



CHEMVISION
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Pressurizing the boiler

Steam or Hot Air?

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Author of 'De ware energiefactuur'

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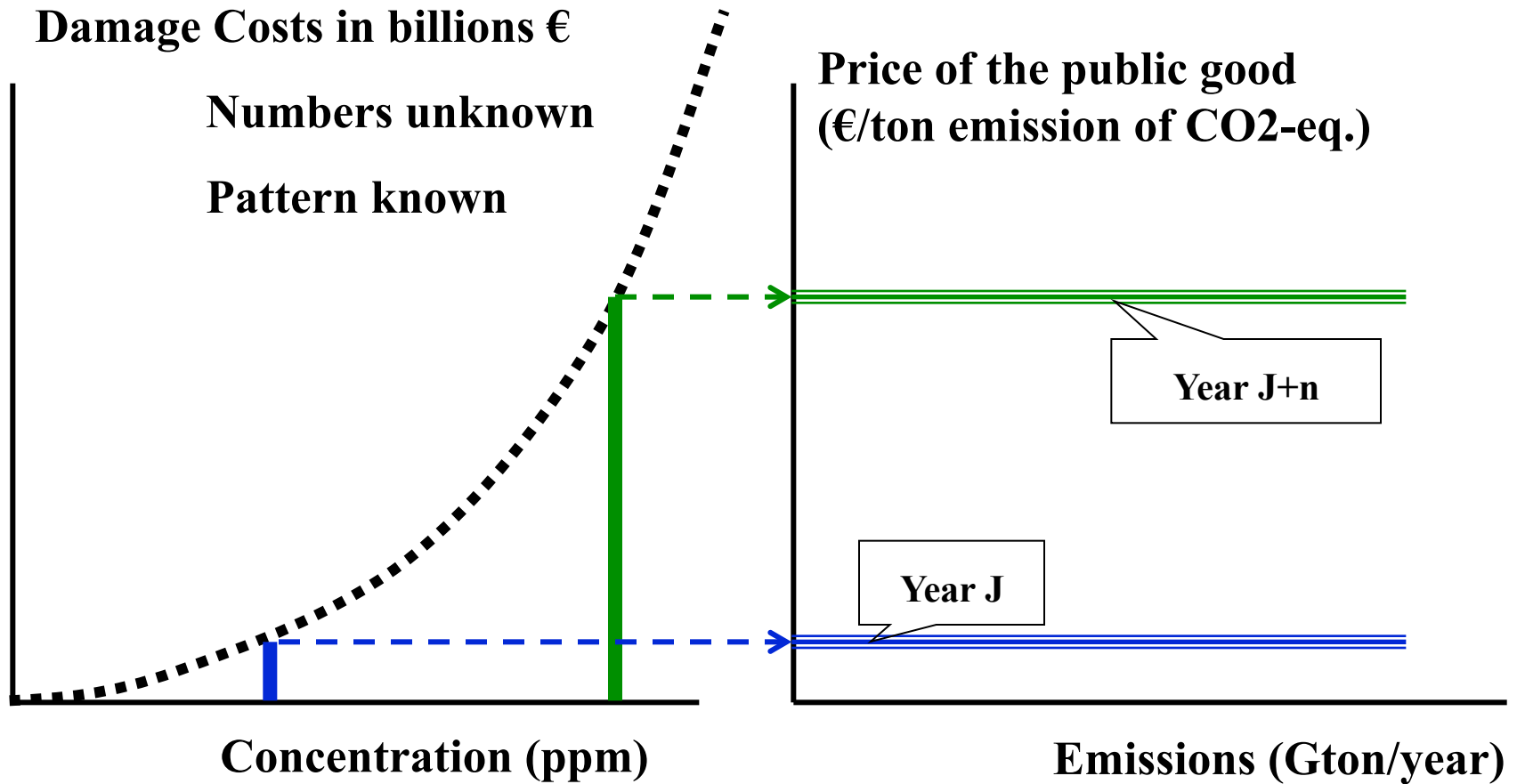


Overview

- **BASICS**
 - **Carbon Emission Price Pattern**
 - **Marginal Cost Functions Emission reduction**
 - **Prices versus Quota**
 - **Aggregation and Markets**
- **EU-ETS**
 - **Functioning and Effects**
- **STATEMENTS**

