

Public Economics

Lec 4: Externalities

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AM's reminders

- **Essay information**

- **Form groups! [Link](#)**

- **Policy analysis:**

- Description
- Intended purpose: would that work? Why?
- Alternatives? Can you use Pub. Econ. tools to come up with better solutions?
- Use of data/literature encouraged

- **The big short**

- **HA**

- **RG, ch.4, ex 3**
- **RG, ch.4, ex 8**
- **RG, ch.4, ex 13**

Reading list

- **RG ch. 5**

Plan

- **Definition and consequences of externalities**
- **Private/market remedies:**
 - Coase theorem
 - Internalizing
- **Public interventions:**
 - Pigouvian taxes and subsidies
 - Emission fees
 - Cap & trade programs

Definition of an externality

Whenever the action of A affects the welfare of B

- Effect **not** through market price

Cost not fully borne by active agent (not **internalized**)

Definition of an externality

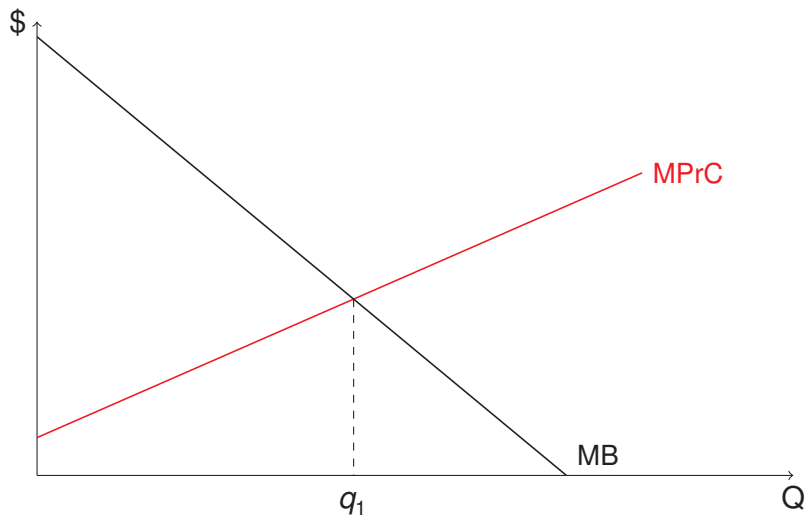
Whenever the action of A affects the welfare of B

- Effect **not** through market price

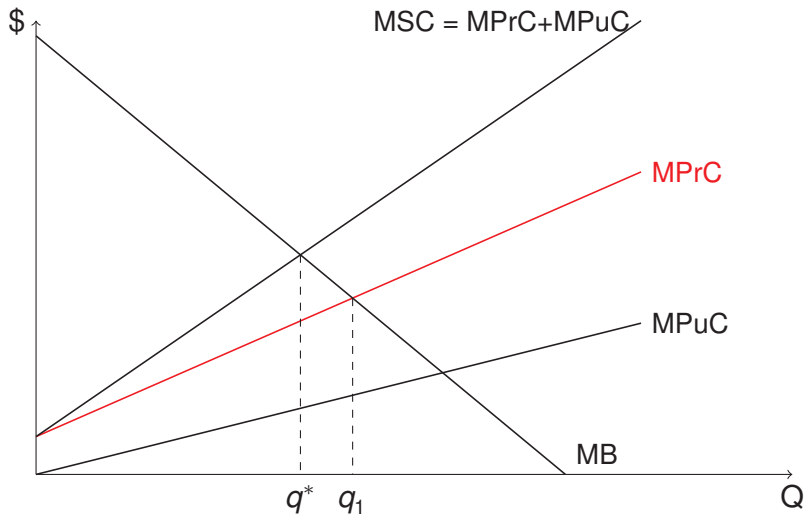
Cost not fully borne by active agent (not **internalized**)

- By both **production** and **consumption**
- Reciprocal in nature
- Both **negative** and **positive**

