



Tutorial on Tradable Emission Permits EU ETS case study

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Contents:

Hybrid of Permits & Taxes

USA: workable systems

Kyoto Protocol launches worldwide interest

**Emissions Trading Scheme (ETS): flagship of EU
climate policy**

Evaluation and discussion



Tradable Permits: USA grown

Improve the permit system

- **Reduce CaC [Command and Control] interventions**
- **End technological detail prescribing**
- **Netting – Offsets – Bubbles**

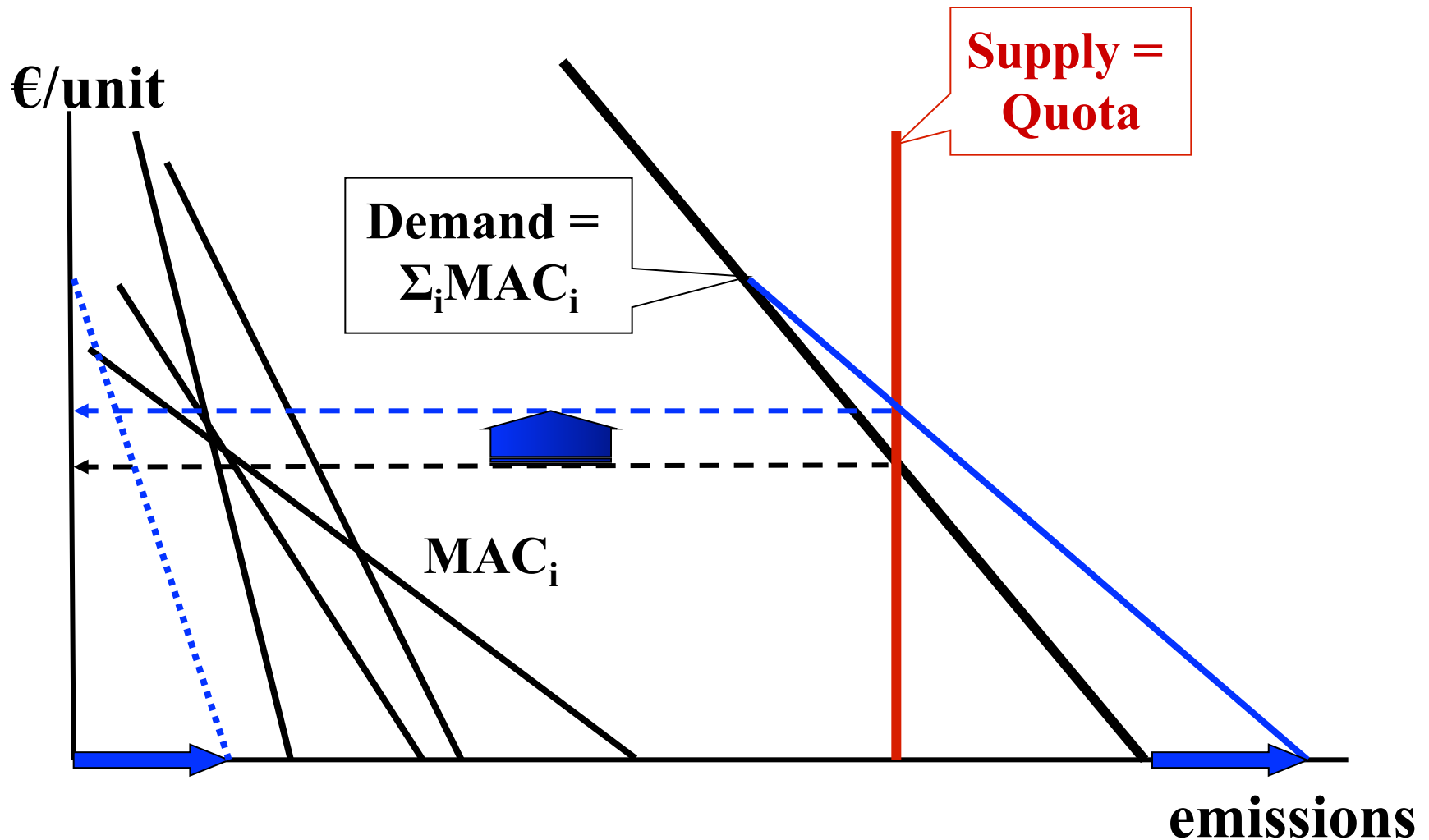
The reference: SO₂ emissions of fossil power plants

- **Start from solid basis of earlier emissions permits**
- **Clear supervising authority: EPA**
- **Sources & technology: coal power plants**
- **Cheap technical fix: substitute low-sulphur for dirty coal (advanced scrubber development halted)**

Is this a valid reference for ETS?



