

Public Economics

Lec 4: Externalities

Alessandro Martinello

alfa 4035B

alessandro.martinello@nek.lu.se



LUND UNIVERSITY

School of Economics and Management

AM's reminders

- Essay information
- **The price we pay**, CPH-DOX

Readings

- **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

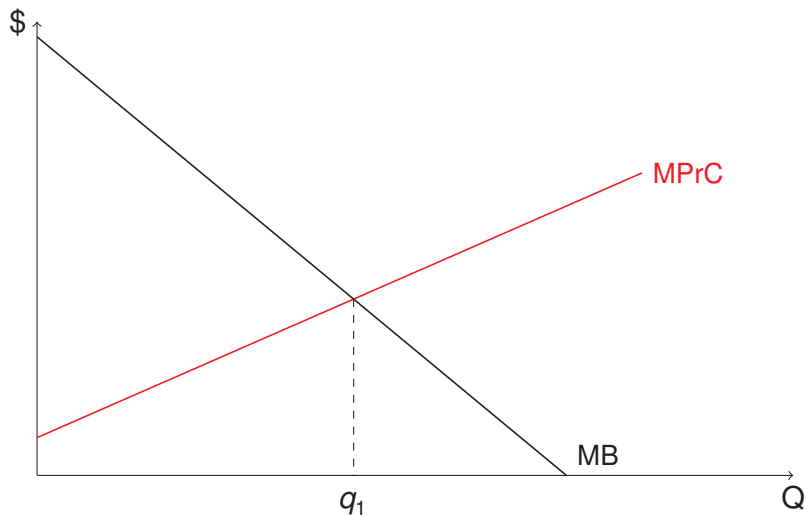
Whenever the action of A affects the welfare of B

- Effect **not** through market price

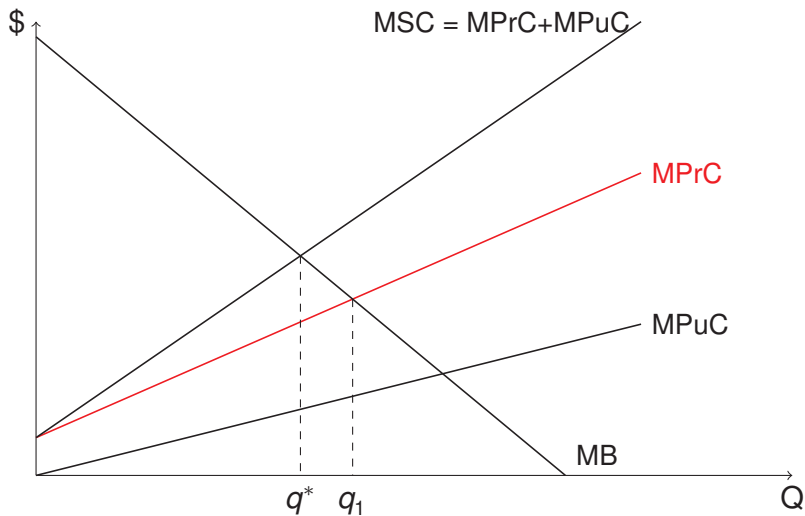
Cost not fully borne by active agent (not **internalized**)