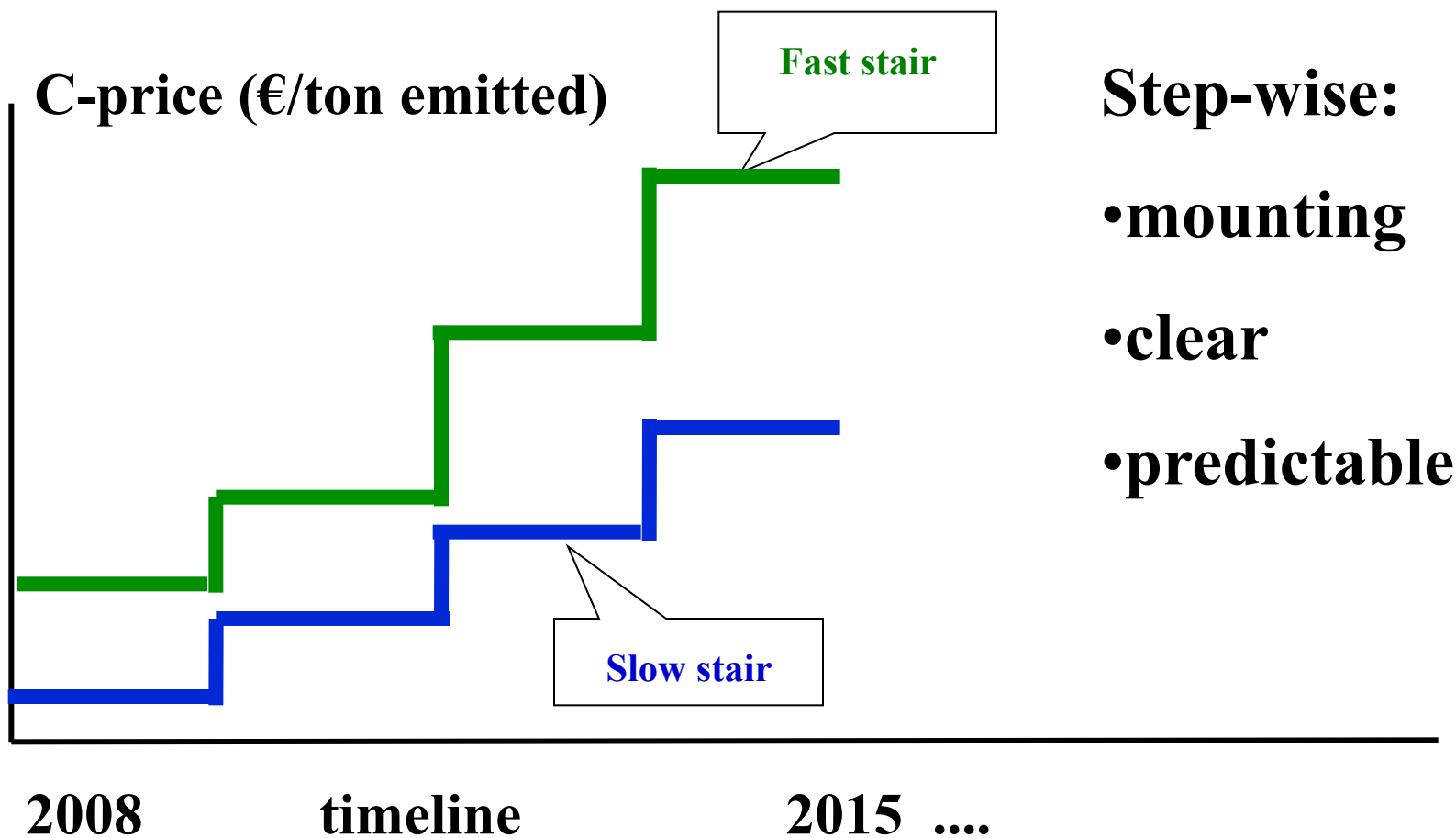


Real price of CO₂-eq. emissions





Real Carbon Prices over time



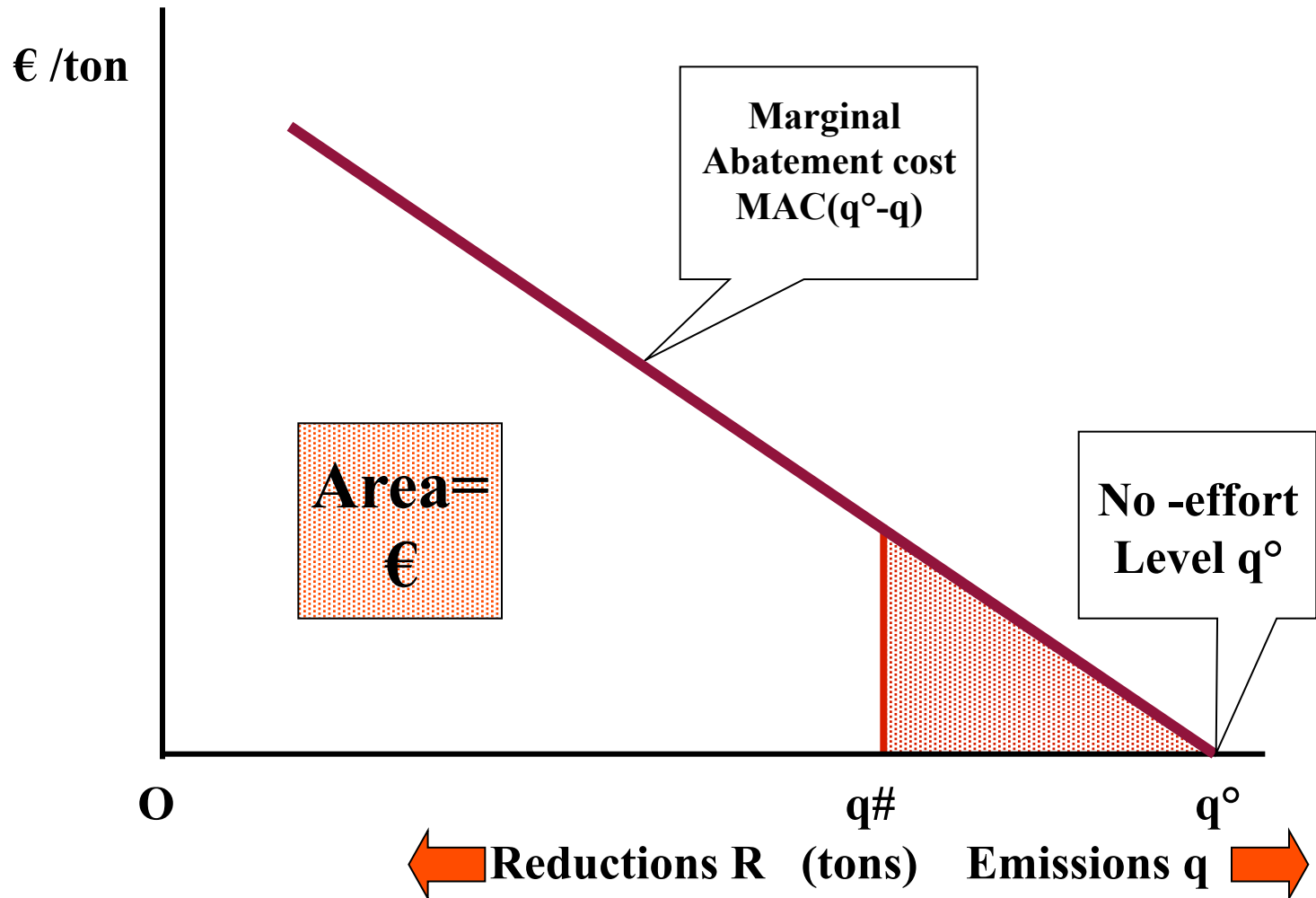
- Step-wise:**
- mounting
 - clear
 - predictable