Tradable Permits: market mechanism

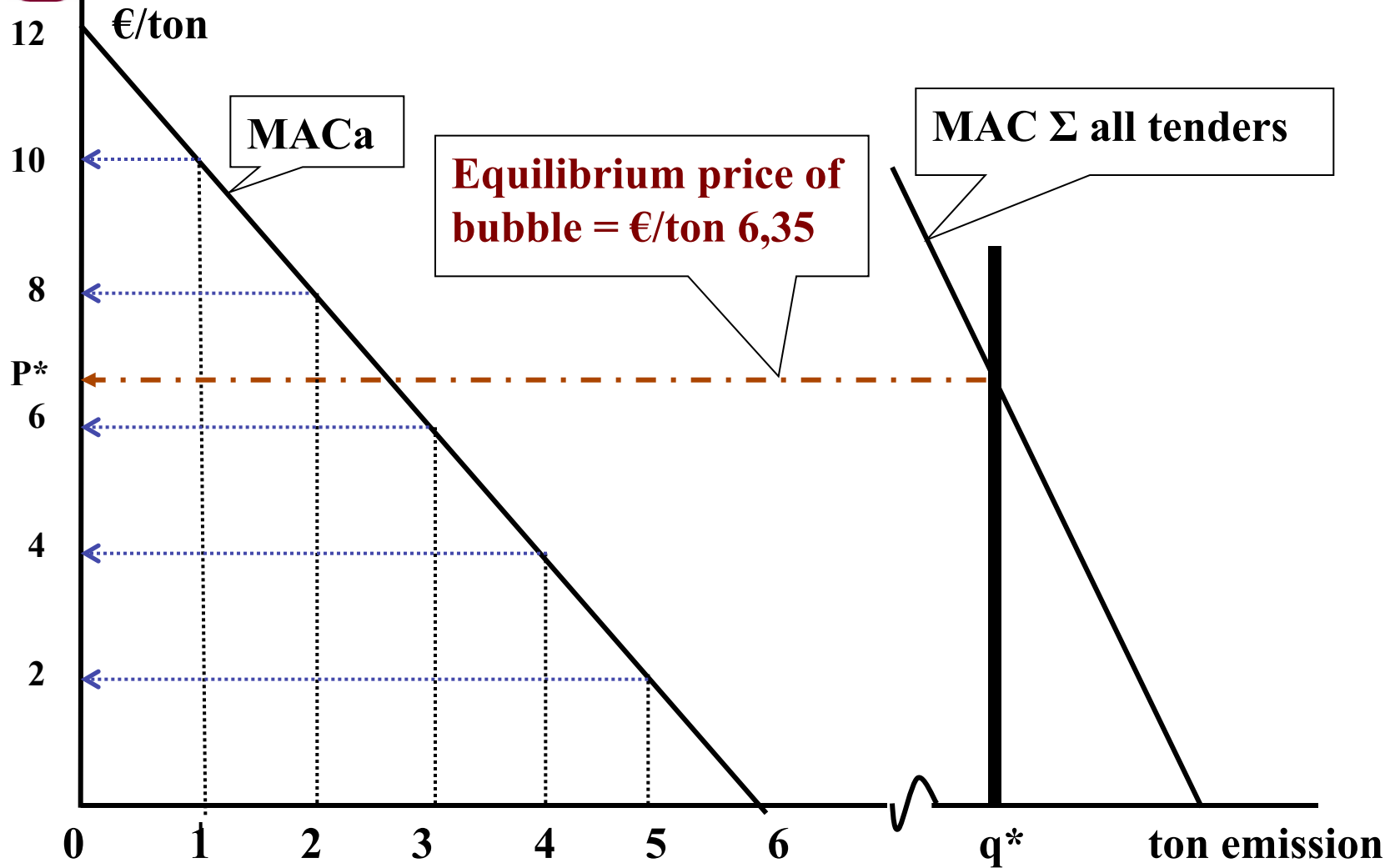




- **Define BUBBLE (Who's IN/OUT?), free of leakages**
 - **Relevant emission sources**
 - **Size of sources**
 - **Type of activities (homogeneous ⇔ disparate)**
 - **Geographical scope**
 - **Span of public authority (market regulator)**
- **CAP time-line: periodical, consecutive phases, & extinguish in 2050 (?)**
- **Introduce quota supply in the market**
 - **Perfect auctions <> gaming the system**
 - **Free gift: Who gets how much? Why? How long?**
- **Supervise performance & transactions**



Auction mechanism: sealed bid





Colour of the chameleon depends on initial assignment of permits

LEVIES

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

PERMITS

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

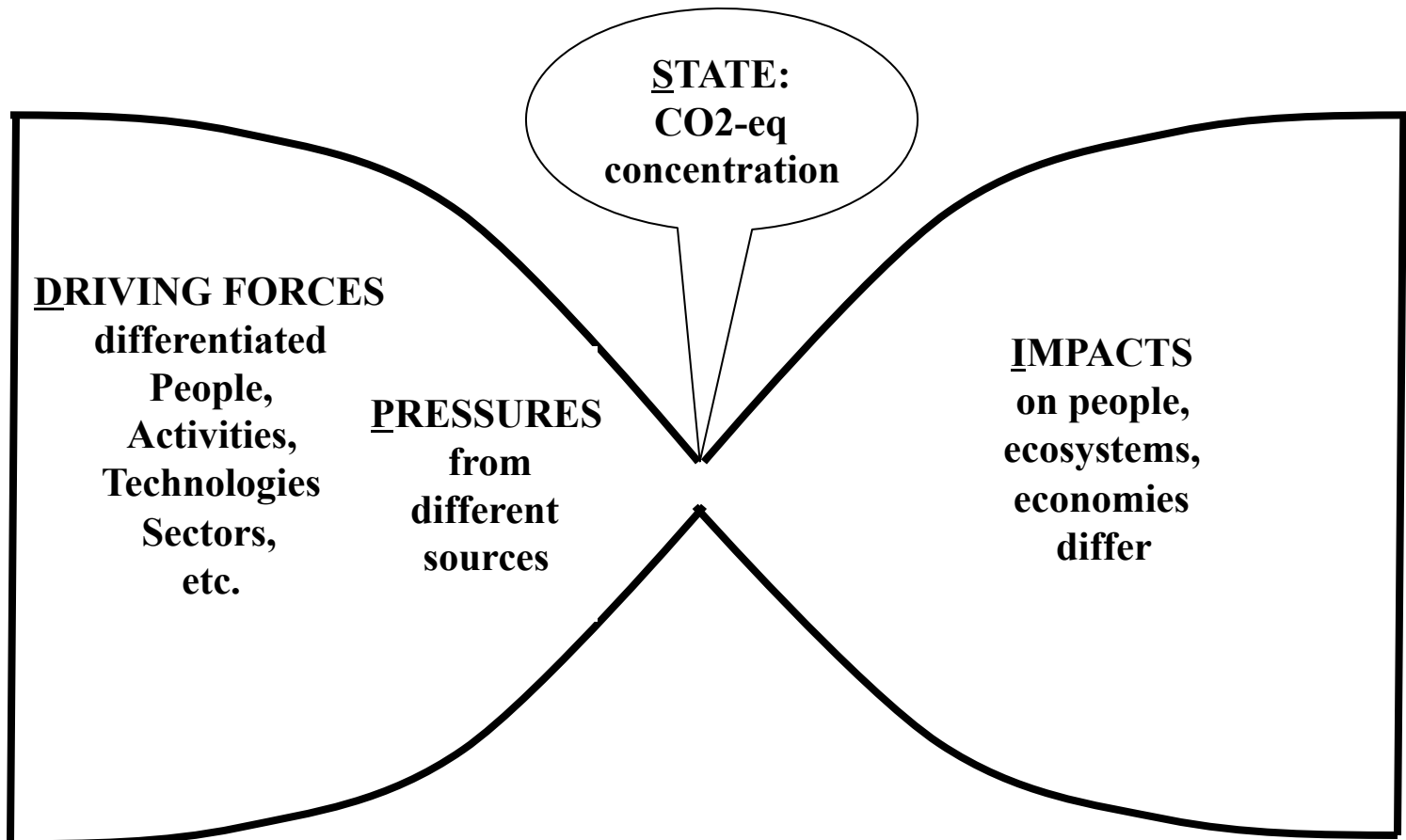


ET and Global Climate Policy

- **Climate is a global problem:**
 - **Every CO₂-eq. - wherever emitted – increases global concentration equally**
 - **Sufficient argument to treat all diverse sources (seemingly) equally? See DPSI@R framework**
- **IPCC Stabilization trajectory = global quota/ reductions: how to divide over sources?**
 - **Quota by country (Kyoto): natural, demographic, social, economic, history, development, ... differ + change continuously!**
 - **Distribute country quota over domestic (only the large) sources: how?**