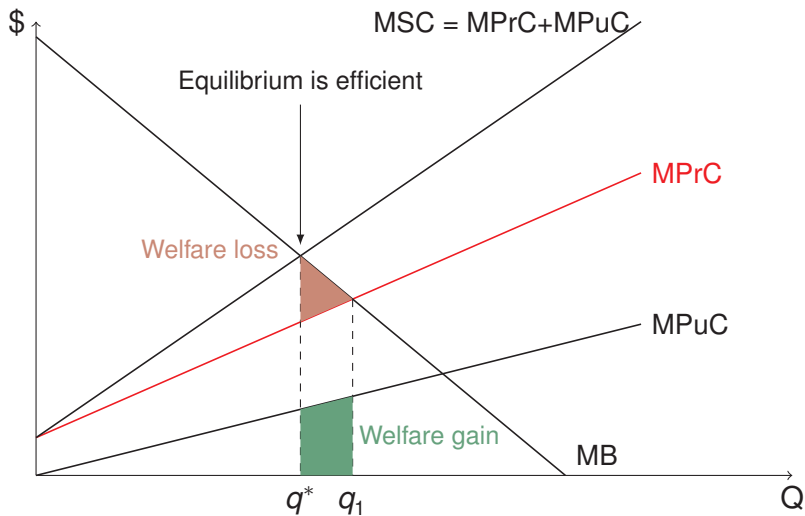
Inefficiency from externalities



Inefficiency from externalities



Inefficiency from externalities



Summing up

Externalities:

- **Negative:** overproduction
- **Positive:** underproduction
 - E.g. vaccination, industrial synergies
 - **Public goods** as a special externality case

Problem: absence of property rights

- **Market for public cost does not exist**

Reaching the social optimum (I)

Private/market solutions:

- **Coase theorem:**

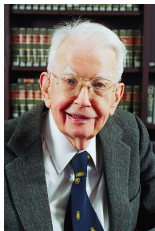
- ① Cost of bargaining negligible
- ② Source of damage identifiable and rights enforceable

⇒ Assigning property rights and letting people bargain solves the problem

- **Internalize the cost**

- Merges

- **Social norms** (be nice)



Ronald Coase
(1910 - 2013)

Reaching the social optimum (II)

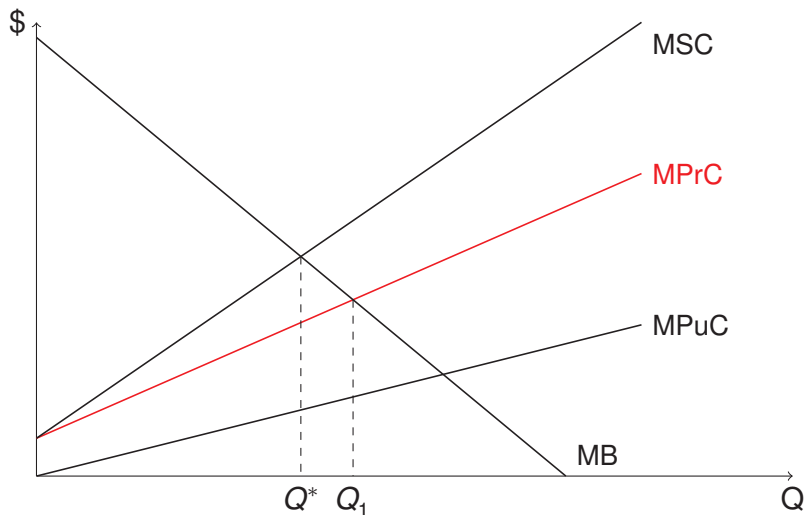
Public intervention:

- **Pigouvian tax**
- **Pigouvian subsidy**
- **Emission fees**
- **Cap & trade programs**

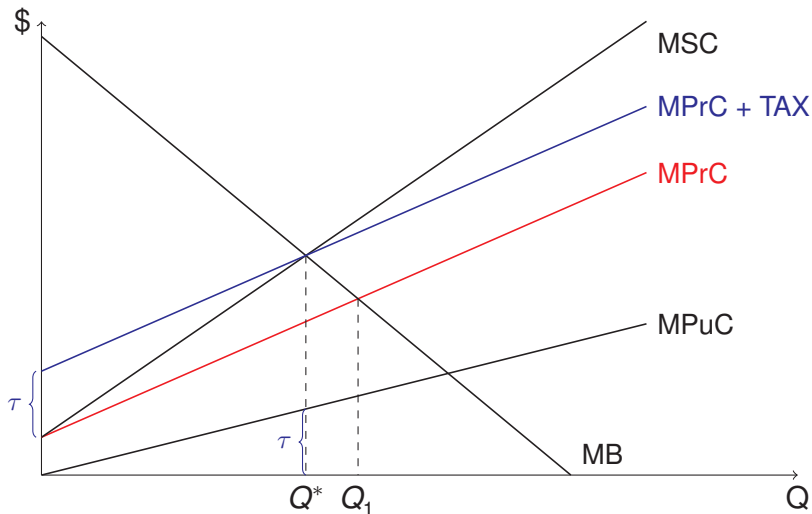


Arthur Cecil
Pigou
(1877 - 1959)