Single Polluter

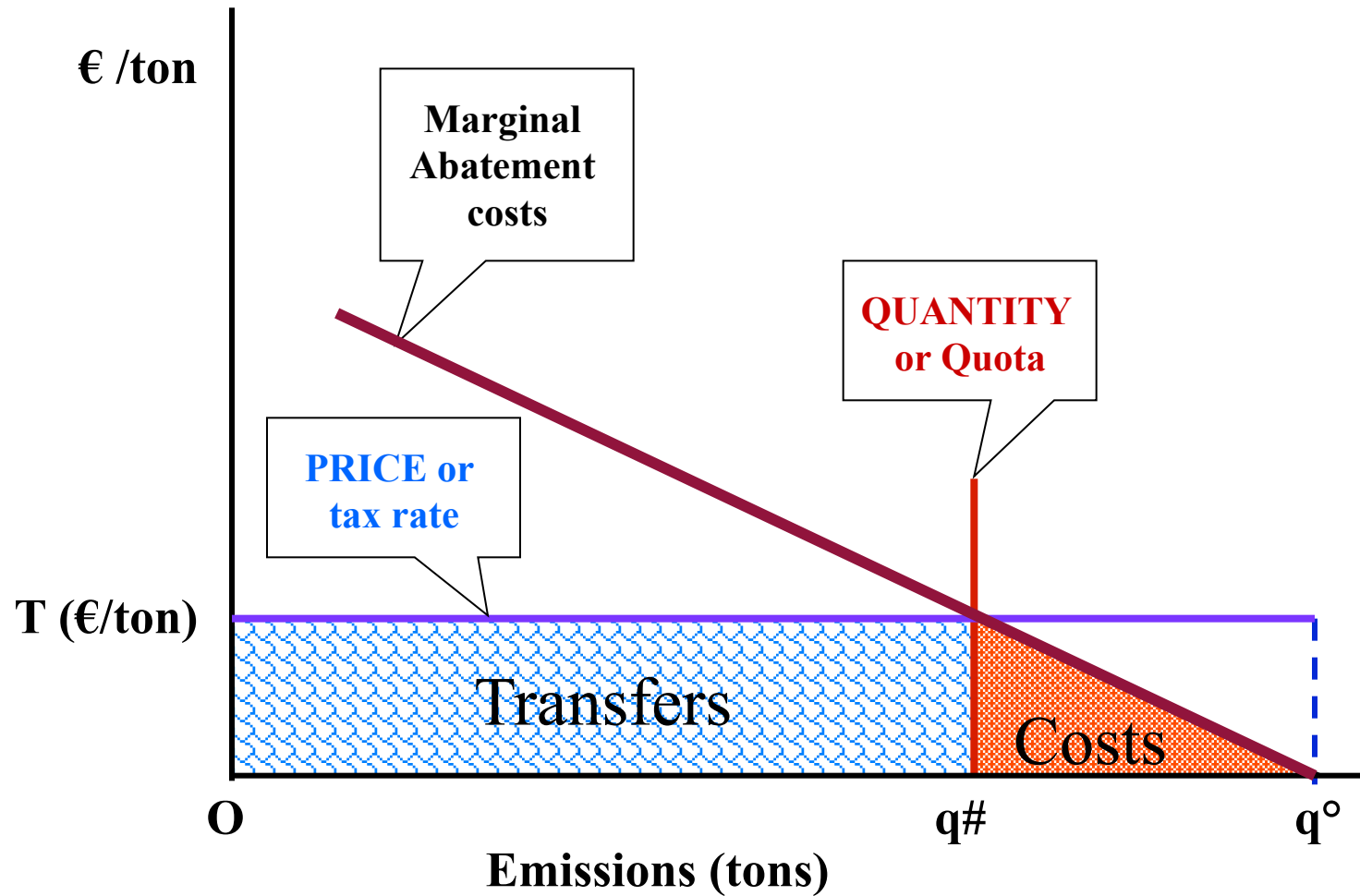
Abatement Cost $AC(R) = AC(q^\circ - q)$