Well-mixed atmospheric GHG concentration is a global phenomenon, but no argument for uniform treatment of upfront and downstream phenomena

Climate change DPSI resembles an hourglass: every molecule emitted CO₂ adds equal weight to the global CO₂ concentration





Kyoto Protocol (COP03, 1997)

- **COP (Conference of the Parties) task:**
 - **Specify and follow-up the Framework Convention on Climate Change UNFCCC (Rio, 1992)**
- **Common but Differentiated Responsibilities**
 - **Annex I countries {1992-OECD members + economies in transition} will limit GHG emissions**
 - FCCC: in 2000 same level as 1990
 - Kyoto: in 2008-2012 reduction of 5,2% versus 1990
 - EU in Kyoto: engages for 8% reduction
 - **Annex II countries {'92-OECD members} will provide money and transfer technology to developing nations**
- **Flexible Mechanisms**
 - **For more efficient realisation of obligations**
 - **In fact: wealthy nations can buy offsets abroad**



Kyoto Flexible Mechanisms

- **Emission permit trading**
 - **Annex I countries can trade permits (AUs) for meeting reduction targets among participants**
 - **Hot Air: Russia and Ukraine own surplus permits**
- **CDM: Clean Development Mechanism**
 - **UN approves emission reduction projects in non-Annex I countries to deliver Certified Emission Rights (CERs)**
 - **Annex I countries can (partly) buy CERs as equivalent to emission reductions (offsets)**
- **JI: Joint Implementation**
 - **Annex I countries realise emission reduction projects jointly to share the Emission Reduction Units (ERUs)**



EU and Kyoto Protocol

- **Burden Sharing of the EU's 8% emissions reduction**
 - **Quick but dirty agreement**
 - Approximate data and models
 - Not on the basis of MAC estimates
 - **Proper quota allocation is practically impossible**
- **Emission Trading Directive (Oct.2003)**
 - **ETS (Emission Trading Scheme)**
 - Three phases: 1)2005-2007 ; 2)2008-2012 ; 3)2013-2020
 - Only large GHG emission sources
 - Member States assign free permits (1st + 2nd phases)
- **NAPs (National [quota] Allocation Plans):**
 - **What sectors are included?**
 - **How many permits per emission source (installation)?**
 - **Little EU guidance (Jan./March 2004)**
 - **3rd phase: allotments by EU Commission to MS & electric power companies must buy permits + gradually non-exposed industries (+transfers 2nd phase)**



EU ETS: Initial assignments 1st + 2nd

How?

**EU-ETS:
3 ways for
FREE
Gifts of AUs**

**Efficiency
($MAC_i = MAC_j$):
slow (little) trade**

**Expected emissions (see
Performance standard
rates)**

**Historic emissions
(grandfathering)**



EU: Implementing Kyoto

- **Burden Sharing of EU 8%**
 - **Uneven allocation over member states**
 - Different histories and conditions (UK coal power; French nuclear; German unification, etc...)
 - Different level of development and expectations (Northern/ Southern Europe; now Western / Eastern)
 - **I.e.: starting platform is not leveled**
- **NAPs (National Allocation Plans):**
 - **No harmonisation in sectors included**
 - **Over-assignment of free permits**
- **Emission Trading Scheme**
 - **Thin trade; volatile prices**
 - **1st phase: final price = 0**
 - **2nd phase: CDM linked to ETS (Oct. 2004)**
 - **3rd phase: banked transfers from 2nd phase; more offsets (1/3) allowed**