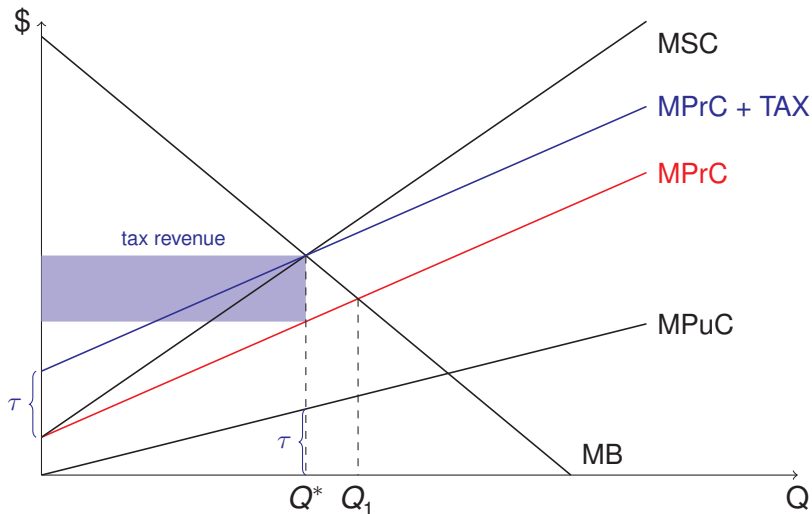
Reaching the social optimum



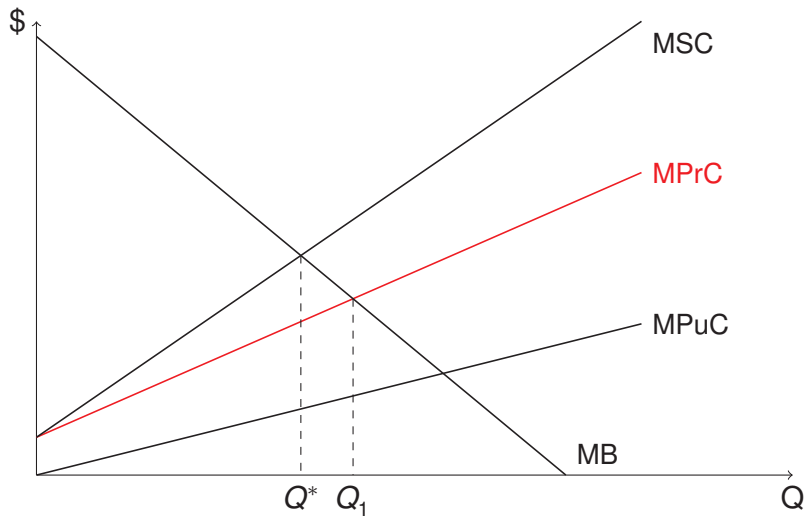
Reaching the social optimum - Pigouvian Tax



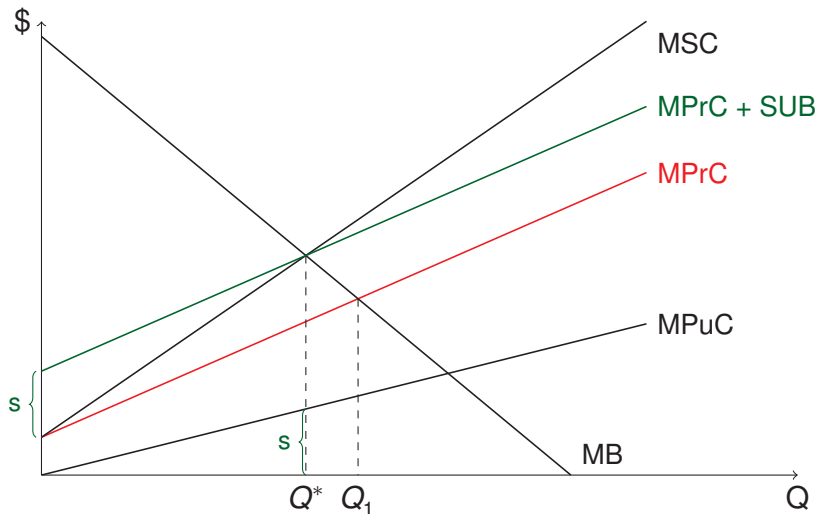
Reaching the social optimum - Pigouvian Tax



