Economic measures of CO_2 mitigation, its background and validness, focusing on Post-Kyoto **global** climate policy

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Why economic measures?

Economists argue economic measures are the best.

- What are economic measures?

  1) Price approach (carbon tax) and

  2) Quantity approach (cap & trade or IET)
- Both are efficient

  to achieve given objective at the least cost by equalizing marginal abatement cost of all players (countries)
- Then, what are the differences?

Price vs. Quantity under uncertainty
Pure theoretical argument

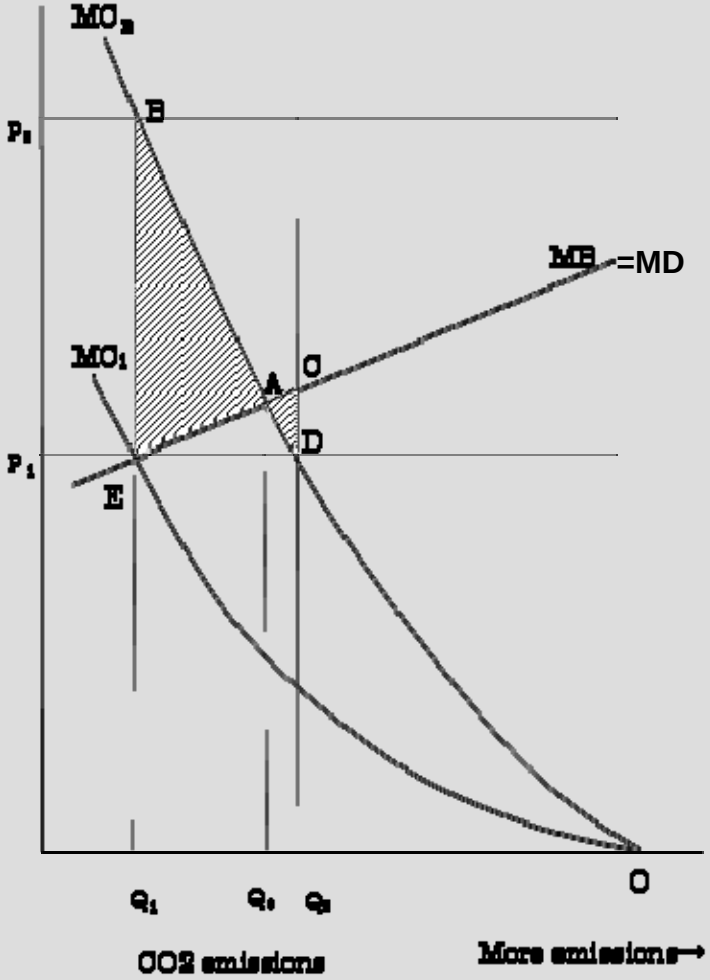
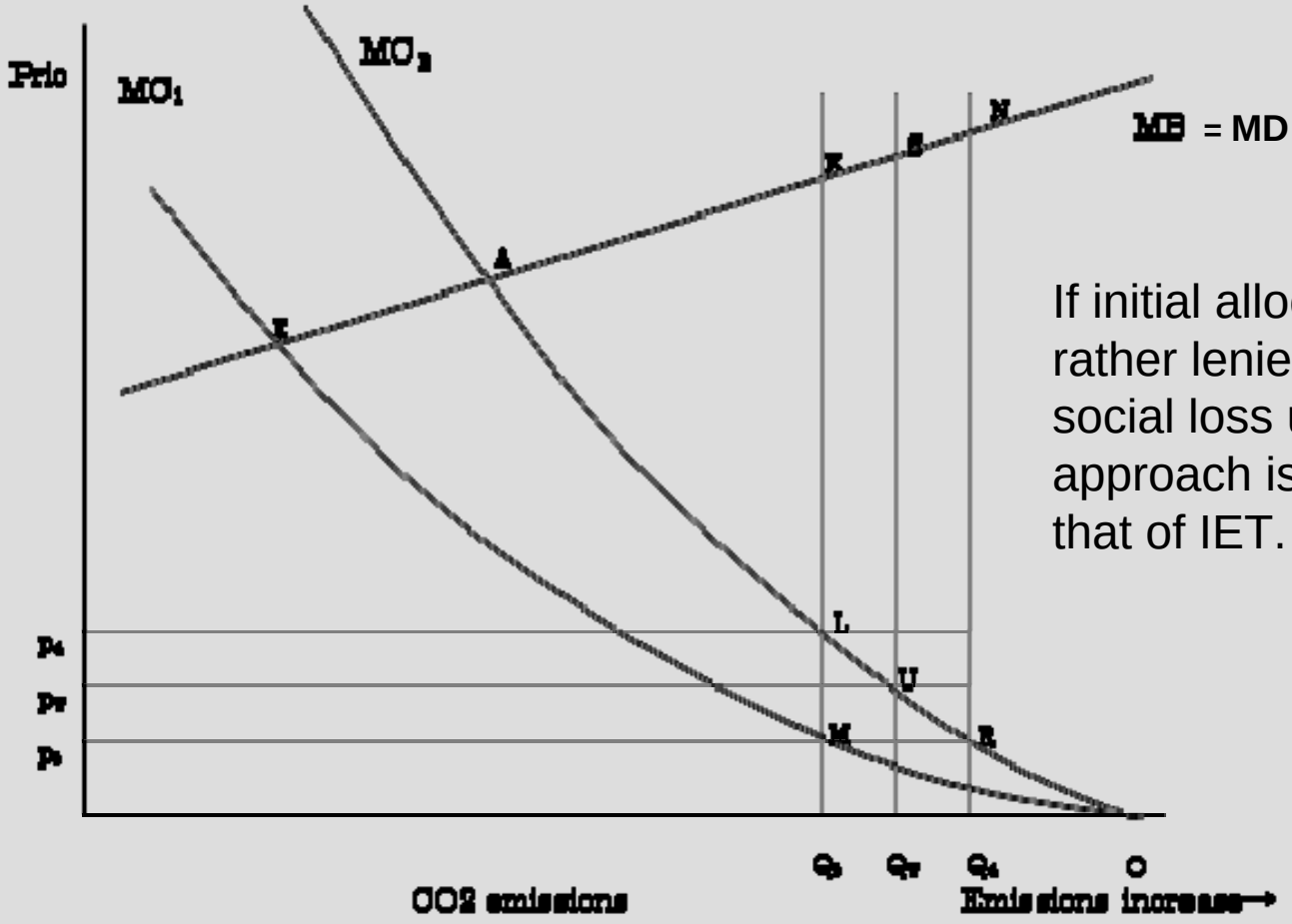