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

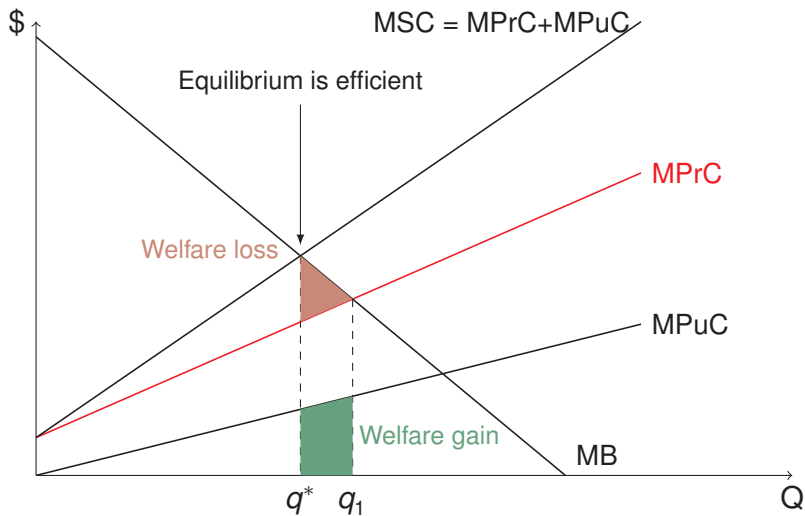
Inefficiency from externalities



Inefficiency from externalities



Inefficiency from externalities



Externalities:

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

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 des not exists!**

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

Reaching the social optimum (II)

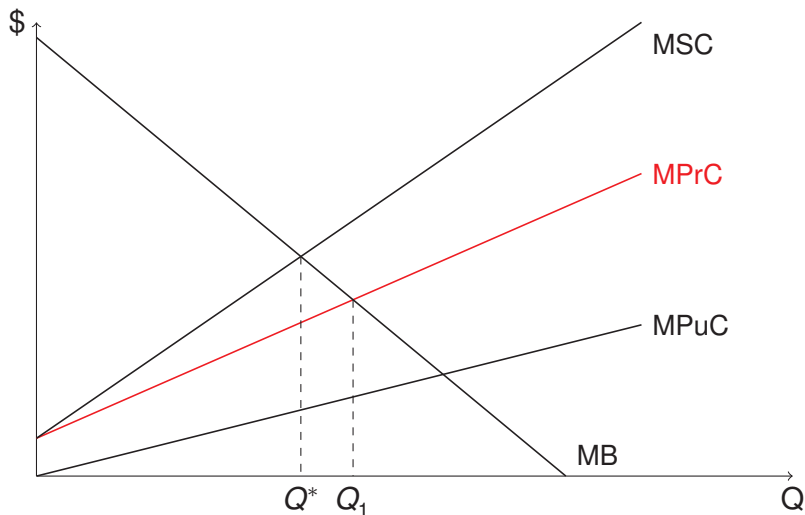
Public intervention:

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

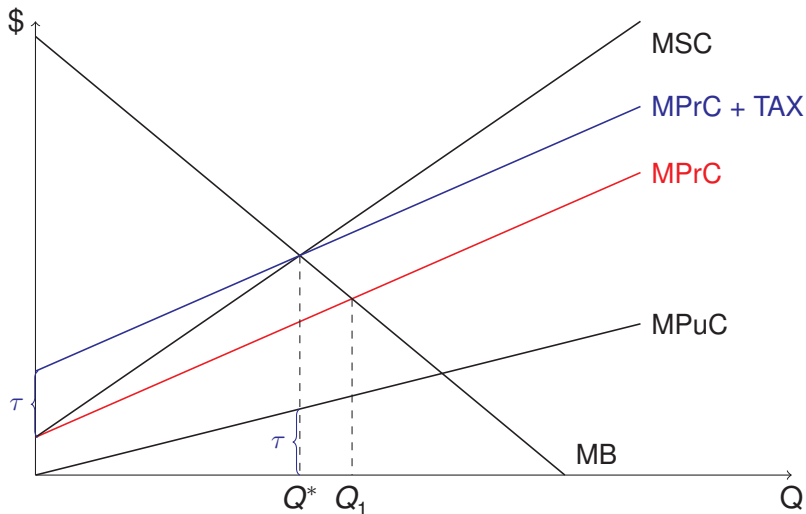


Arthur Cecil
Pigou
(1877 - 1959)