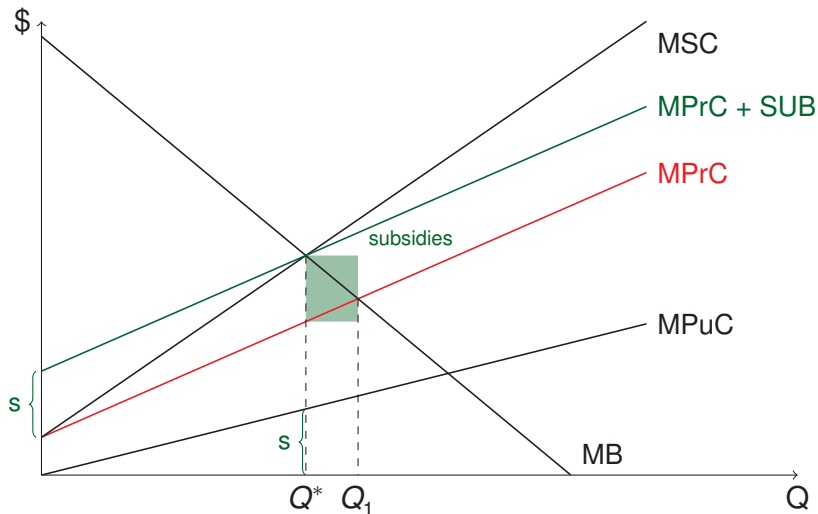
Reaching the social optimum - Fig. Subsidy



Reaching the social optimum - Fig. Subsidy



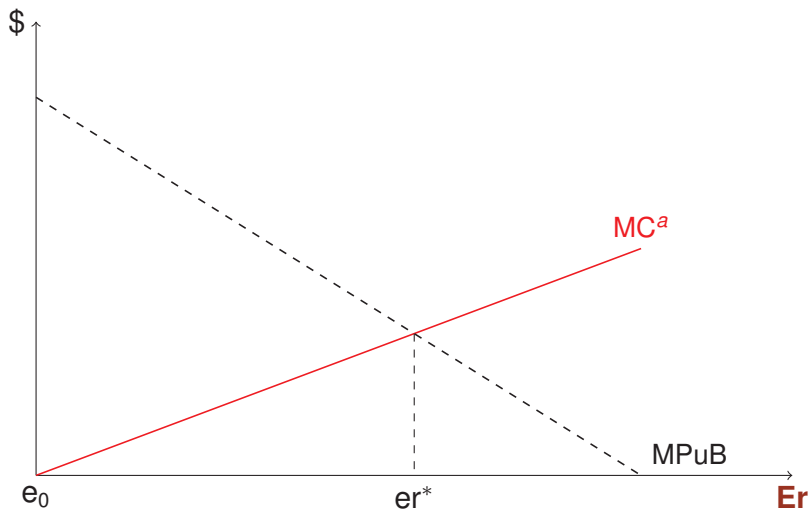
Reaching the social optimum - Fig. Subsidy