Fig. 1 Comparison of social losses when the marginal reductions costs are higher than

As illustrated here, social loss is smaller in case of price approach. This is why economist prefer tax to IET.

Professor J.E. Stiglitz, July 4, 2004, Nikkei

Price vs. Quantity under uncertainty
Pure theoretical argument



If initial allocation is rather lenient (like KP), social loss under price approach is bigger than that of IET.

Fig. 8 Analysis of quantitative approach and hybrid policy at the initial allocation above the optimal point

Comparison is not so simple

Then we should compare these two approaches comprehensively, including

- environmental effectiveness
- equity
- political feasibility
- incentive for technology innovation

Pros and cons of price approach

Advantages

- Cost minimization through equalizing MAC
- Costs are certain
- No hot-air, no cross-border transfer of money
- Revenue recycling, namely to tax on “bads” and reduce tax on “goods”

Pros and cons of price approach

Disadvantages:

- Uncertainty of environmental effectiveness
- Can major countries agree to harmonized tax?

  Sovereignty and tax (even EU failed)
- Politically feasible?

  Is it feasible to introduce carbon tax in the United States?
- Nation’s priority differs

  For developing countries, economic growth→air and water pollution→climate change

Pros and cons of quantity approach

Advantages

- Cost minimization through equalizing MAC
- Environmental effectiveness
- Domestic policies are at each country's discretion

Pros and cons of quantity approach

Disadvantages

- Initial allocation (equity & transparency)
- Hot-air and trans-boundary transfer of money (equity)
- Absolute emission limitations and cost uncertainty (feasibility)

  How to involve major developing countries and the United States
- Environmentally effective, really?