Marginal Abatement Cost



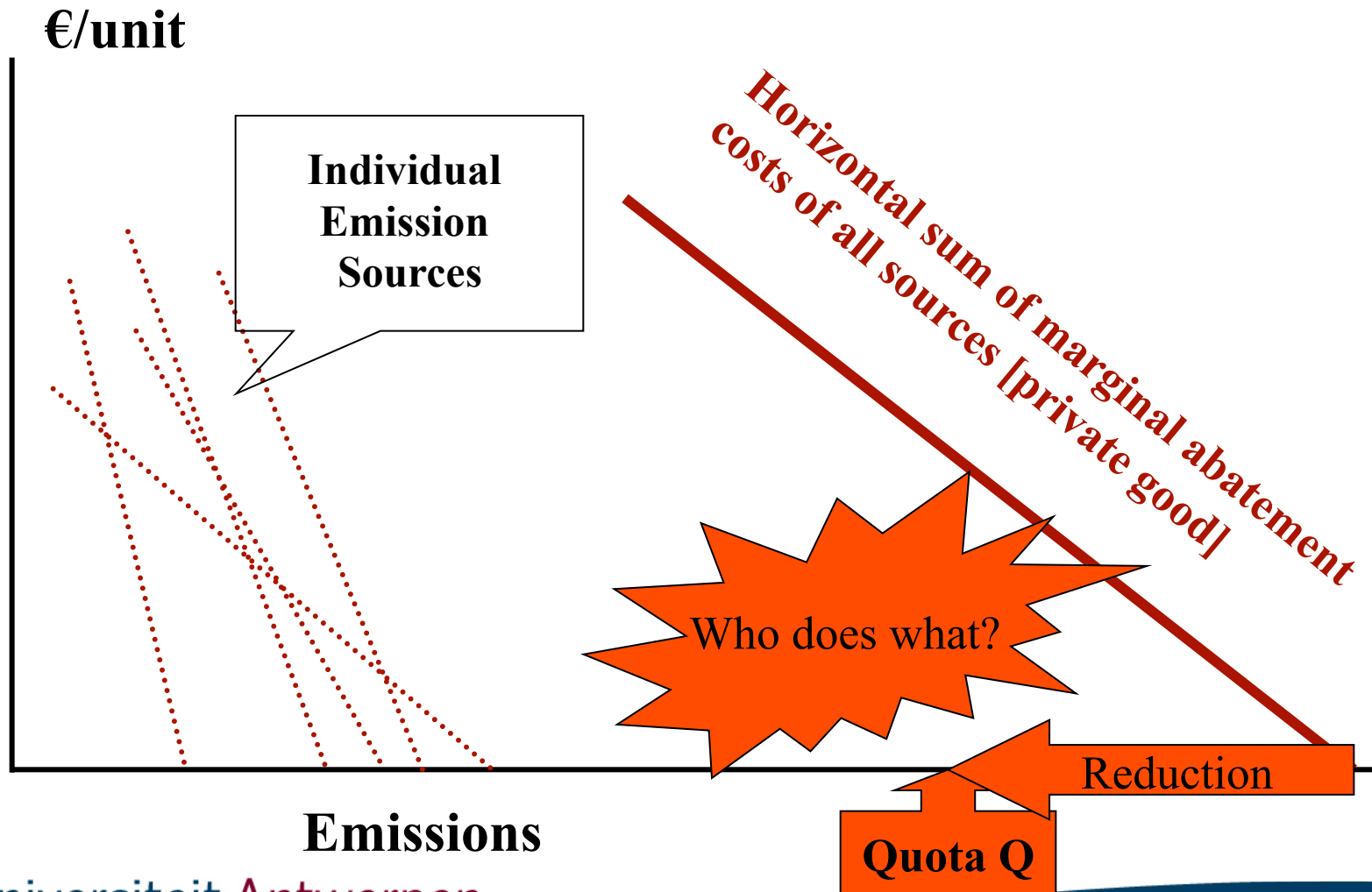


Price versus Quantity Financial Flows



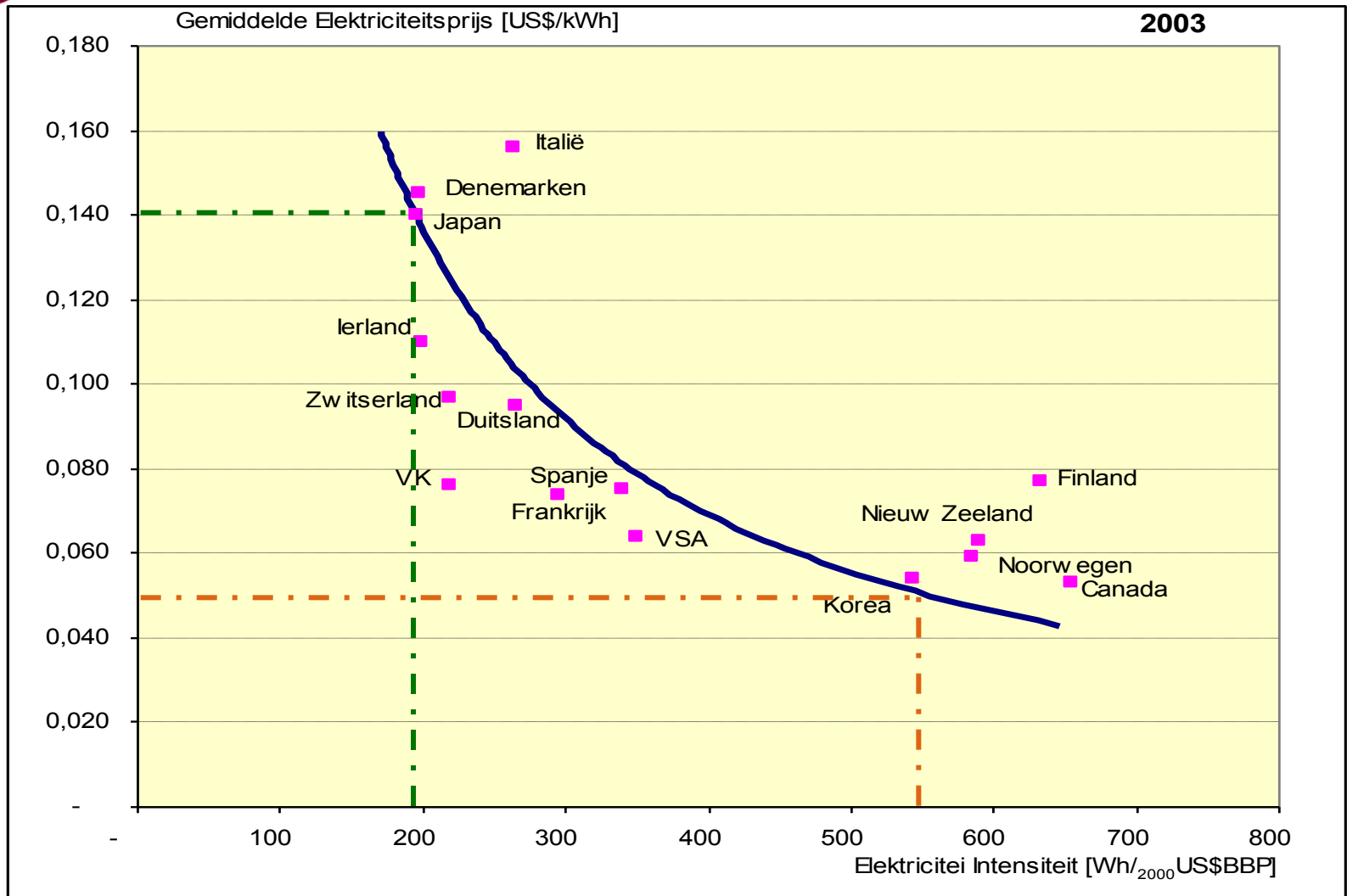


Society: Aggregate $\Sigma_i MAC_i$



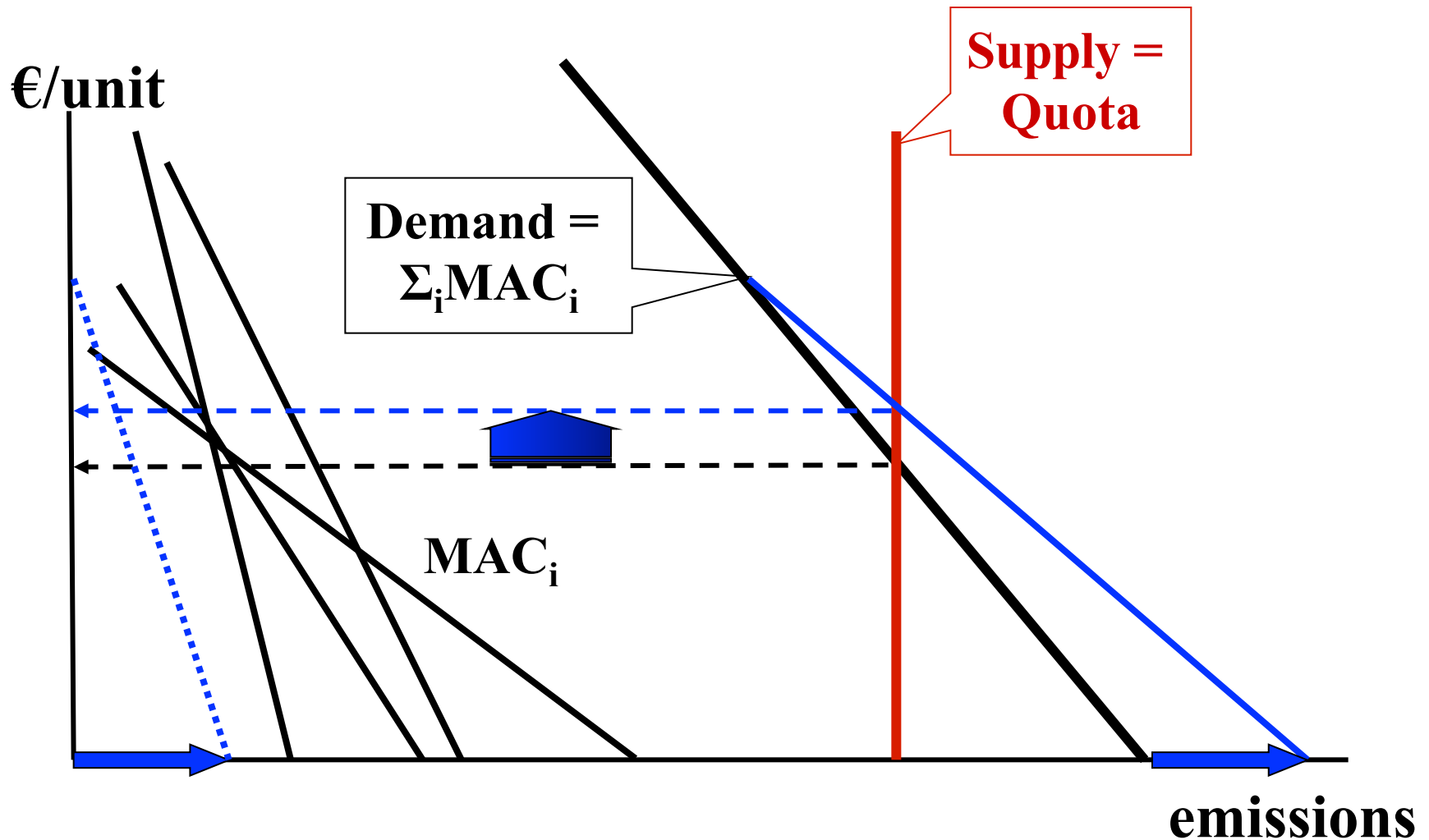


MAC of Electricity Intensity





Tradable Permits: market mechanism





ET is Hybrid of Tax and Permit: What colour has the chameleon?

Type of Assignment of permits

TAX

- **Yearly full auction (renting)**
- **Open auction every few years**
- **Auction of futures and options**
- **Partly auctions / partly gifts**
- **Assign permits to $MAC_i = \lambda$**