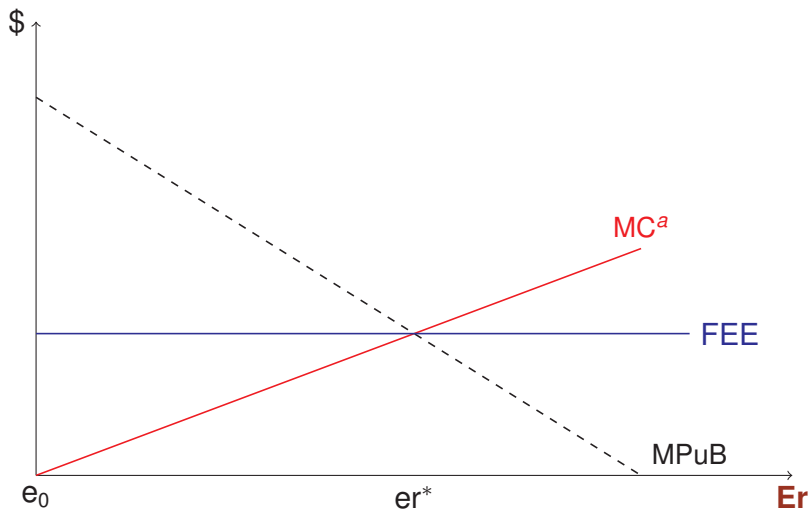
Pigouvian tax and subsidies

- **Subsidy** same effect as **Taxes**
- **Problems**
 - Quantifying the exact social cost is hard
 - **Subsidy** distorts supply & attracts polluters
 - Quantity perhaps the wrong target
 - With such tax/subsidy, no incentive to improve technology

