Lecture 14: Environmental policy - efficiency, distribution and fairness

- Purpose
  - show linkages and distinction between efficiency (social cost considerations) and fairness (includes transfer payments)
  - show that agents' perceptions of fairness influence speed of implementation, political feasibility

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Outline

- efficiency and distribution/fairness
  - welfare implications
  - implementation issues
- perspectives on fairness
- applications to environmental policy - a focus on distribution
  - taxes vs. legal regulations
  - taxes vs. tradable permits
  - taxes vs. subsidies
  - input vs. emission regulations

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Fairness vs. efficiency (1)

- An efficient solution maximizes welfare ⇒ compared to any other solution there is a potential for redistribution making at least one person better of without making anyone else worse off
  - parallell to Kaldor-Hicks potential compensation criterion (frequently used in benefit-cost analysis)
- Redistribution
  - may be undertaken provided that the costs of re-distribution is lower than the value of the welfare gains
  - may require separate policy instruments (if a certain diistribution is a separate goal - cfr. Tinbergen)

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... fairness vs. efficiency (2)

- Policy more easily (faster) implemented if gains have desirable distributional impacts
  - reduces lobbying or discontent
  - ease of implementation connected to existing rights
- The most efficient solution may have distri-butional impacts that delay implementation
  - delayed implementation ⇒ time gap before welfare gains are realized
  - if welfare losses from delayed implementation > welfare gains from most efficient policy (barring implementation issues), overall welfare may be increased by
    - ➡ redistribution reducing implementation time

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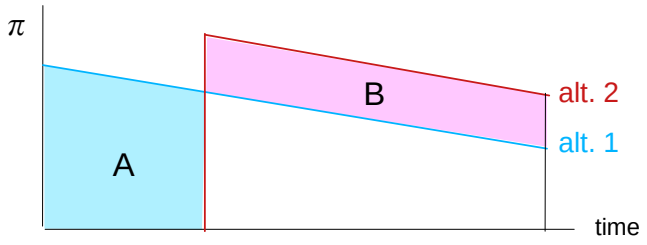
... fairness vs. efficiency (3)

- Tradeoff efficiency with/without implementation delays
  - alt. 1: yearly disc. net benefits, π_{inf} from year 0
  - alt. 2: yearly disc. net benefits, π_{eff} from year τ
  - net benefit ordering: $\pi_{eff} > \pi_{inf}$
  - NPV of the alternatives



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... fairness vs. efficiency (4)

- Example: 1990s - work on nonpoint source pollution from agriculture suggested that taxing fertilizers was the least costly policy
- Fertilizer tax made most farmers worse off ⇒
  - several years lost debating fertilizer taxes rather than implementing alternate policies
  - not implemented to extent needed to correct externality
- Example demonstrates the need for looking at potential "winners" and "loosers"
  - have a "plan B" for implementing the non-controver- sial suggestions may have reduced welfare losses

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... fairness vs. efficiency (5)

- Factors that ease implementation:
- Nobody left worse off than they were before
  - initial distribution matters
  - compensate groups that are clearly negatively affected (vis-a-vis their initial position)
- Develop policy in cooperation with those affected rather than forcing the policy "from above"
  - increases agents' understanding why some policy is needed ⇒ agents may accept some welfare changes without protesting

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Three positions on fairness (1)

- Consequentialism/welfarism
  = consequences perceived fair
  - utility (classical utility (Bentham) or modern welfare theory (Bergson-Samuelson))
  - individual advantages
- Rights based
  = rights perceived fair and are respected
  - individual advantage or impartiality (Norw. upartisk)
  - rights more important than consequences

  Remark: Amartya Sen's position: "rights based conseqentialism"

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... three positions on fairness (2)

- Procedural fairness
  = the (policy or decision) process perceived fair
  - Participation (by those affected) becomes a goal by itself
  - Comes in multiple versions
    - Pure procedural justice: does not consider consequences in the particular matter (but may involve some "larger" considerations like "not guilty unless otherwise proven beyond doubt")
    - Perfect and imperfect procedural justice :: focuses indirectly on conseqences
      ⇒ procedures installed to secure outcomes with certainty (perfect) or beyond a certain level of probability (imperfect)

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... three positions on fairness (3)

- (Core) economic theory
  - mainly based on consequentialist/welfarism perspective
  - ... but dynamic analyses and game theory are examples of awareness of fairness -- imple- mentation issues in main stream economics
- Economic rules of efficiency/fairness
  - Pareto optimality / improvement
    - individual advantage / advantage for all
    - rights must be defined (for initial position to exist)
  - Potential pareto improvement
    - "winners" can compensate "loosers", but not necessary to compensate "loosers"

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Applications to environmental policy