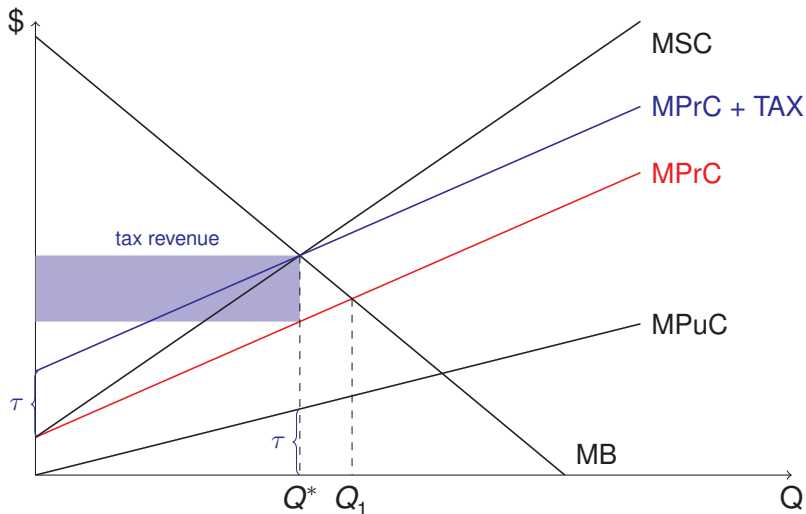
Reaching the social optimum



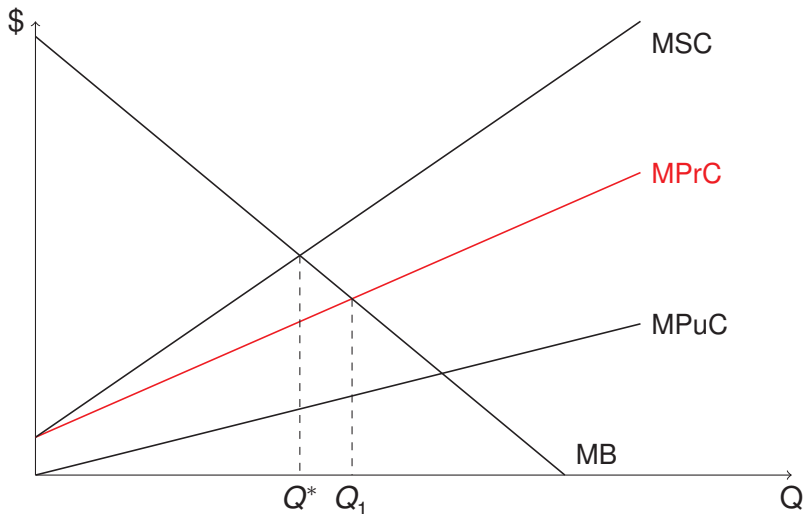
Reaching the social optimum - Pigouvian Tax



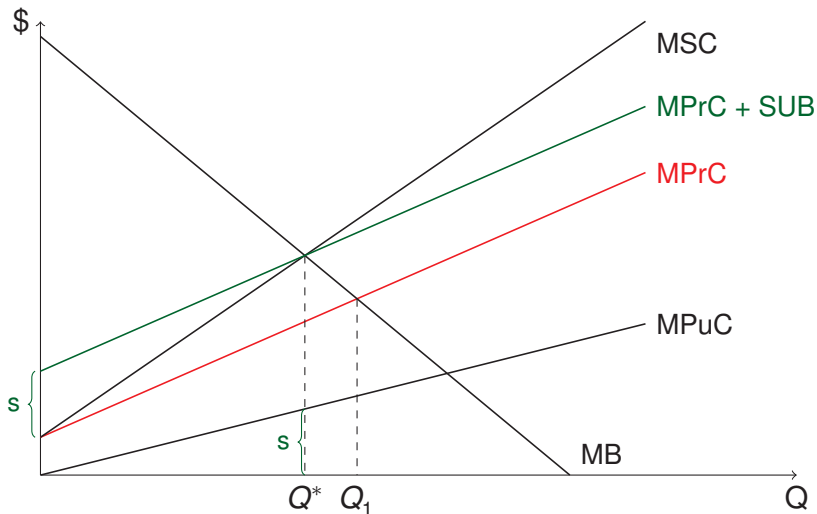
Reaching the social optimum - Pigouvian Tax