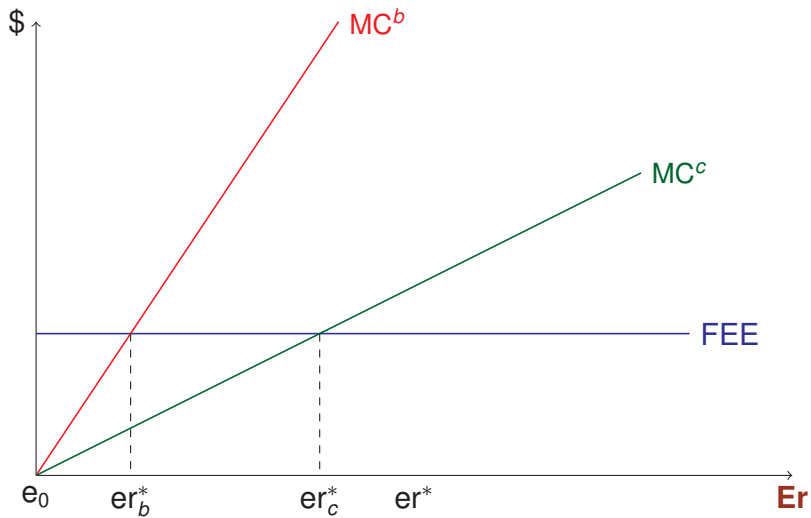
Emission fee



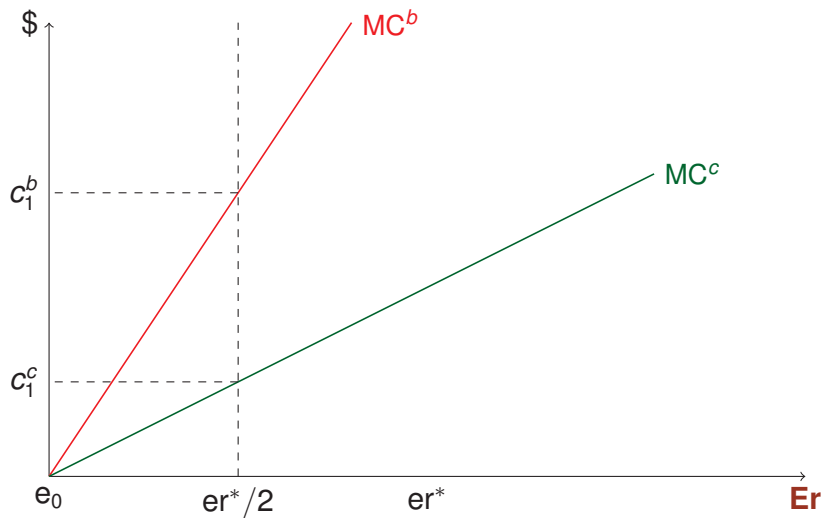
Emission fee



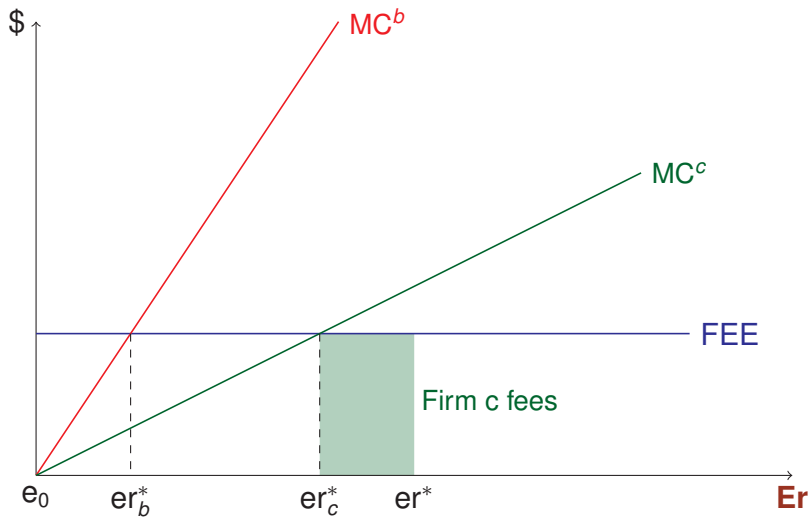
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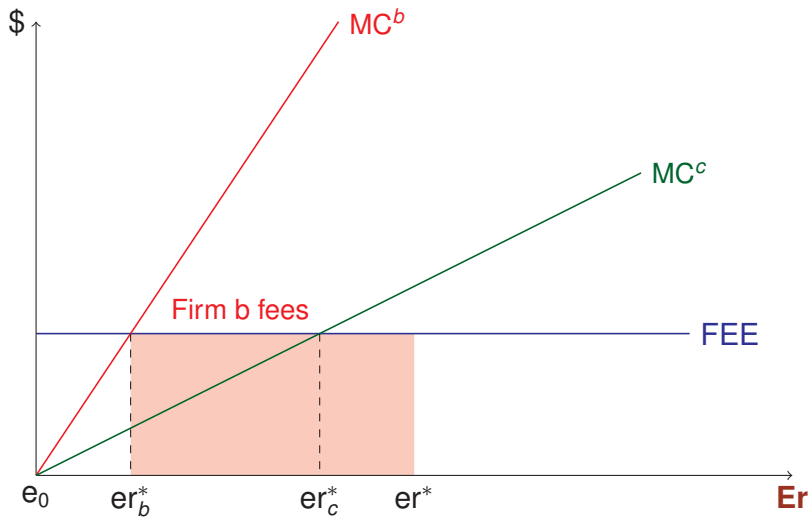
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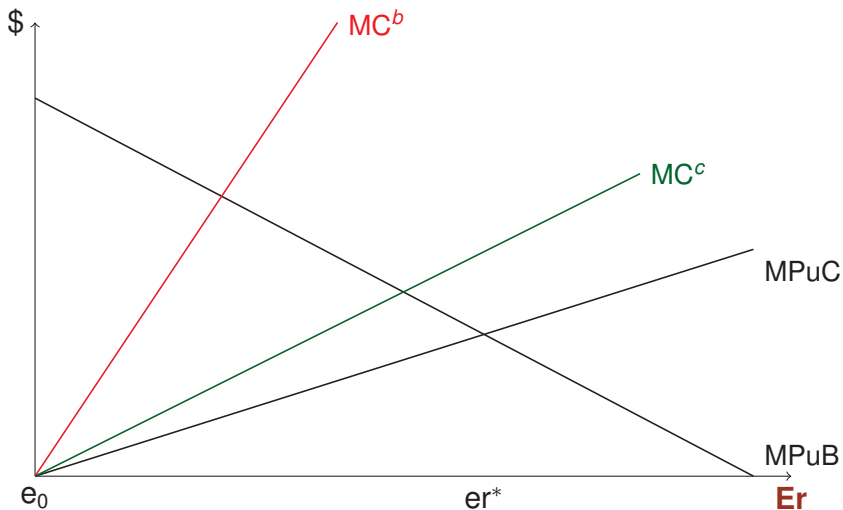


