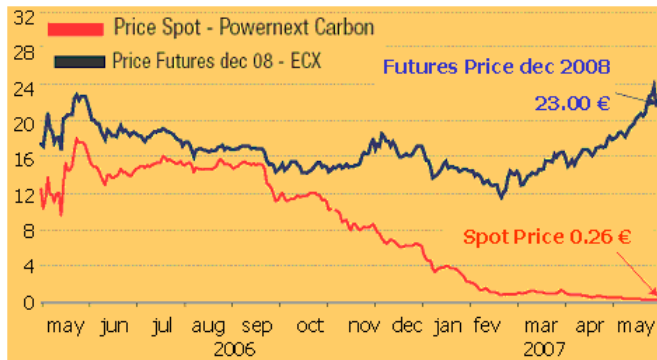
- income loss
- does not facilitate price discovery.

Alternative: zero-income auctions. Example: stabilization
objective: firm i pays



✓ Limited banking and price volatility

[except France and Hungary]



[Source: Powernext Carbon, ECX, Point Carbone in Tendances Carbone, 2007.

Extrait de Bouttes-Trochet-Dassa "Assessment of EU CO₂ regulation,"
mimeo, 2007.]

b) Price vs quantity vs hybrid system (safety valve = price ceiling)

✓ Weitzman 1974 classic argument

[cap-and-trade dominates if

- social cost of pollution has high curvature
- marginal cost of abatement fairly constant.]

✓ Economics or political economy?

Little political support for taxes.

c) **Other instruments** (costs and benefits)

- ✓ Norms
 - ✓ Labels
 - ✓ Subsidies to equipment (heat pump, insulation,...), R&D, etc.
-
- Index these instruments on carbon price
 - Encourage R&D, not obsolete (current generation) equipments
[biofuels, photovoltaics]

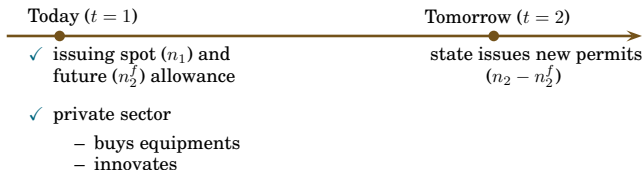
2. COMMITMENT ISSUE

- ✓ Need for *long-term visibility*
 - equipments
[20 to 60 years in power sector; buildings; transportation; forests; ...]
 - R &D
[CSS, 4th generation nuclear, new fuels for planes, crops and technologies that are robust to climate change, etc.]
 - risk management
[can exist under zero-net-supply, but...]

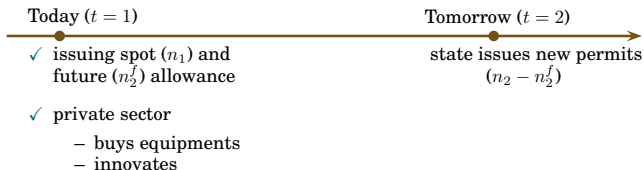
- ✓ Encourage R&D in private sector

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- State may want to flood market tomorrow:
 - revenue from auctions (cash-strapped government)
 - please industry
 - “expropriate” innovation: lower price of licenses

CREATING COMMITMENT: PUT OPTIONS

[Laffont-Tirole *JPubE* 1996a,b ; Ismer-Neuhoff 2004.]

- Simple option: State stands ready to buy at price floor.
Criticism: uncertainty.

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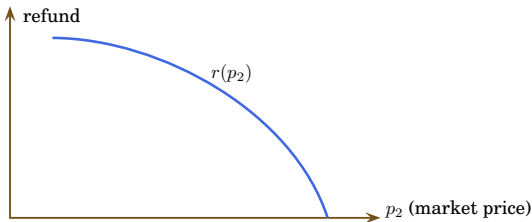
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- Laffont-Tirole :

Optimal Policy = provide State with flexibility to react to news (for instance about impact of pollution)

Refund policy or array of put options.



II. POLITICAL ECONOMY OF INTERNATIONAL GOVERNANCE

Standard observations:

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- too much pollution
- inefficient abatement
[but CDM]

1) Border tax adjustment

[(a) BTA; (b) compulsory purchase of regional permits.]

Incentive but

- protectionism

[incentive compatibility?]

- measuring carbon content

[home vs foreign benchmark; virtuous foreign firms penalized.]

Even if performed by WTO or independent agency...

Compare relative performance

- Europe : some countries more virtuous than others
- different approaches (would be simpler if single carbon price in each country: ETS vs R&D vs...)
- enforcement.

2) Other policies

- ✓ CDM (projects)

Benefits

- aid to development
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Drawbacks

- transaction costs; interpretation of additionality requirement (counterfactual)
- incentive to install/maintain polluting equipments? certificates
- incentives to join/ratify Kyoto?

✓ Trading/nontrading

[net supplier of permits: low effort in non trading sector]

✓ Sectorial agreements

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✓ International

- who will receive funds?
- who pays?

3) Towards a new architecture

Standard recommendations

- allow headrow allowance and index to growth
[use politicians' horizons]
- use WTO or other “collateral” to incite joining.

Possible approach

International agreement on:

- 1) single CO₂ market,
- 2) issuing of put options by all countries

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(2) does not solve free rider problem, but creates an incentive for renegotiation.