Negotiating effective institutions against climate change

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A complex tragedy of commons

- Most benefits of mitigation are *global, distant* and *uncertain*, while costs are local and immediate.
  - 100% of cost of green policy; 1% of the benefits
- A country which would contemplate a unilateral mitigation strategy would be discouraged by the presence of the so-called "carbon leakages".
  - Net zero benefits; lost employment and revenues.
- Mitigation is a threat to the oil rent, and its owners should be expected to react to it. Green Paradox.
  - As long as fossil fuels are the cheapest source of energy, someone is going to burn them.
- Climate policy is also used to fight *inequalities*.
  - Multiple objectives; conflicting interests, definition of common but differentiated responsibilities?
  - Curious to see the reaction of developing countries to the OECD report.
But...

- Each year, emissions generate future damages whose discounted value is estimated at 1.500 billion €.
- The good news is that everyone would benefit from an ambitious agreement!
  - Big carbon rent.
- Can we overcome the tragedy of commons?
  - Maybe not. Maybe pledge-and-review is the best that we can expect.
  - Prepare for the worst?
A painful experience

- A growing awareness, but
  - We emit much more today than in 1997!
  - From Kyoto (1997) to Copenhagen (2009), striking contrast between:
    - Ambitious targets for ... 2050;
    - Very modest commitments for 2020.
  - Little confidence in promises:
    - National interests are paramount;
    - Screening: Countries which intend to abide by their pledges would benefit from a binding agreement!

- Lesson: We need carrot-and-stick approach.
The waiting game (Laffont-Tirole 1996)

- High cost of delaying negotiations:
  - Excessive emissions in the meantime;
  - Exacerbated by leakages.

- The anticipation of future (re)negotiation makes things worse than in the BAU:
  - Strategic moves ex ante: emitting more today improves bargaining power ex post;
  - Also true if promises, as they will be increased every 5 years: Ratcheting/grandfathering.
Pledge and review

- Copenhagen 2009/Lima 2014/Paris 2015
  - Abandon idea of economic instruments;
  - Rely on non-committal pledges: Intended Nationally Determined Contributions (INDC).

- Issues:
  - Measurement, reporting and verification (MRV)? Little progress
  - Enforcement? “non-punitive verification process”
  - Least-cost abatement? Very unlikely
  - Burden sharing? Not clear...

- Waiting game continues!
Zero-ambition promises

- Is associated to some self-interested efforts
  - Co-benefits (SO$_2$/NO$_x$/MP/...);
  - Co-benefits (energy-saving, ...);
  - Green R&D: rent-seeking game and positive externalities;
  - Some internalization by very large countries;
  - Placate public opinion at home, avoid international pressure. But political green washing.
A uniform carbon pricing is necessary

- Surprisingly a hot issue!
- Environmental Economics 101
- Polluter pays principle.
- Universal price: Simple and efficient.
- Least-cost approach.
- <= Industrial policy, feed-in tariff, direct subsidies,...: large implicit CO₂ price.

This principle is orthogonal to the contributive problem:
- Green check, Green Climate Fund,...
- Distribution of free permits.
Innovation and LT price commitment

- Need green innovation to keep under 2°C.
  - Long term visibility on carbon pricing helps.
- But appropriability issue suggests underinvestment in R&D.
  - Standard reasons: spillovers, fundamental research;
  - Need to anticipate on treatment of resulting intellectual property: Hold-up problem;
- Because of uncertainty, flexibility is necessary. Solution (Laffont-Tirole 1996): Option system.
Two policy instruments

- Two negotiation processes:
  - *Price*: A minimum LT price around the world is negotiated.
  - *Quantity*: A maximum LT emission-per-capita is negotiated. Market for permits.

- Subsidiarity principle on national policies; revenues are recycled within each country.

- “I will if you will”. Participants are required to impose the common price (or quantity per capita) as long as all signatories do too. Alleviate the free-rider pbm.
I will if you will: Example

- 100 homogeneous “agents”:
  - Emission per agent = 10 tCO₂;
  - PV damages per tCO₂ = 1€/country;
  - 80% of emissions can be abated at a cost of 50€/tCO₂;
  - the remaining 20% can be abated at a cost of 200€/tCO₂.

- Efficient solution: 80% abatement everywhere.
- Negotiation on a common price: all countries will vote for a price of 50€/tCO₂.
  - Benefit per capita = (0.8x1000) - (8x50) > 0.
- Same result if negotiation on a uniform emission per capita.
- The outcome of this game may not always be efficient with heterogeneous countries; but it does in general much better than the BAU/INDC/...
I will if you will: Issues

- Redistributive impacts controlled by a Green Fund (price) or by the allocation of free tradable permits (quantity).

- Equivalence price vs quantity?
  - Initial negotiation position: fairness?
  - Treatment of uncertainty (Weitzman’s price vs quantity)
  - Observe price vs observe quantity.

- Special issue of *Economics of Energy & Environment Policy* (vol 4, n°2).
An international cap-and-trade

- Creation of a large green coalition:
  - Negotiation on a global cap of emission;
  - Allocation of country-specific tradable permits that recognize our common but differentiated responsibilities;

- An argument for quantity vs price: Transfers by allocation of free permits is non-transparent, and thus politically easier to implement.

- Requires a system of control of national emissions.

- Kyoto failed because of
  - Green coalition too small -> Huge leakage problem;
  - No carrot-and-stick approach to the free riding problem.
Enforcement: The carrot-and-stick approach

☐ Naming and shaming is an approach and should be used; but as we have seen with the Kyoto “commitments”, it has limited effects. Easy excuses.

☐ Nordhaus (2015): WTO should view non-compliance with an international agreement as a form of dumping, leading to punitive border taxes.

☐ Non-compliance with a climate agreement should be treated as committing future administrations and treated as sovereign debt. This policy would involve the IMF as well.

☐ Not easy, but crucial. Without penalty, adaptation becomes the only credible option.
Cost of climate change

- Social Cost of Carbon: Highly dependent of the choice of discount rate.
- Consensus estimation of SCC: 10-50 USD/tCO₂, rising over time.
- This externality needs to be priced. At what price?
  - Nordhaus (2011): 1 tCO₂ = $10 of damages.
  - Stern (2007): 1 tCO₂ > $100 of damages.
- These are (very) distant damages discounted to the present.
- How should we compare current and future damages?
Discount rate

☐ We discount the future because we believe that future generations will be better off.

(2x growth rate?)

☐ High uncertainty affecting this belief justifies a low risk-free LT discount rate.

(1%?)

☐ Climate CAPM beta is positive: In the BAU, most damages arise when consumption is high. Large risk premium

(3%?)
Roadmap

- We need to put a universal price on carbon, or things are going to be very inefficient, unverifiable, and not credible.
- Negotiations have stalled, with potentially dramatic consequences.
- Instead of looking for inefficient patches or cheap pledges, agree on short-term actions, and
  - An agreement on a good governance: a path of universal carbon price, and an enforcement strategy;
  - An independent emissions tracking system to measure country emissions;
  - A negotiation process for compensation.
- Given the challenges, this would already be a big success.
- Otherwise, zero-ambition pledges will prevail. Adaptation will then be our only hope.
Thank you very much for your attention!