**ET a dream of promised scores
on 4 main criteria**

**Effective
CAP**

**Efficient
TRADE**

**Fair
EQUAL
SHARES**

**Feasible
STAKEHOLDERS
MARKET**

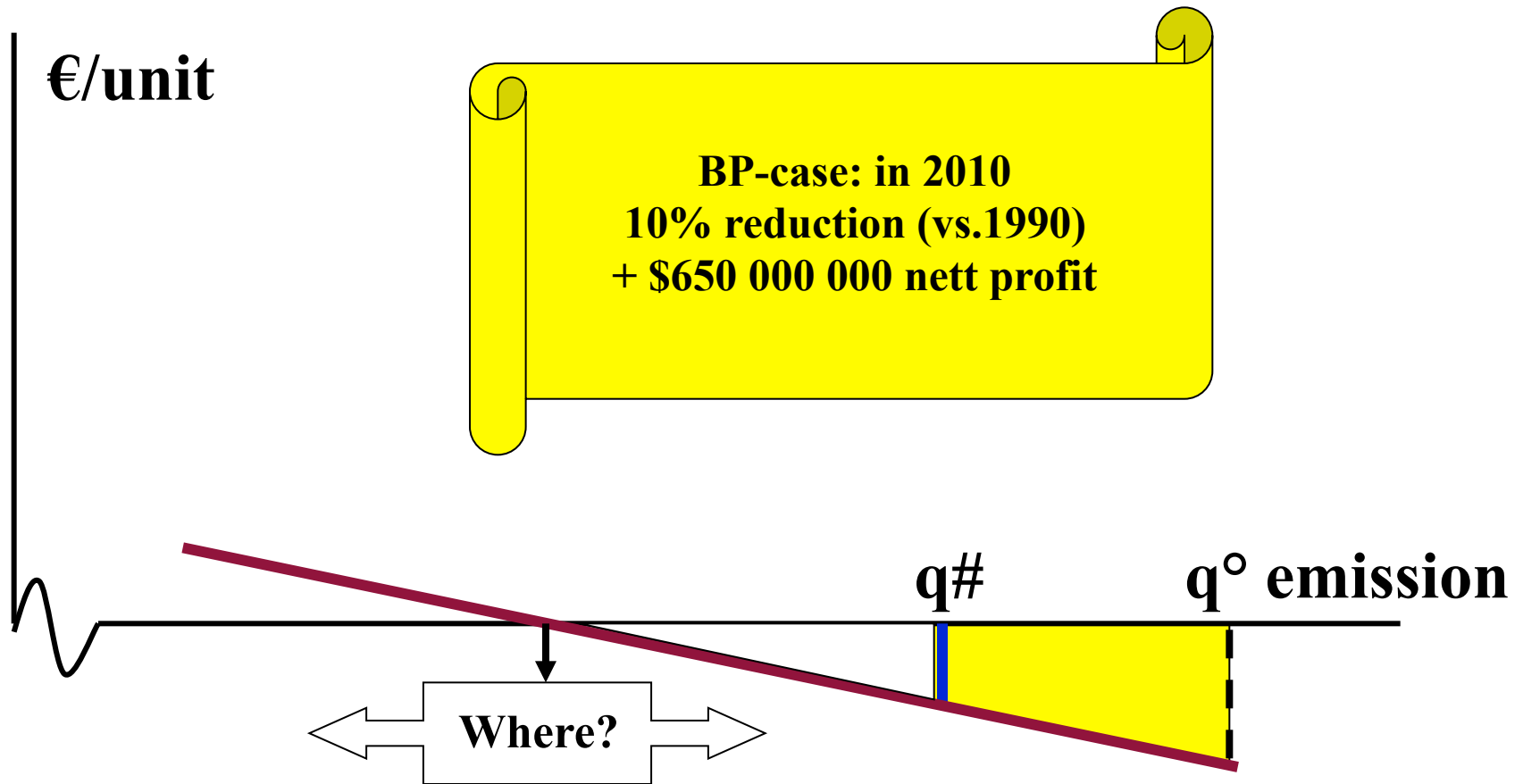


EU ETS: Effectiveness

- **Theory: absolute quota effective**
 - **Right quota = global stabilisation trajectory**
 - **Distribution of quota = mission impossible**
- **Leakages because scope too limited**
 - **40% of EU emissions X EU is 1/5 of global = 8%**
 - **Uneven rules across countries, sectors, installations**
- **Bill pressure not felt**
 - **EU industry refuses bleeding by deep cuts**
 - **Low penalty on excess emissions beyond assignment**
 - **No additional reduction effort / No carbon leakage**
- **Second phase (2008-2012)**
 - **Over-supply of CERs through CDM linkage**
 - **Expected price and effectiveness is 0**
 - **Crisis 2008/09: demand for permits shrinks**
 - **Banking of (free) permit allowed beyond 2012**
 - **Electricity monopolies cheaply hoard permits**