- Past lectures have shown
  - rights influence efficiency (= rights influence how much nature to be protected)
  - rights influence which costs that are included (= protecting victims some times more costly than allowing pollution to take place)
- Distributional impacts of type of policies used
  - taxes vs. legal regulations
  - taxes vs. tradable permits
  - taxes vs. subsidies
  - input vs. emission regulations

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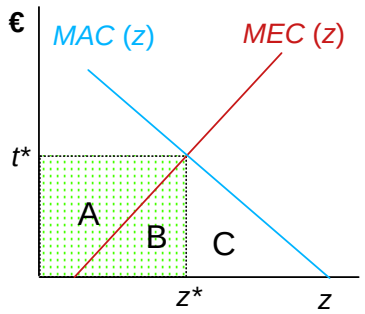
Taxes vs. legal regulations

- Main advantage emission taxes vs. legal regulations:
  - abatement until MAC(z*) = *t** dominant strategy for polluters even when regulator has little knowledge of polluting firms' MACs (priv.knowledge)
- Polluters pay for damages (B) they cause
- ... but polluters pay taxes exceeding damages they cause (A) = excessive tax



- If regulator knows *MEC*(*z*) and *MAC*(*z*) {p*,z*} is reached
  - costs: B+C

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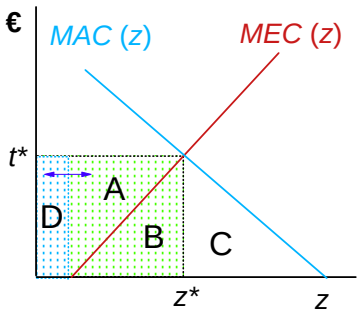
Taxes vs. tradable permits

- Recall: emission taxes and TP work the same at the margin = same total abatement costs, C
- Tradable permit payments
  - auctioned = tax payments
  - grandfathered = tax payment less grandfathered share, D (that can vary)
  - revenues quota trade transfers ⇒ no social cost imp.
  - ... but real efficiency gains



- Fairness: influence distribution of private costs and hence fairness perceptions

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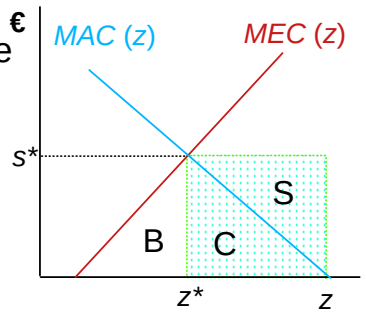
Taxes vs. subsidies

- Recall that emission taxes and subsidies also work the same at the margin, i.e. same abatement costs, C
- Subsidy: C+S ⇒ net extra profits (rents) from sub = S
- Problems with subsidies:
  - incorrect entry-exit incentives for polluters
  - public finance issue (scarce public funds)



- Fairness: polluters are paid - potential breach with PPP ethics

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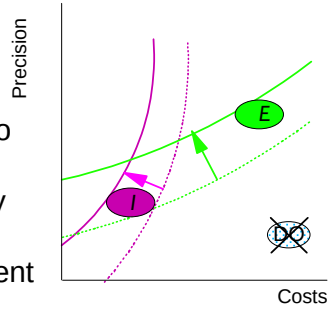
Input vs. emission regulations

- Input regulations may be warranted if the transaction costs of emission based regulations exceed the costs of lack of precision in the input regulation
  - classical example: nonpoint source pollution (like farm field nutrient leakages)
- Tradeoff precision - costs
  - transaction costs of using emission instruments adds to social costs
  - emission instruments usually more precise (yield {p^*, z^*})
  - optimality is context dependent



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Summary (1)

- Efficiency and distribution/fairness
  - maximizing welfare increases room for compensation of "loosers" -- min. social costs main issue
  - fairness influenced by change in utility/profits/wealth from initial position
  - fairness perceptions important for how easy it is to implement policy - (which may have social costs)
- Transaction costs are real
  - influence social costs
  - fairness
  - tradeoff efficiency (precision) and social/private costs

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... summary (2)

- Reasons for economists' "obsession" with efficiency (cheap regulations)
  - min cost of regulations (cost effectiveness) :: an integral part of overall objective of max social welfare
  - increases the size of the pie ⇒ redistribution in principle easier
- Pareto-improvements (= nobody worse of and at least one better off)
  - advantage: consistent with participation contraint in RAMS
  - disadvantage: initial distribution matters a lot (and may set some severe restrictions on outcomes)

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Concept questions

- Advantages and disadvantages of focusing on overall welfare gains / cost min
  - Do economic analyses on welfare max and without distributional matters included, create some sort of anchoring bias?
- Alternative approach of including distribution - a constrained maximization problem, where
  - ➡ the constraints are set to meet stated distributional targets
  - ➡ the shadow prices on the constraints indicates the cost of these distributional targets
  - ... advantages and disadvantages of this approach compared to handling distribution in post analysis?

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