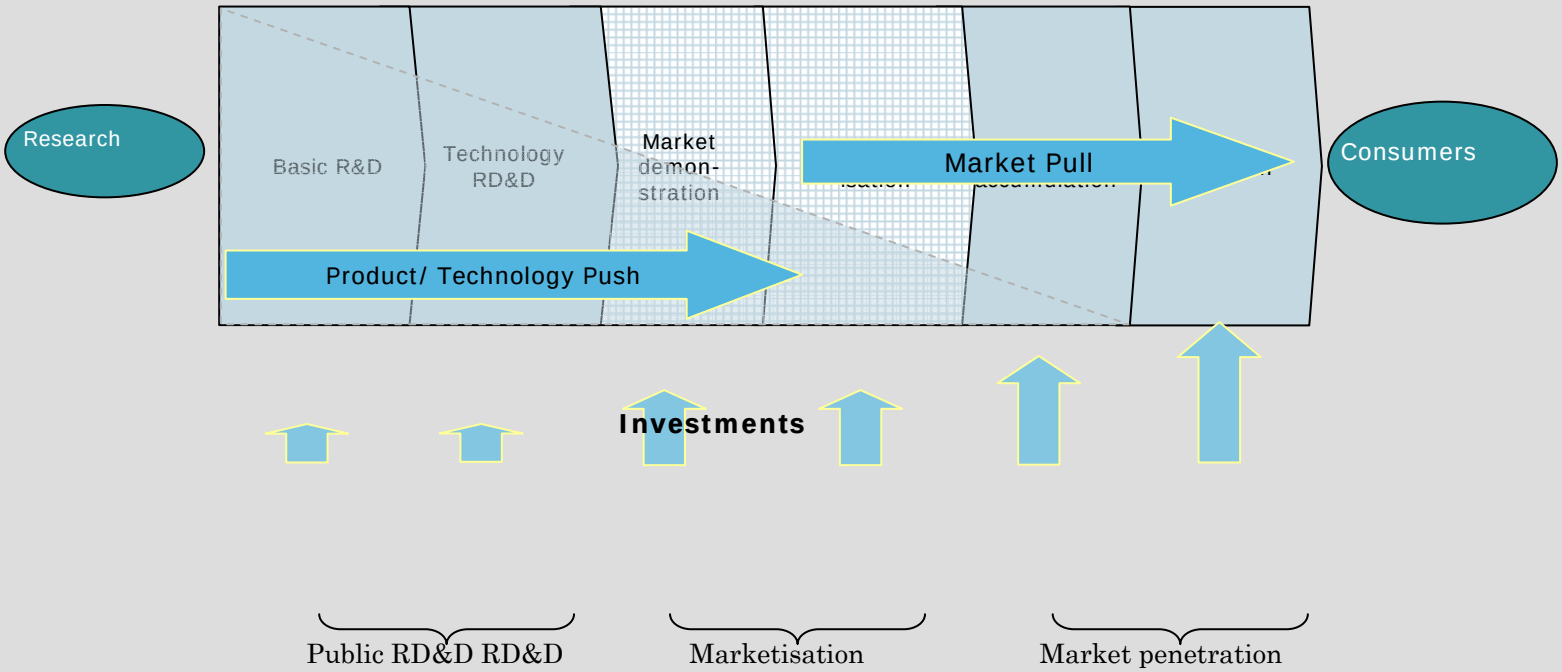
Neither approach, though efficient, seems to be effective nor feasible for future framework

And

Neither approach will offer enough incentive for technology innovation.

Basic R&D policy is necessary.

Main steps in the innovation chain



Grubb, M. 2004, “Technology Innovation and Climate Change Policy: an overview of issues and options” Keio Economic Studies, Vol. 41-2

Technology innovation and climate policy

- Without technology innovation and diffusion, global GHG concentration never stabilizes.
- What is needed in the long term is a policy to promote technological innovation and diffusion as well as induced technological change.
- For this purpose, what kind of international framework is desirable? That is the real question.
- We should note, however, that any such technology policies should be accompanied by appropriate climate policies

My proposal

- Climate Policy

Pledge (with review) with review, and sector-based benchmarking agreement (long term environmental effectiveness and political feasibility should come first)

As to domestic policies, efficiency matters (cf. priority of climate change)

- Technology Policy

International/regional cooperation in basic R&D as well as technology transfer