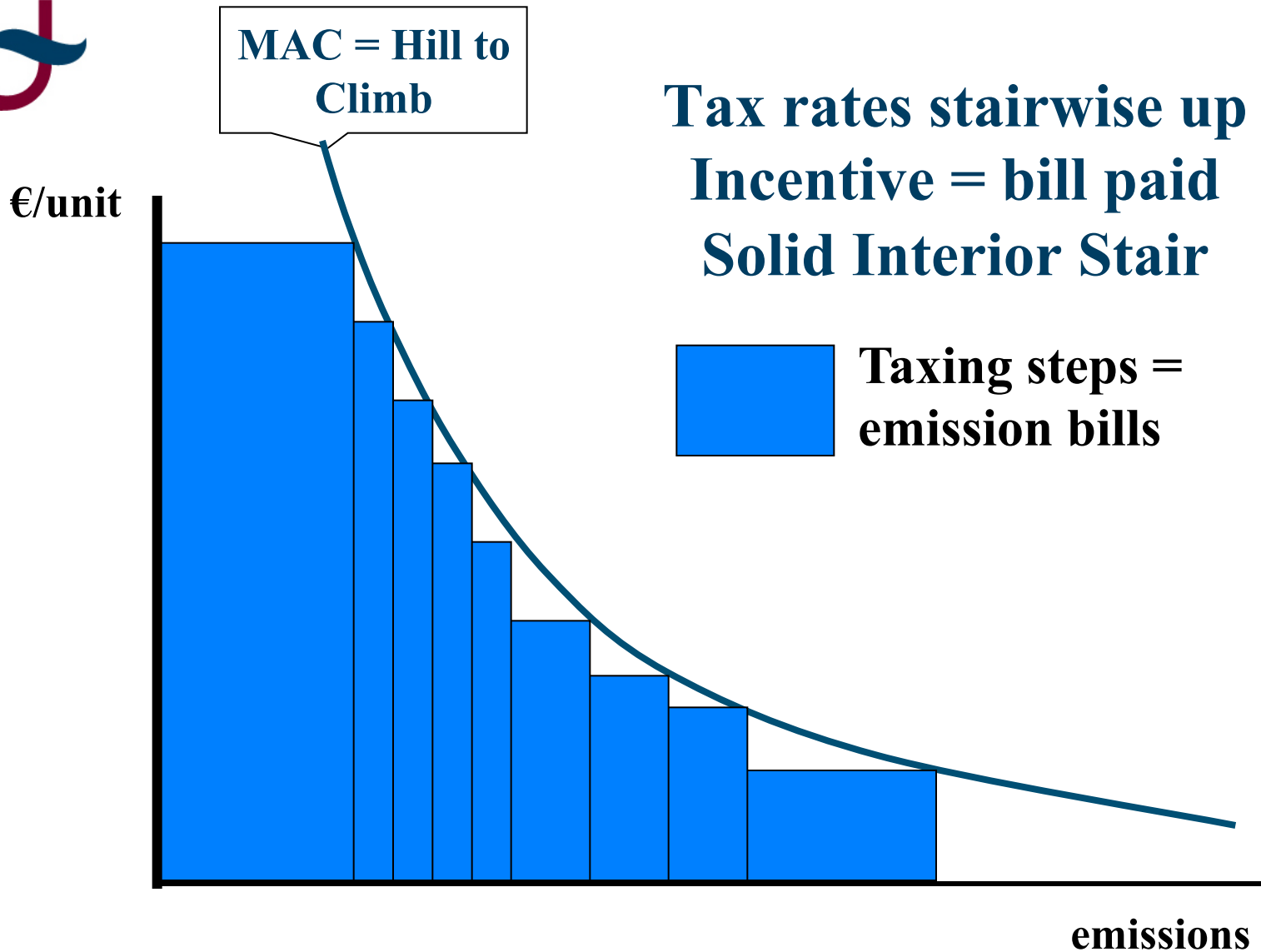
PERMIT

- **Grandfathering**
- **Gifted along expected emissions**



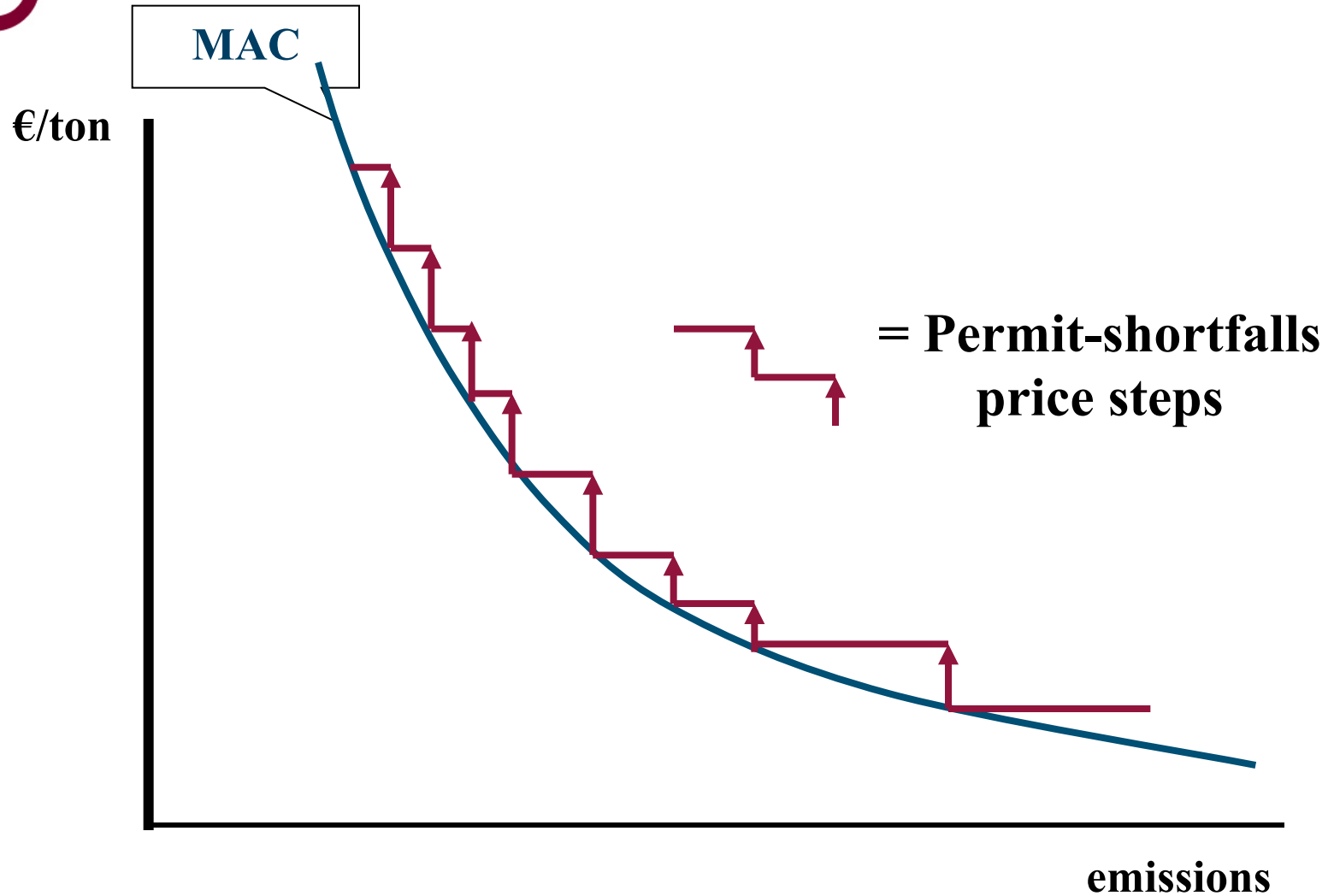
EU ETS in practice

- **Free Permits up to actual emission levels**
 - **Permit price = penalty on excess emissions**
 - **No Trade in permits; but trade in penalties**
 - **Carbon price volatile and near zero**
- **Total & Marginal costs: Tail wags Dog**
 - **Marginal is derivative of total (not the reverse)**
 - **MC-pricing optimal IFF all submarginal units also pay the marginal cost (+ convexity)**
- **Uniform Instrument on Diverse reality:**
 - **Inefficient**
 - **Source of swindle profits**