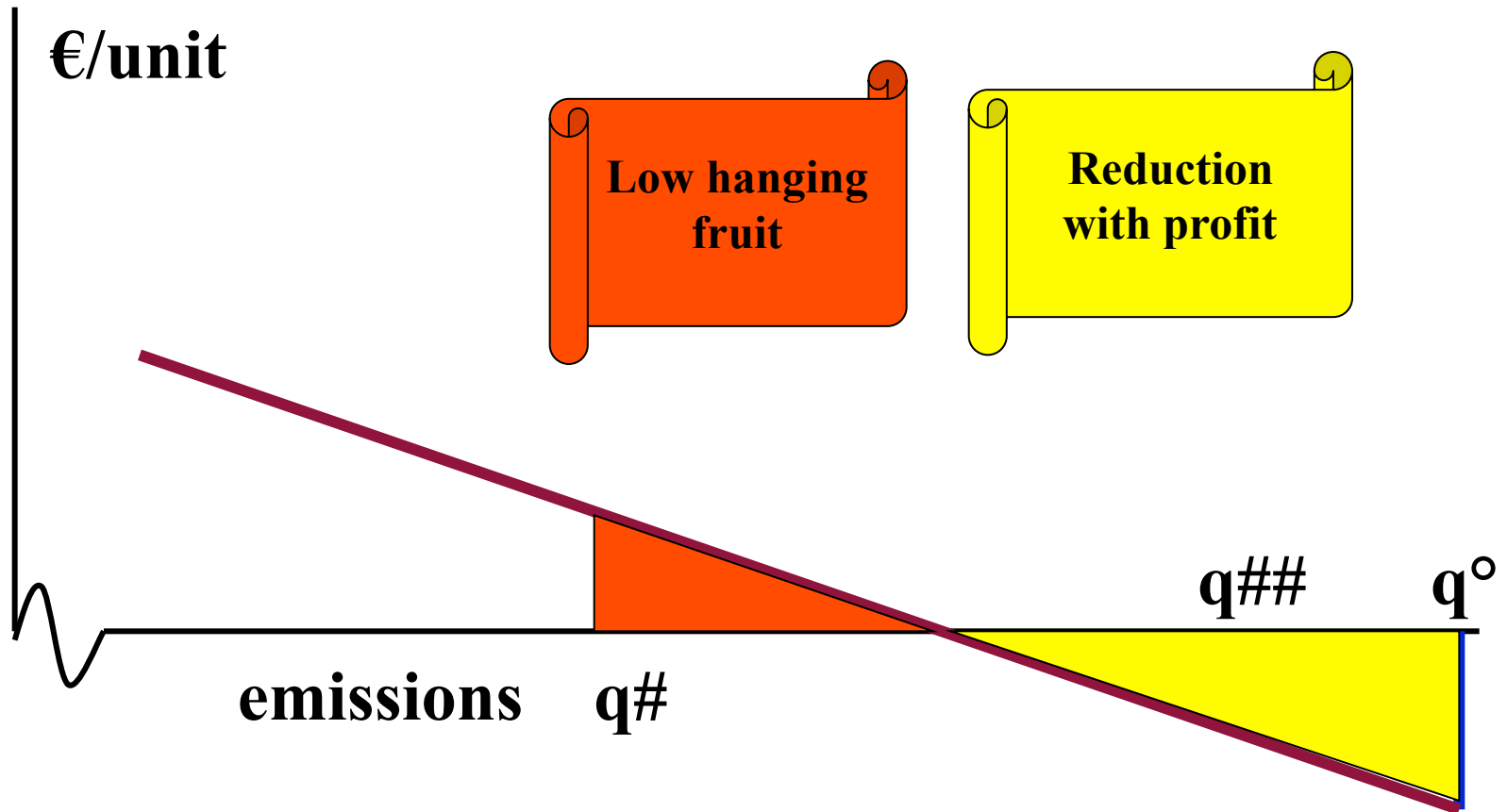


ETS: over-supply of permits



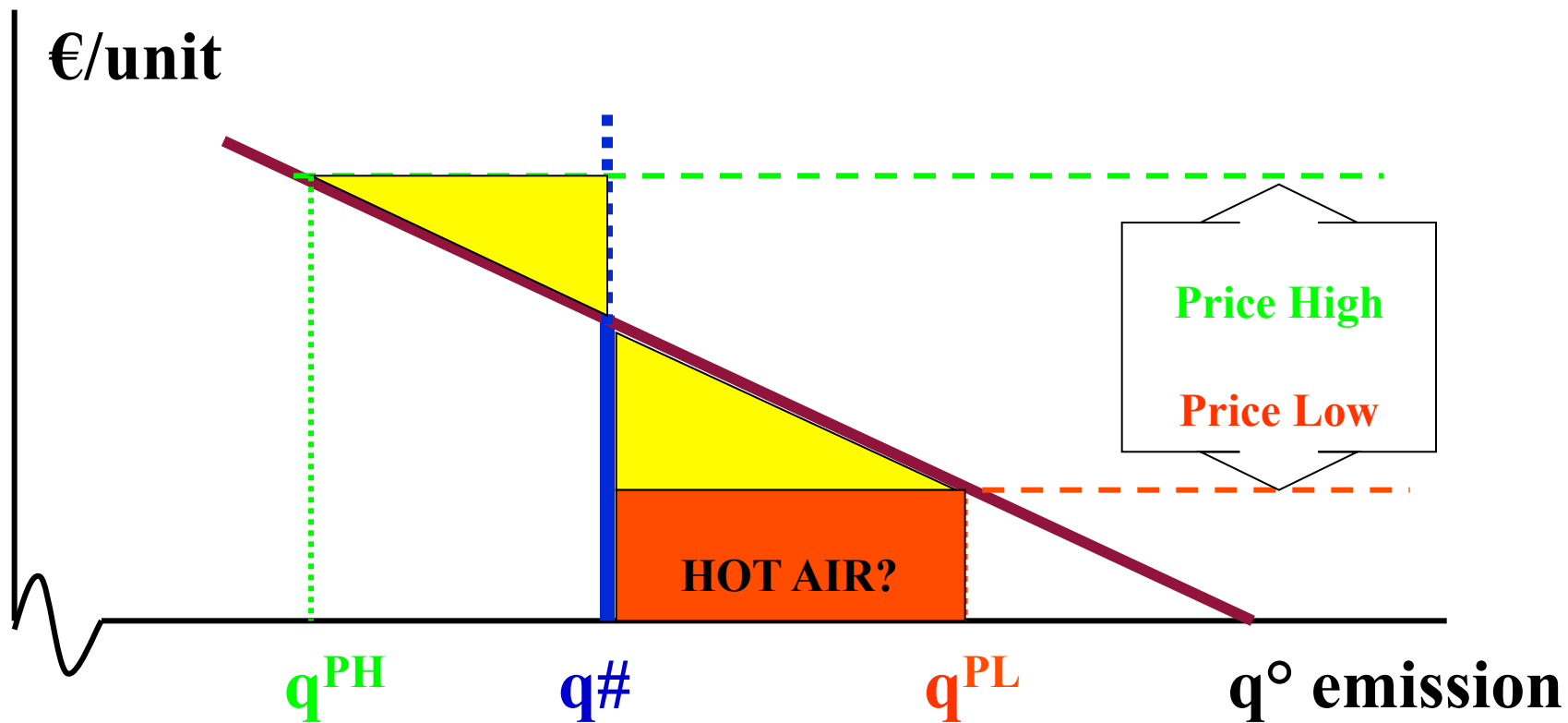


EU ETS: easy targets





EU ETS: Trade effects





EU ETS: Efficiency

Trade increases efficiency

- **When markets cover right scope of activities**
- **When harmonised & transparent**
- **Cost effectiveness unlikely**
 - **Uneven burden sharing & biased NAPs**
 - **No segmentation in proper categories**
- **Allocative efficiency when quota = trajectory**
- **Dynamic efficiency: tail wags dog?**
- **Macroeconomic: hot air and CDM drains**

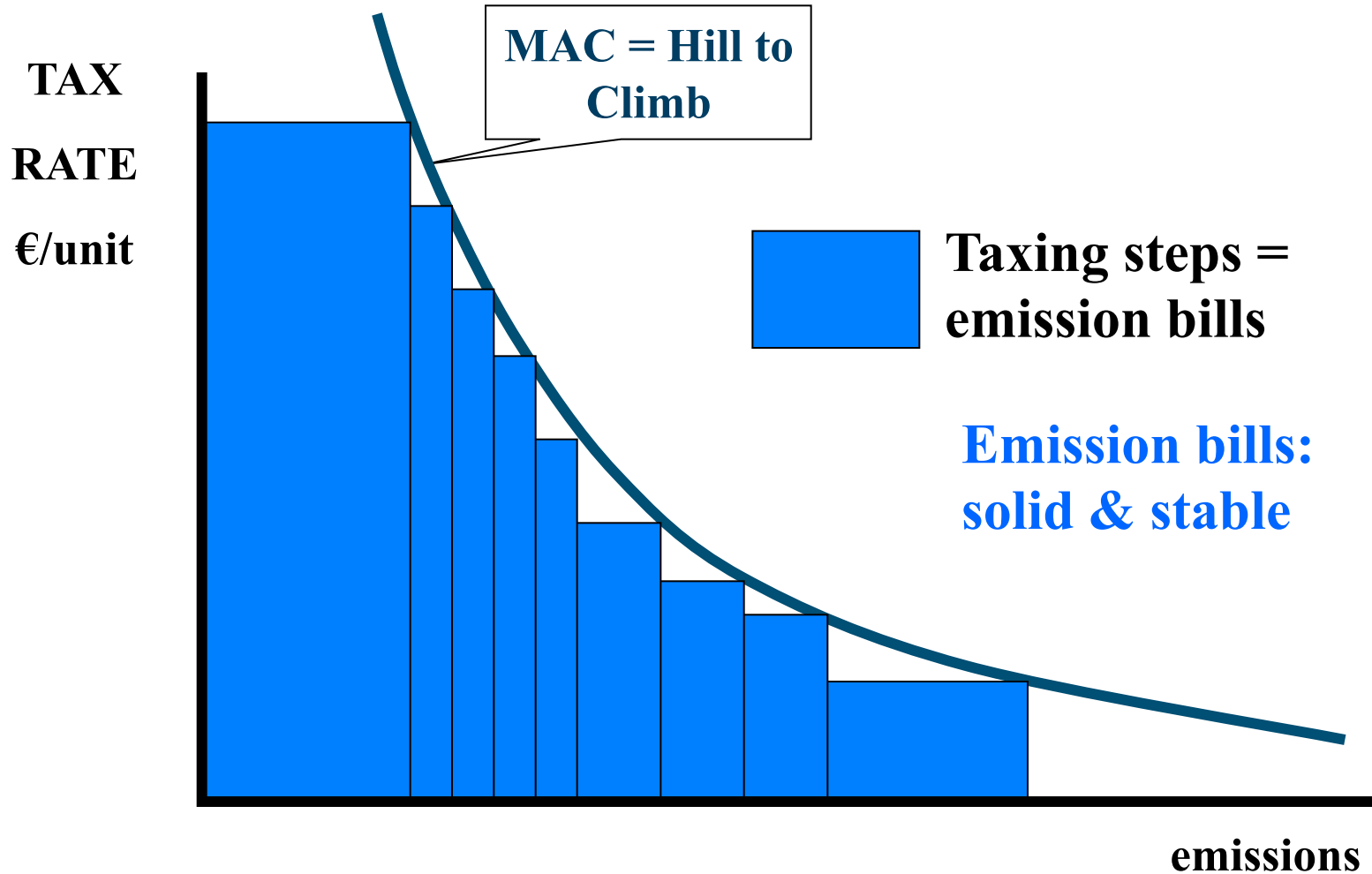


EU ETS in practice

- **Free Permits up to actual emission levels**
 - **Permit price = penalty on excess emissions**
 - **No trade in permits, but trade in penalties**
 - **Carbon price patterns phase 1 & 2: downstairs to 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**