Cap & trade system

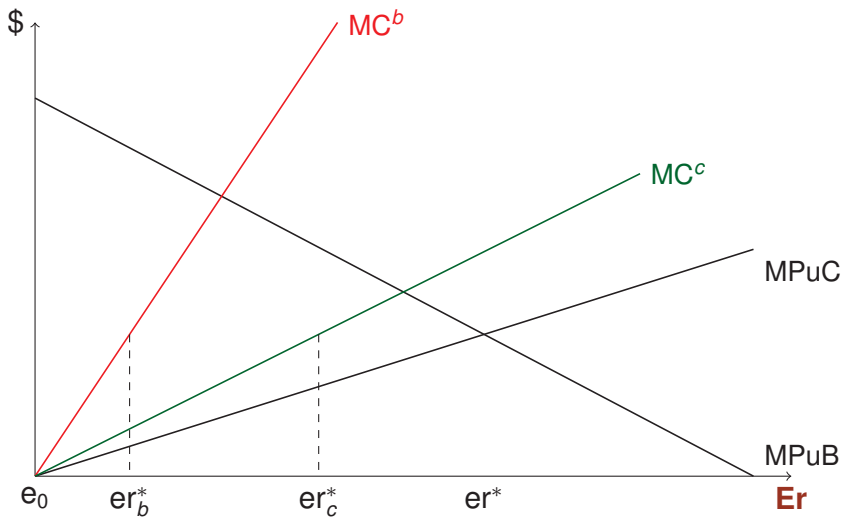
Designed for markets with multiple firms

- ① Set efficient amount of emission reduction
- ② Emit (fixed supply) of permits for polluting
- ③ Firms trade