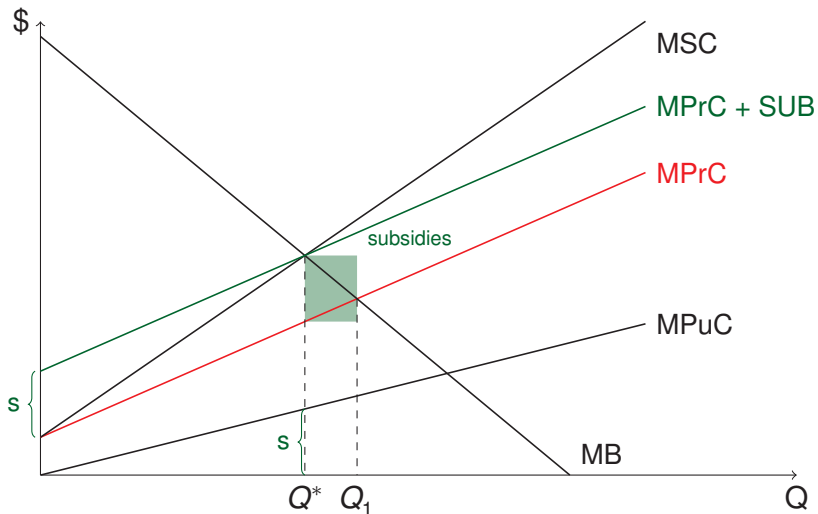
Reaching the social optimum - Fig. Subsidy



Reaching the social optimum - Fig. Subsidy



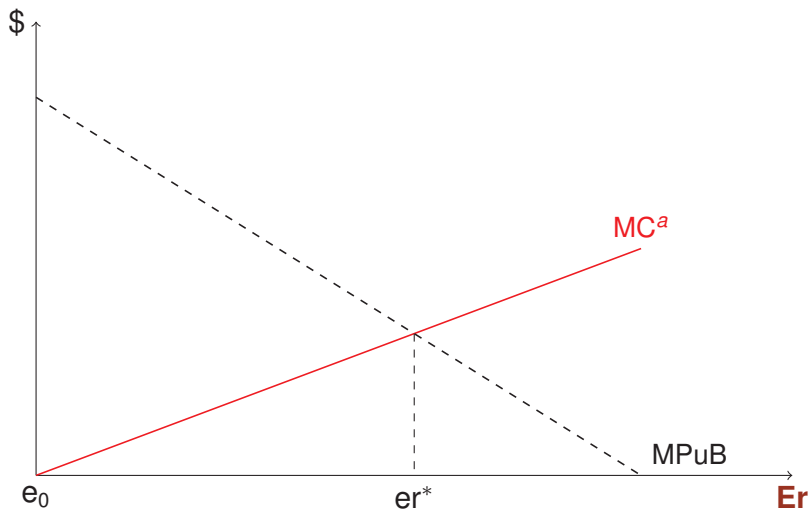
Reaching the social optimum - Fig. Subsidy