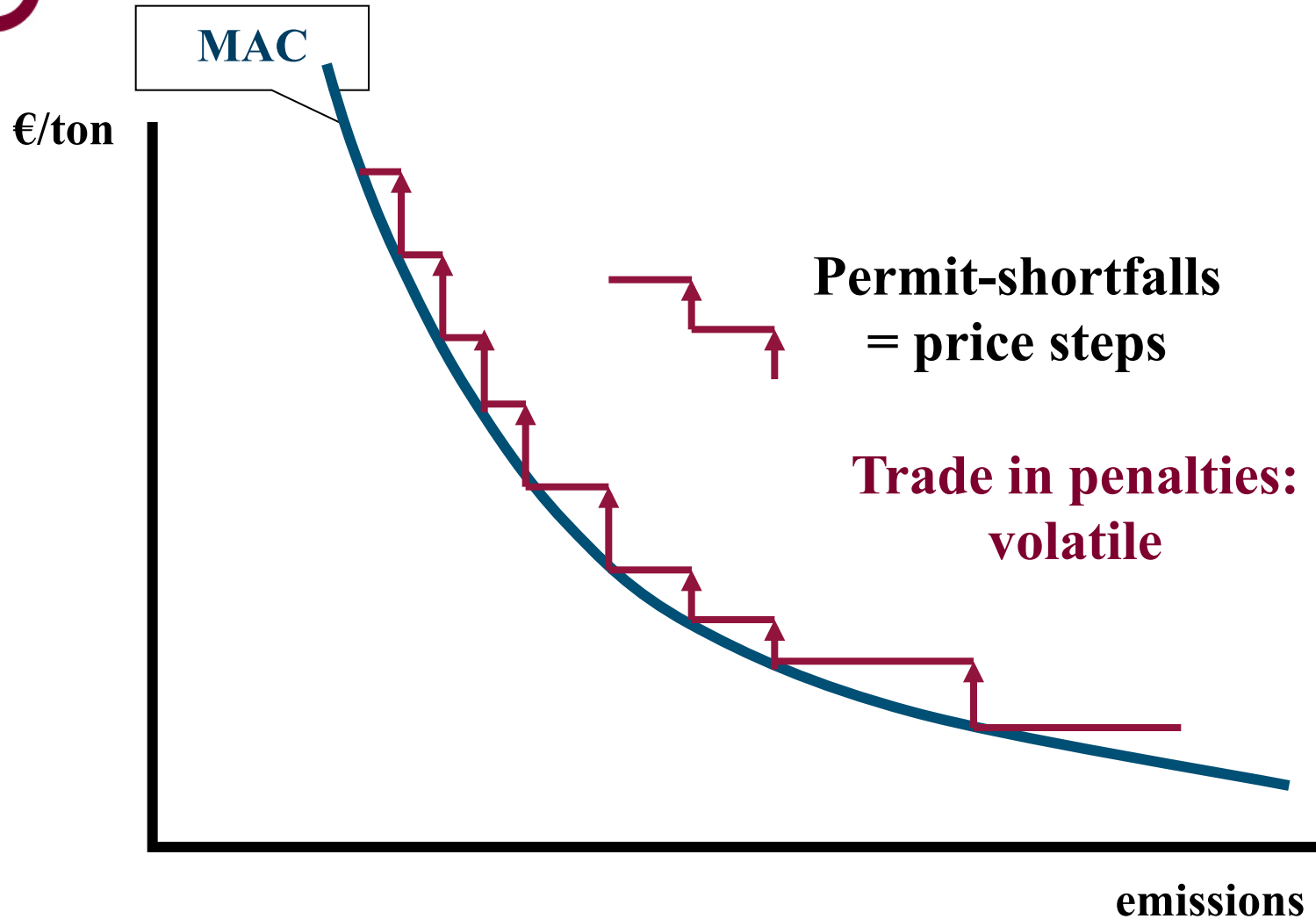


Climbing the Emissions Reduction Slope via Interior Stair



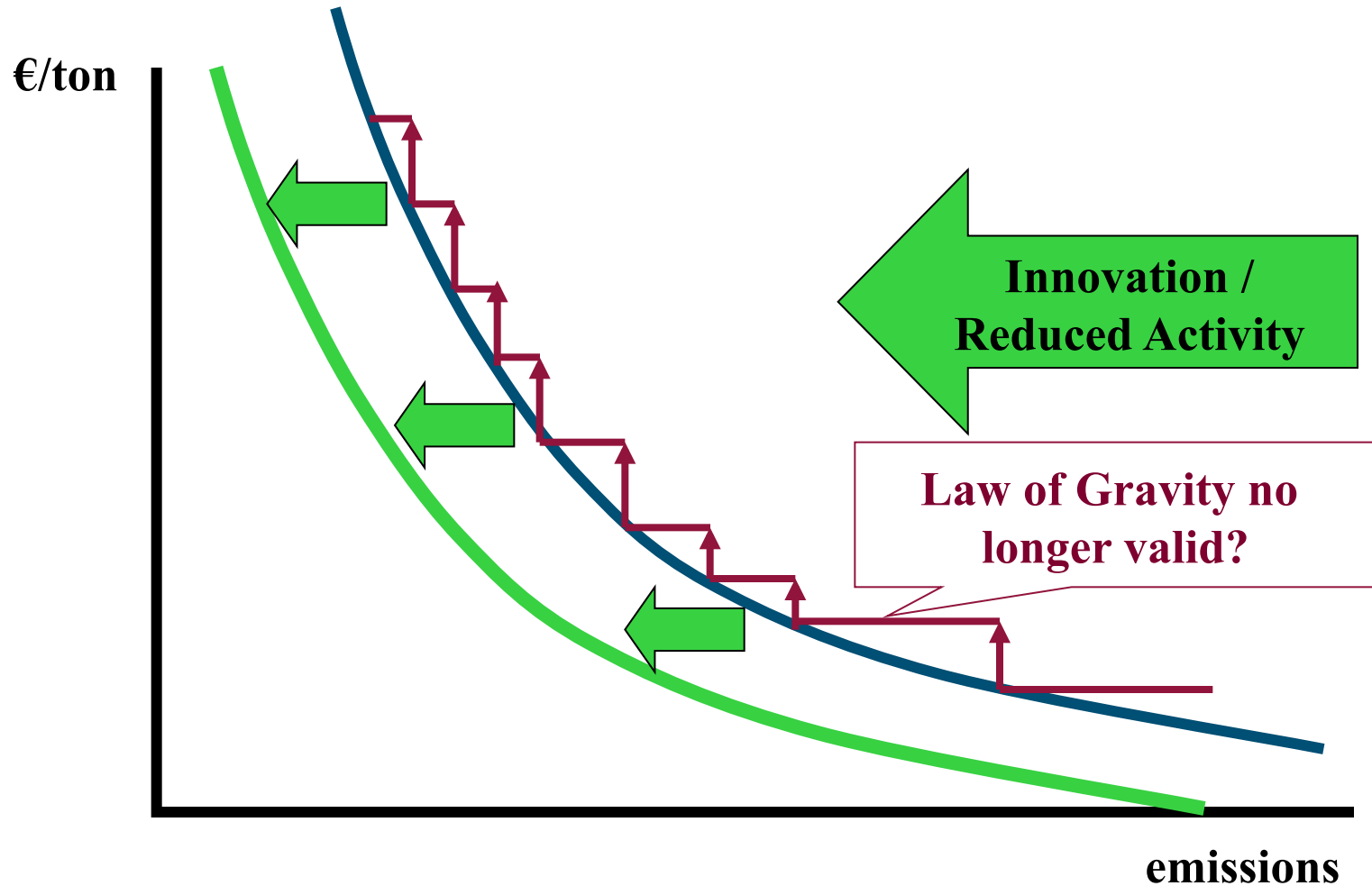


Free quota = Exterior stair (only pricing permit-shortfalls)



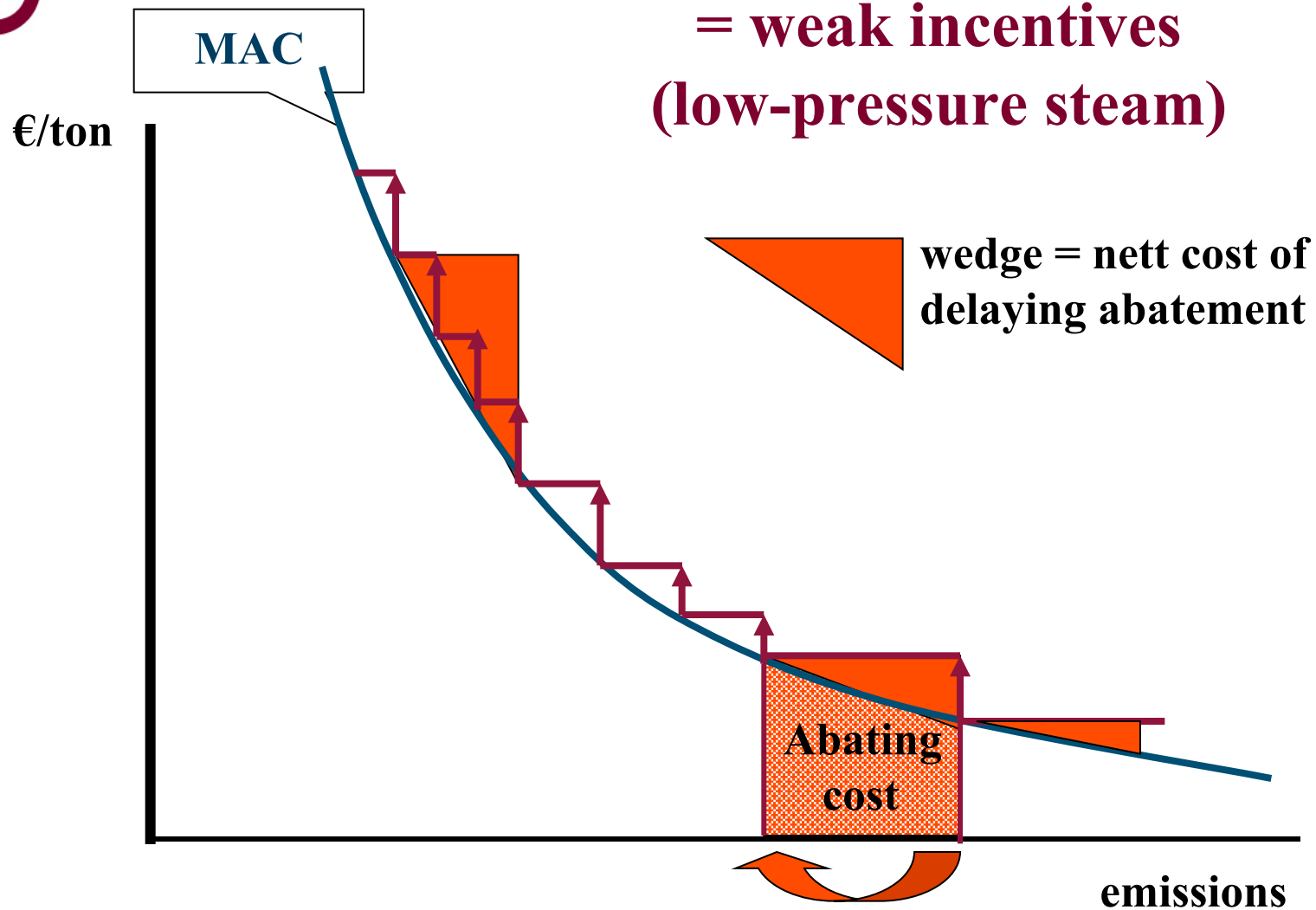


Exterior stair = unstable construction





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





ETS: Distribution & Ethics

Distributional aspects

- a) Grandfathered permits for historical polluters according their pollution quantities
Pioneers in efficiency are disadvantaged
Swindle profits (electricity companies)**

- b) Uneven burden sharing (comitology) create profits for winners, paid by losers
Companies in ETS vs. emitters outside.
CDM: fraudulent profits (e.g.: HFC23)**

Ethical aspects

- c) Offsets: Affluent Lifestyles buy rights – defect & delay energy transition
Swindle profits erode social cohesion (Mishan)**



ETS: Administrative efficiency

Transaction costs decisive for feasibility

- a) ETS requires perfect allocations or perfect auctions ⇔ scope & dynamics of climate change and economies**
- b) Transaction costs (consultant fees) heavy
Speculative trades (ETS) and CDM set-ups**
- c) Meter & measure emissions of included parties, registers, verifying (CDM; JI?)
NAPs created uneven treatment**
- d) Eurekaocrats enjoy discretionary power
Playing field for lobbyists**
- e) Muddling by eurocrats (“comitology”)**



ETS: Control & Enforcement

- a) **Enforcement: pure penalty of €100/ lacking ton emission is strong incentive**
Actual over-supply needs no actions
- b) **ETS is not transparent; few understand**
- c) **Equal treatment is absent (among participants and across emitters)**
E.g.: UK first round
- d) **Worldwide Participation & Compliance?**
Worldwide bubble and trade: who is included?
Who allocates? Who supervises?