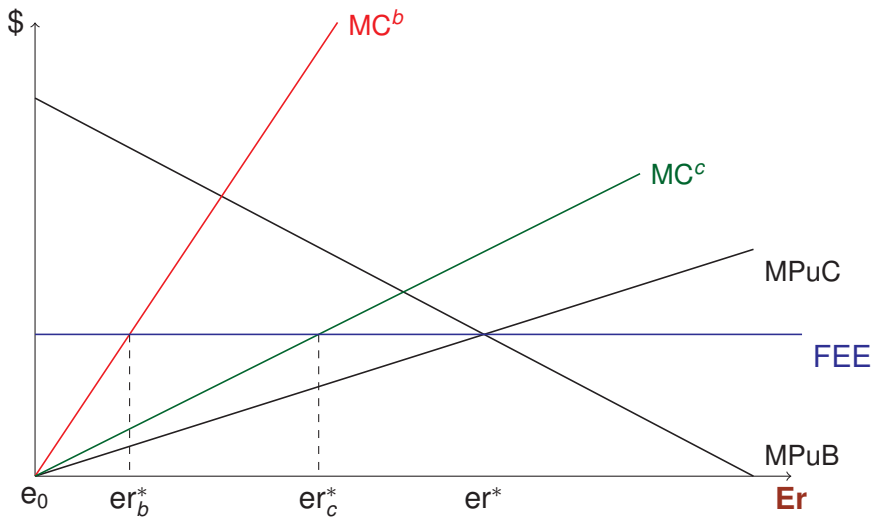
Cap & Trade system



Cap & Trade system



Cap & Trade system

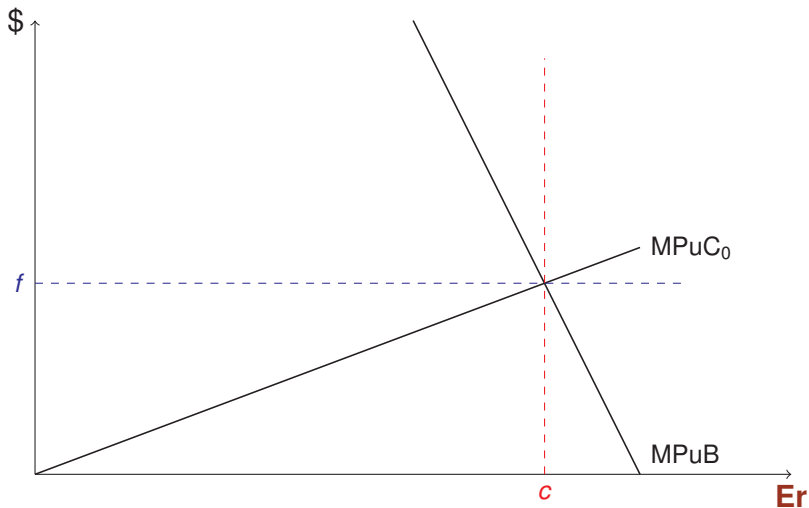


Fixing quantity VS fixing costs

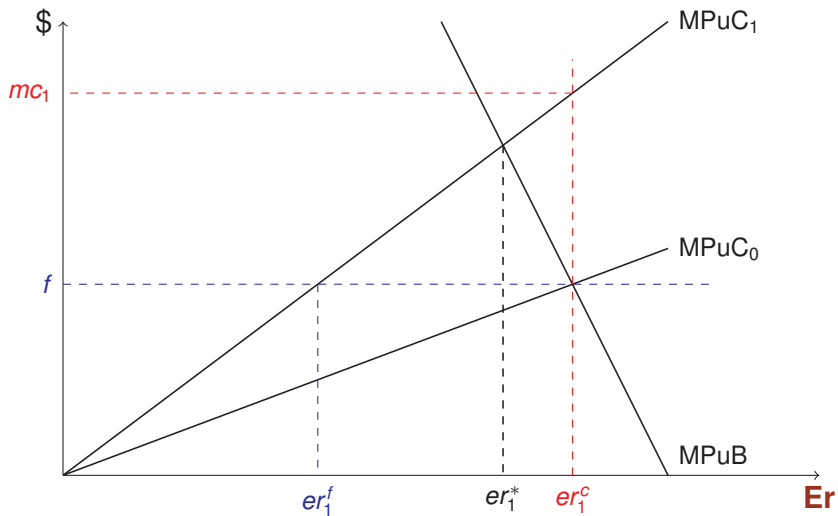
	Fee	C&T
Inflation	X	✓
Increasing costs	X	X
	↗ emissions	↗ costs

- **Safety valve**
- In general, which system is best depends on the **elasticity of the marginal public benefits**

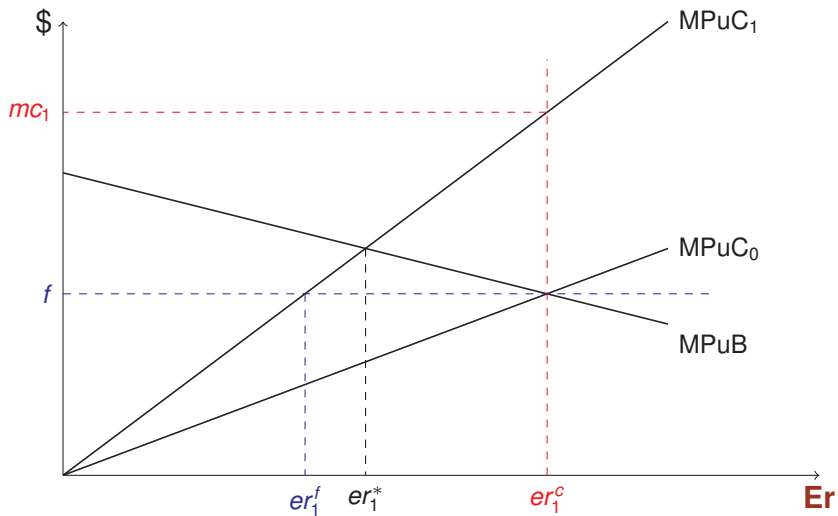
Uncertainty in costs - **inelastic** benefits



Uncertainty in costs - **inelastic** benefits



Uncertainty in costs - **elastic** benefits



The real world of Human-land

- **Incentive-based** approaches
 - **Most efficient**
 - **Self-maintaining**
 - **Emissions must be monitorable**
 - **Drawbacks** (hot spots) solvable only by increasing complexity
 - **People are st simple** and like simple stuff
- **Command and control** approaches (standards)
 - **Simple** to understand and foolproof
 - **Used in real life**
 - **Very costly**
 - **Require constant deliberations**
 - **Subject to corruption/lobbying**

Who bears the costs?

- E.g. Factory jobs
- **Meatonomics**
 - Market value of meat consumption in US: \$250B
 - Estimated external cost by meat consumption in US: \$414B
 - Most in taxpayer's money (subsidy, healthcare...)

Positive externalities

- **Education?**
 - E.g. because ↘ crime
- **Owner-occupied housing**