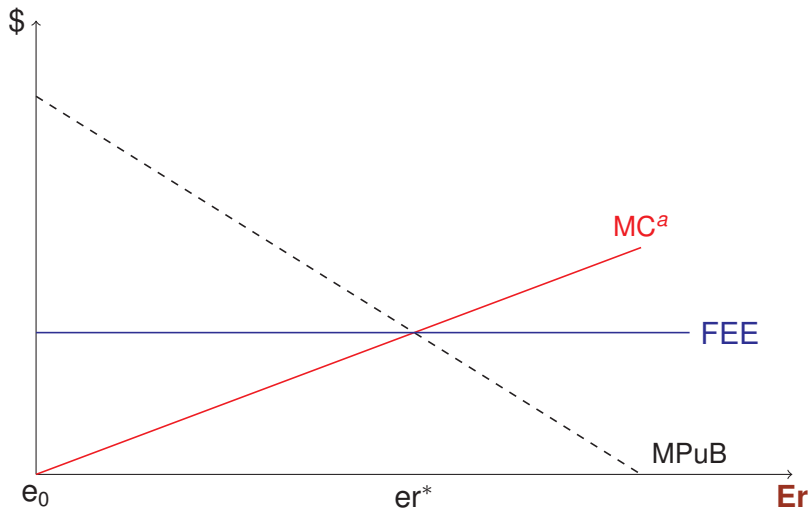
Pigouvian tax and subsidies

- **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

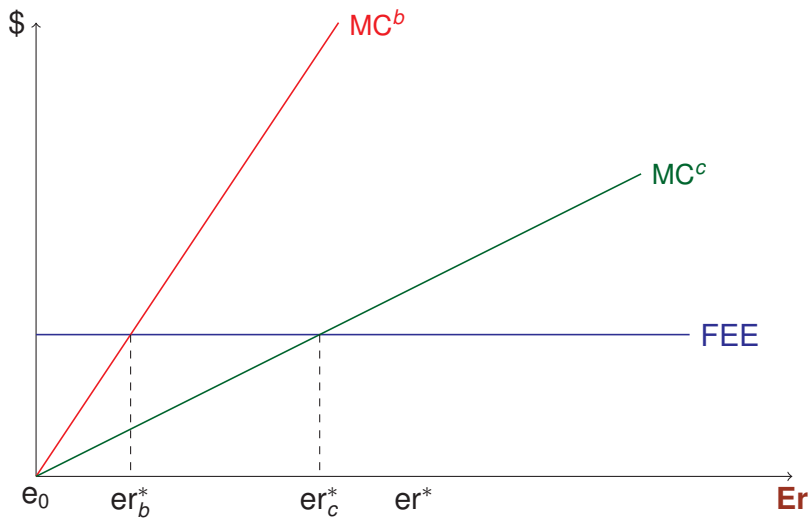