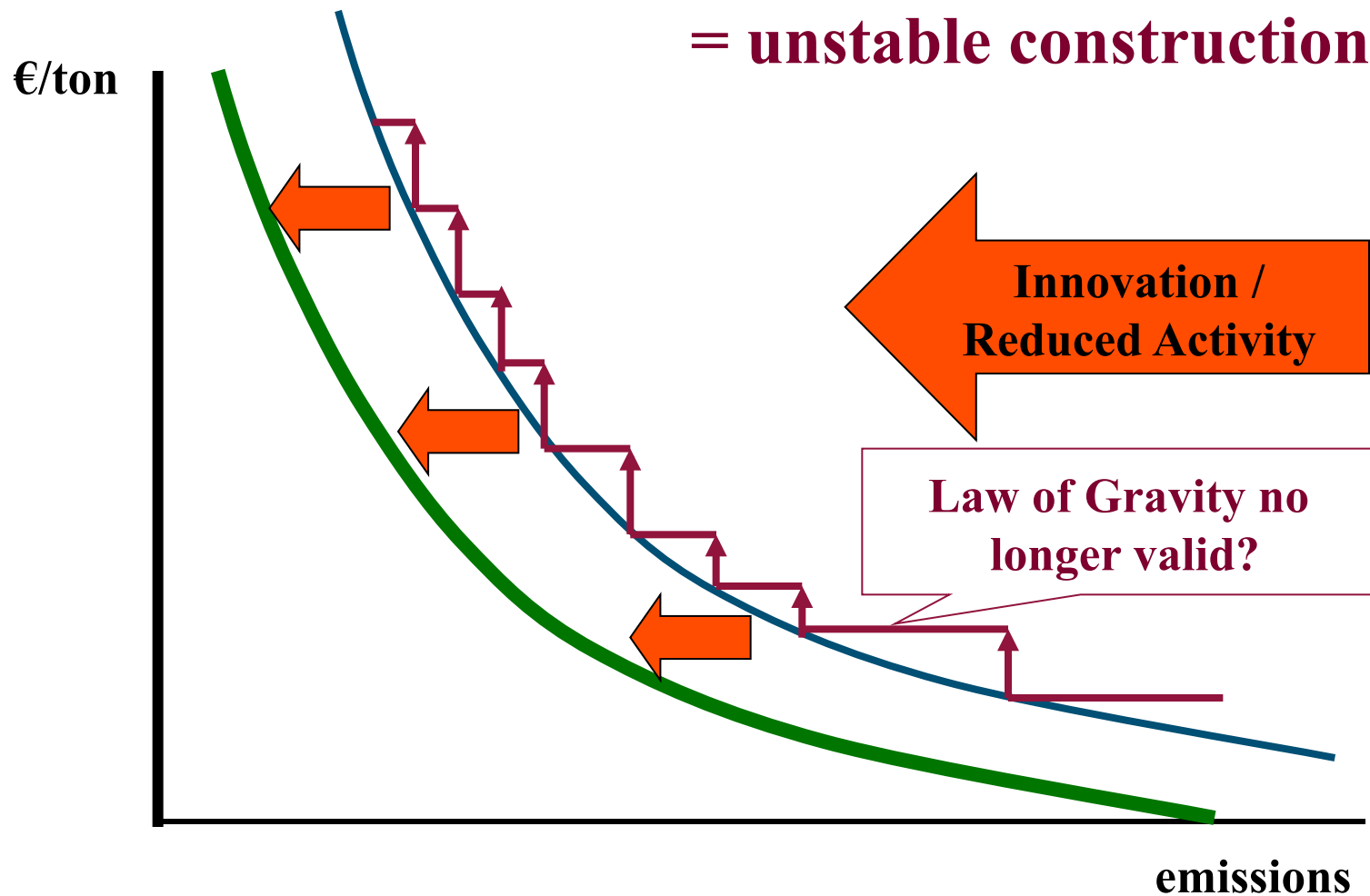


Trading permit-shortfalls = exterior stair



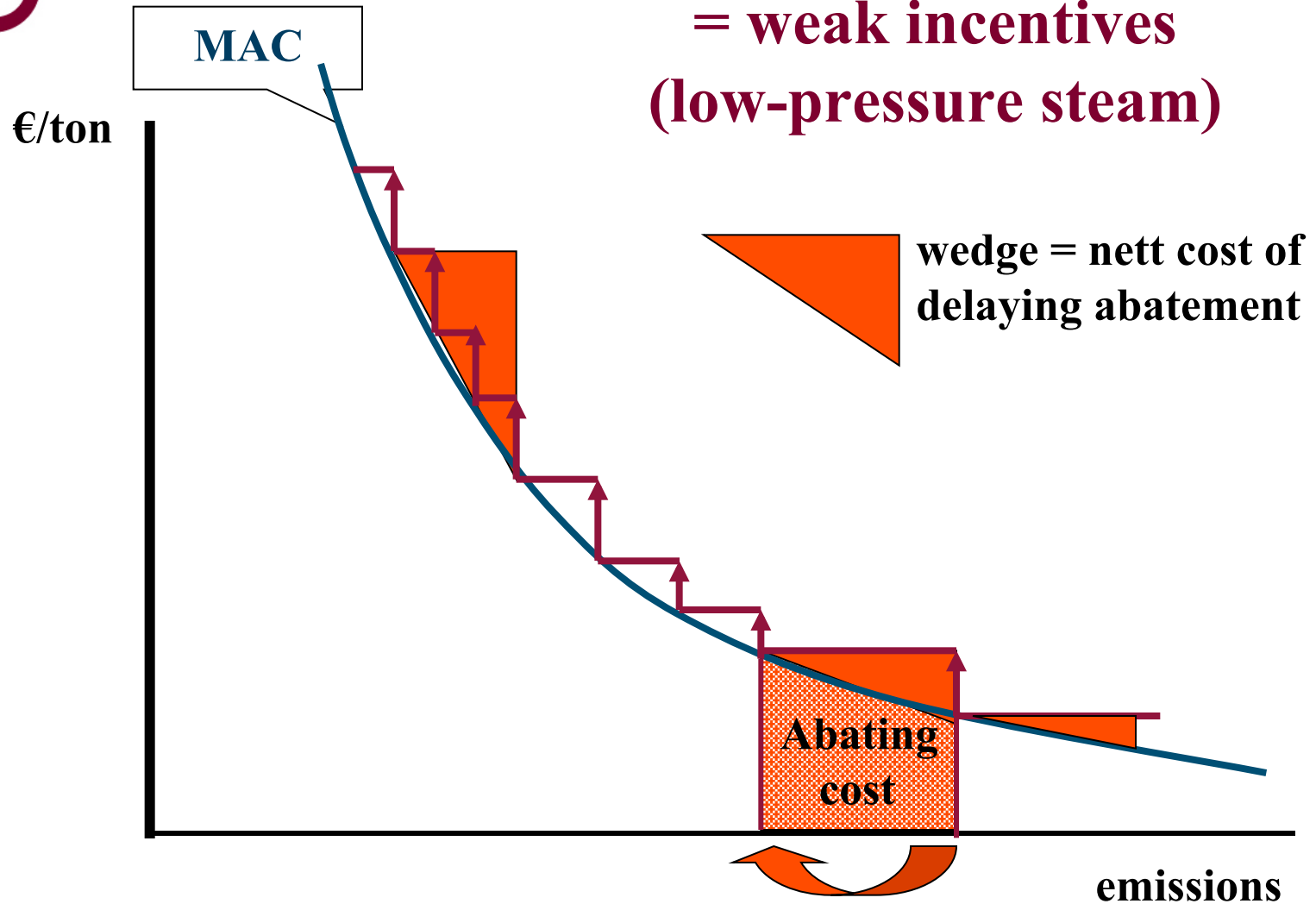


Trading permit-shortfalls = exterior stair = unstable construction





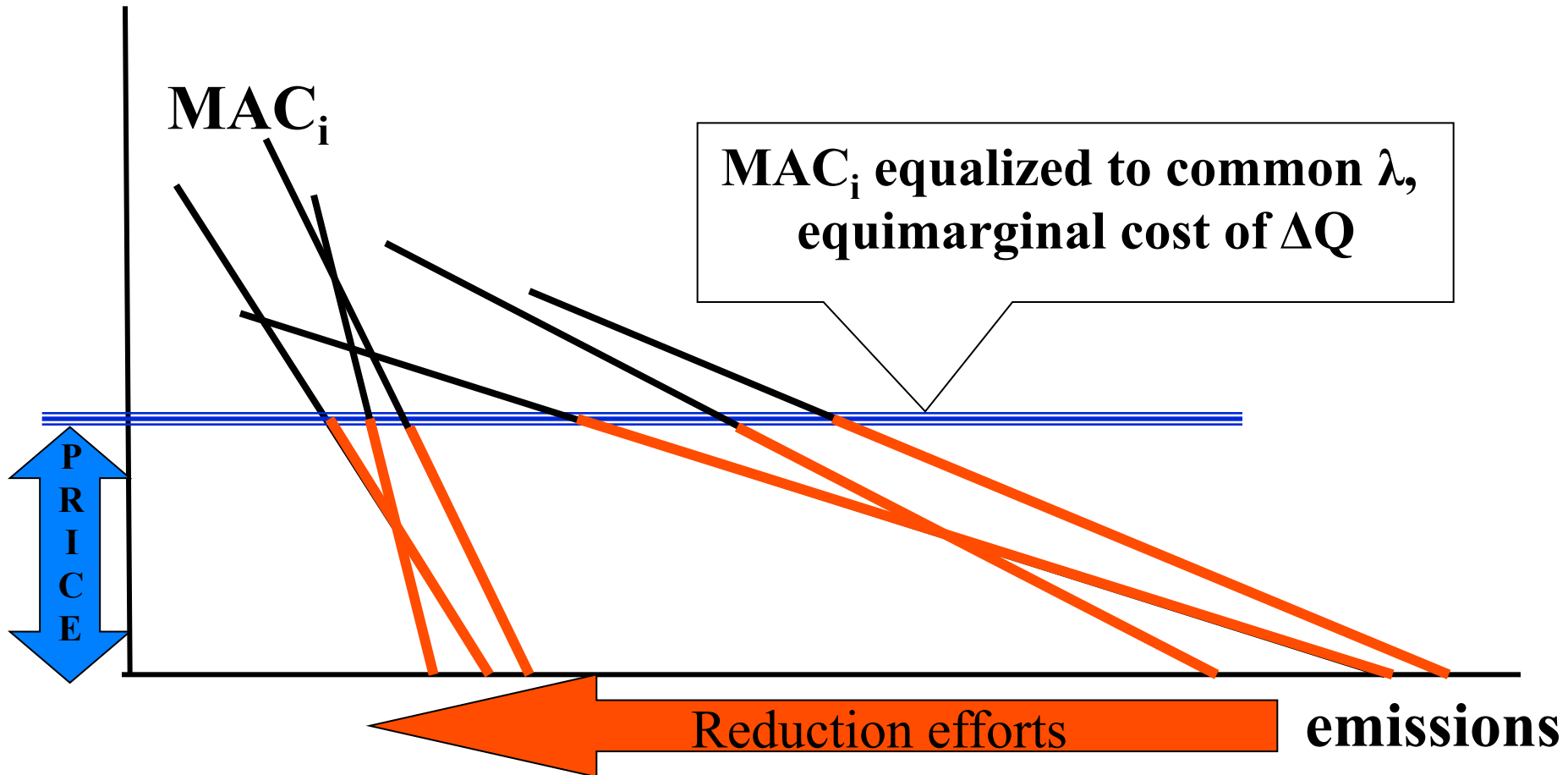
Permit shortfall-prices = weak incentives (low-pressure steam)





Equi-marginality OK iff conditions are comparable

€/unit





STATEMENT part 1: EU-ETS is

- **Leaking**
 - **Only ca. 8% of global emissions covered**
- **Flawed**
 - **Quota are not assigned efficiently**
- **Teethless**
 - **Carbon Prices are volatile and crashing**

EU-ETS = Shadowboxing



STATEMENT part 2: Saving EU-ETS is a mirage

- **Global coverage?**
 - **Commitments by who and by when?**
 - **Transactions costs increase with success**
- **Efficiency?**
 - **Respect Sector diversity (+ global coverage)**
 - **“A Hammer is OK when the World was a Nail”**
- **Impact?**
 - **Pricing emissions needed: full, yearly auctions**
 - **Induce technological innovation**
 - **Lifestyle changes and new activities**