Emission fee



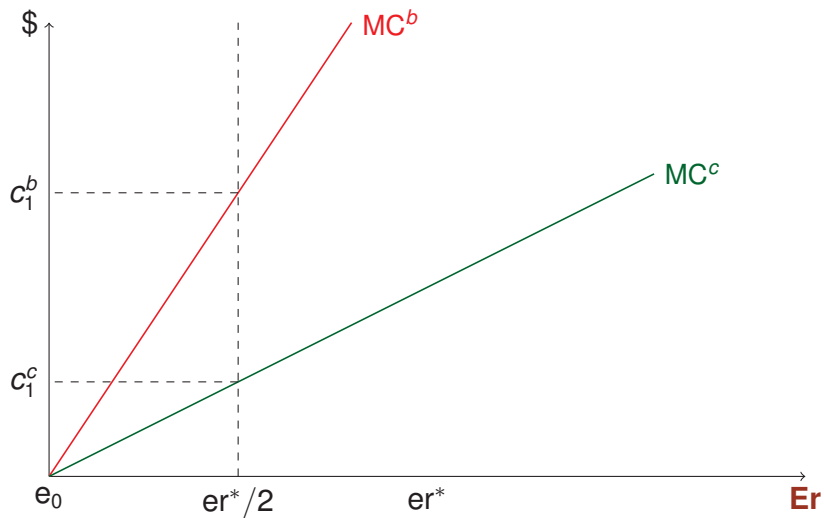
Emission fee



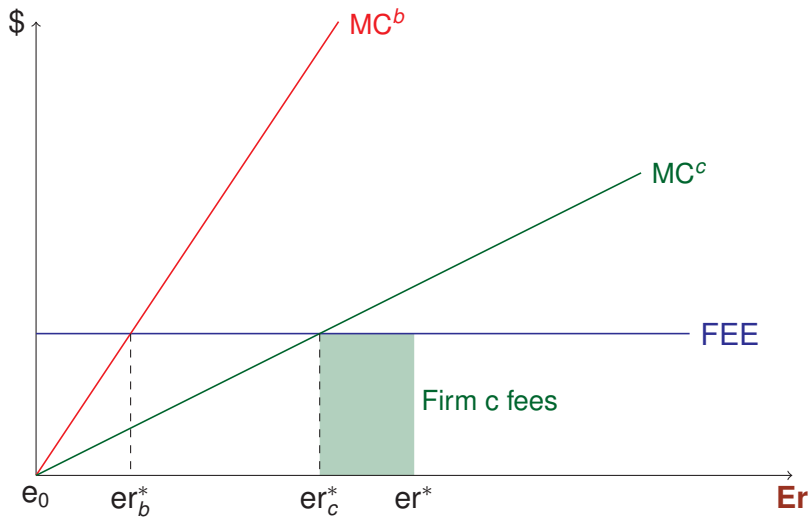
Emission fee



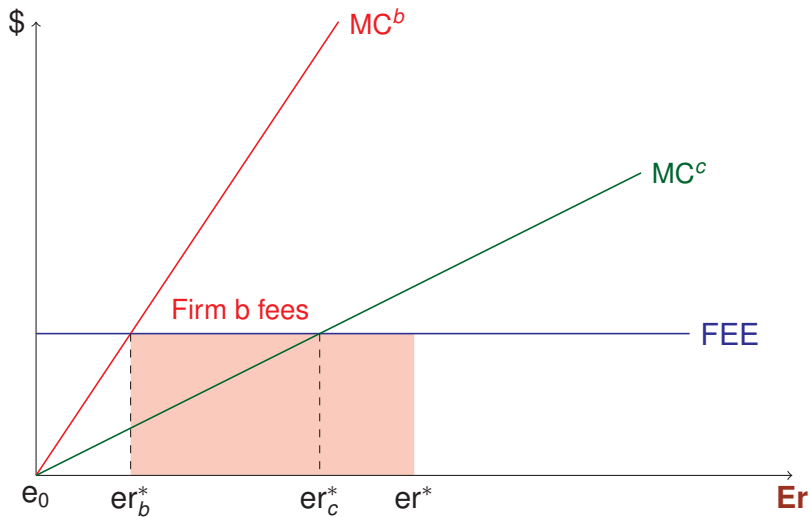
Emission fee



Emission fee



Emission fee

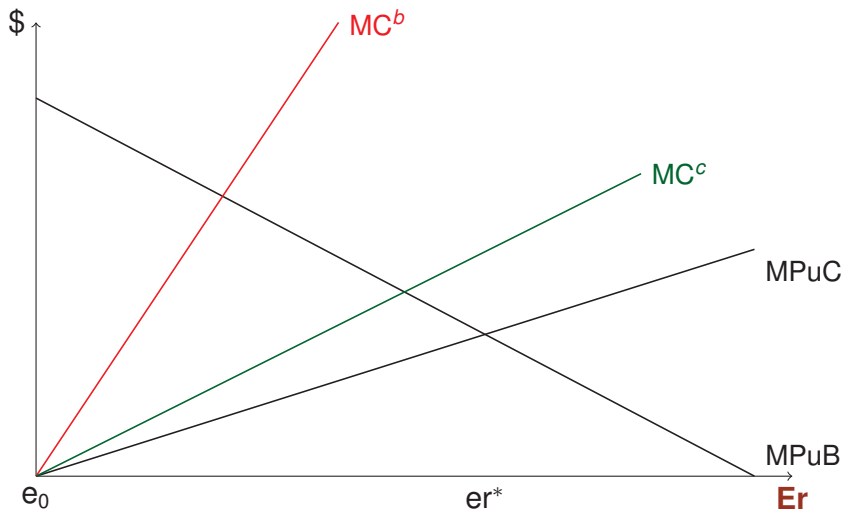


Cap & trade system

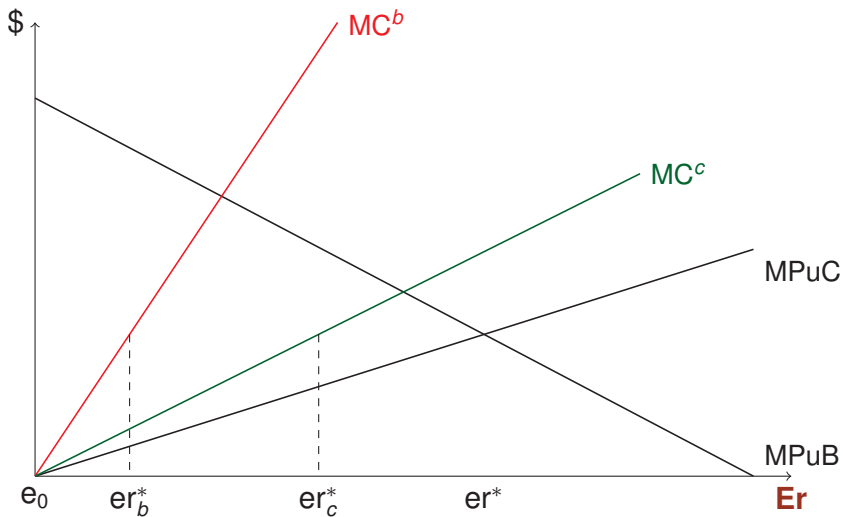
Designed for markets with multiple firms

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

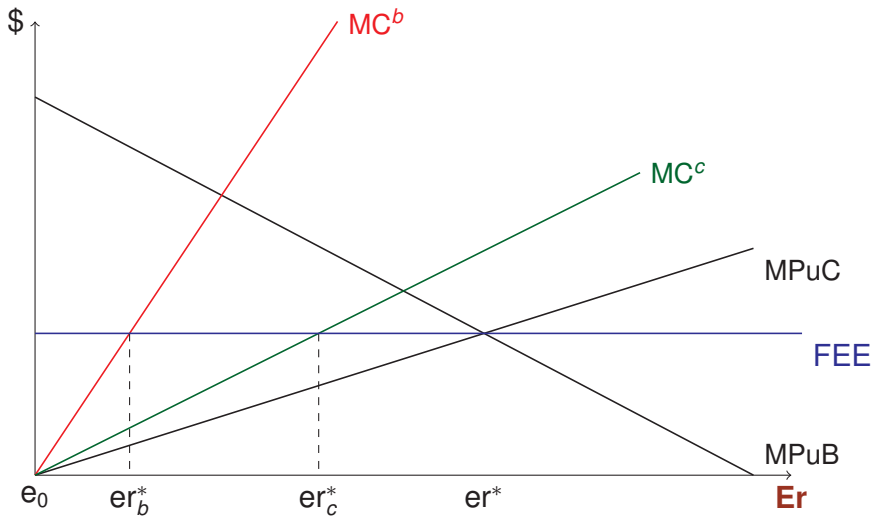
Cap & Trade system



Cap & Trade system



Cap & Trade system

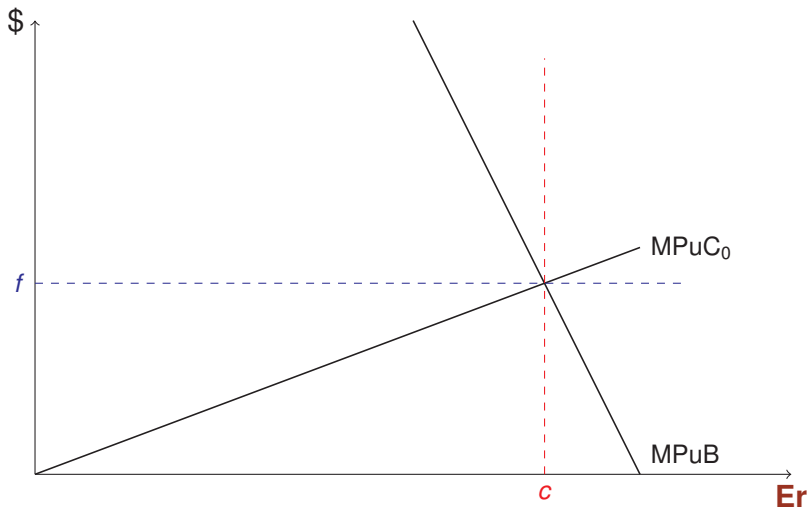


Fixing quantity VS fixing costs

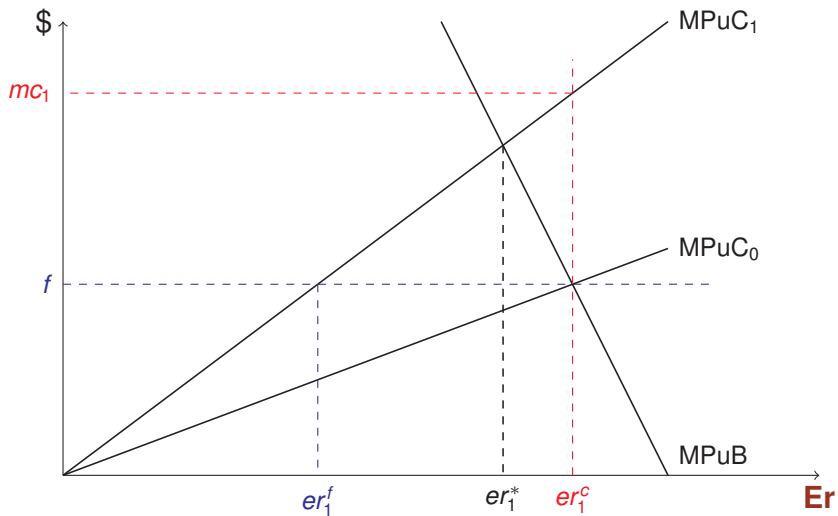
	Fee	C&T
Inflation	X	✓
Increasing costs	X	X
	↗ emissions	↗ costs

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

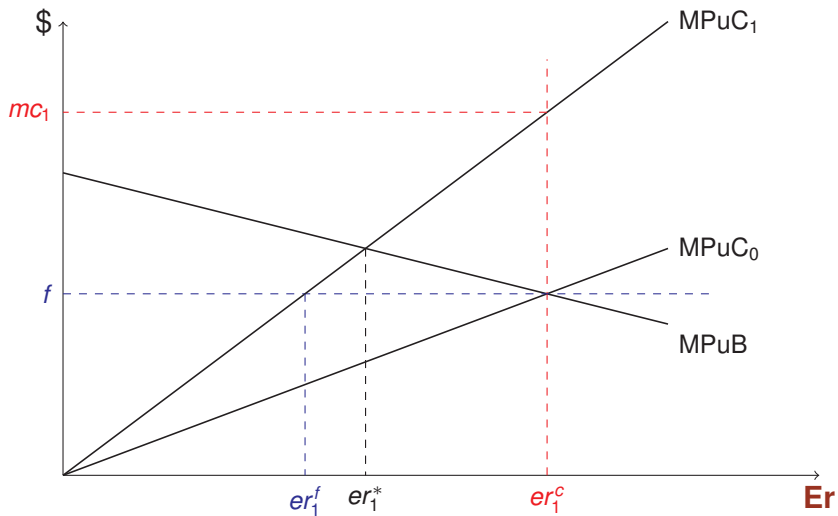
Uncertainty in costs - **inelastic** benefits



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
 - **Simple** to understand and foolproof
 - **Used in real life**
 - **Very costly**
 - **Require constant deliberations**
 - **Subject to corruption**