EU-ETS: basic questions

- 1. Why should actors - refusing Carbon Taxes - accept correctly Auctioned Emissions Trading?**
How naïve is politics' belief the corporate sector is naïve?
- 2. When AUCTIONS: What type of auctions? Who sells to whom (property rights on the atmosphere!)? Who is obliged/ allowed to buy? How to organize 'partial' auctions with efficient & fair allocation of free permits? Who gets the revenues (climate money)? etc....**
- 3. What administration can successfully construct & control a global, artificial, multi-billion market?**
See EU politics record in regulating electricity sector



- **Free Permits = 100%(Ph1), 96%(Ph2) of actual emissions**
 - **Price patterns Ph1 down to zero; Ph2 idem, but hold up by banking permits from Ph2 into Ph3**
 - **Banking delutes role of CAP + extends problems in next Phase**
- **Trade in excess permits = 'Tail wags Dog'**

Ref.: Aviel Verbruggen. Windfall and other profits. *Energy Policy* 36 (2008) 3249-51

 - **Permit price on excess emissions beyond free assignments**
 - **Marginal is derivative of total (not the reverse)**
 - **MC-pricing may work iff all submarginal units also pay the costprice at the margin (+ long-run optimum)**
 - **No financial incentives from 0 euro bill**
 - **Source of windfall- excess profits for corporates**
- **Price is symbolic (joke)**
 - **Support by stock-stakeholders (ETS companies)**
 - **No carbon leakage by climate policy (yes by globalization)**
 - **ET popularity is growing wherever industry understands it is a symbolic dance without impact, but source of money-making**

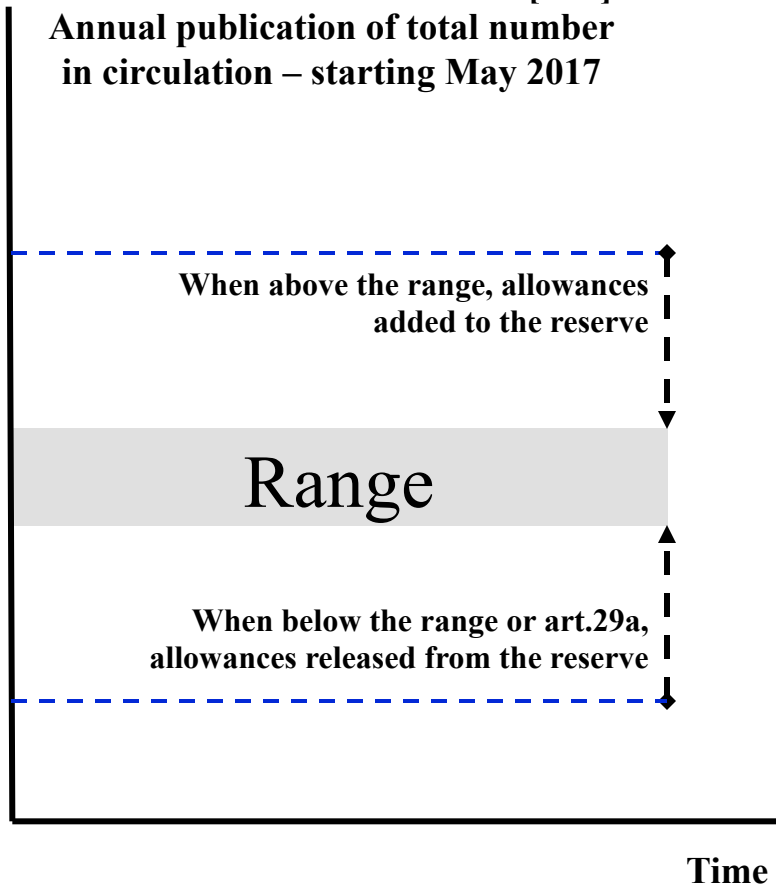


- **Permit assignment**
 - Free for exposed industry, not for electricity generation
 - ≈ 2 Gton surplus Jan.2013 (banked free Ph2 permits), expected to be ≈ 2.6 Gton in 2020
 - Share of auctions *would* increase to 71% in year 2020
 - Electricity sector is hoarding permits
 - Backloading shifts problems to the end of Ph3 (into Ph4)
 - CERs (CDM) are squeezed out as part of the surplus
- **Market stability reserve**
 - Comitology creature for Ph4
 - ETS metamorphoses from periodical cap steering to permanent price control
 - 'cap on emissions' is now 'cap on the price of permits'
- **Yearly cap 1.74% linear reduction factor (≈ 0.038 Gton)**
 - Insufficient to respect +2°C warming
 - Commission proposes 2.2% after 2020, but 2.6% needed



Market stability reserve

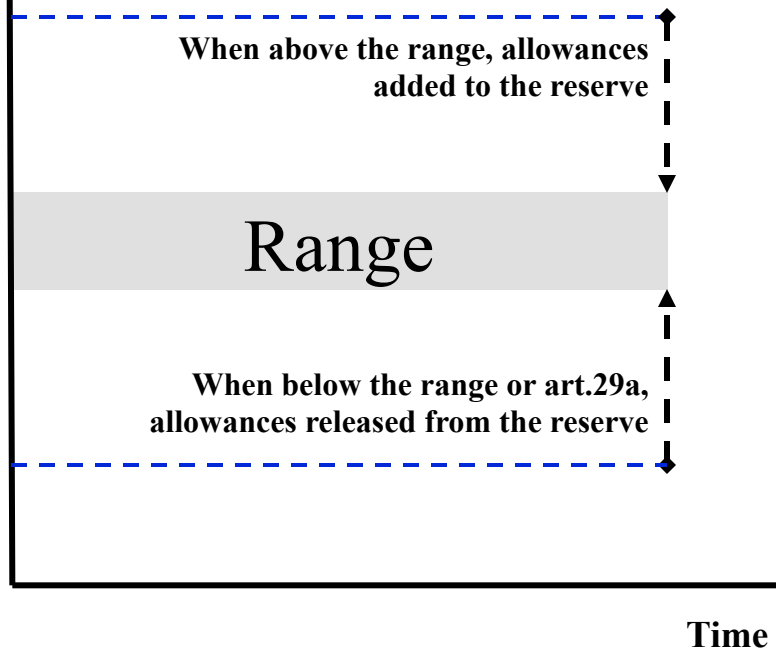
of Allowances in circulation [mio]
Annual publication of total number
in circulation – starting May 2017



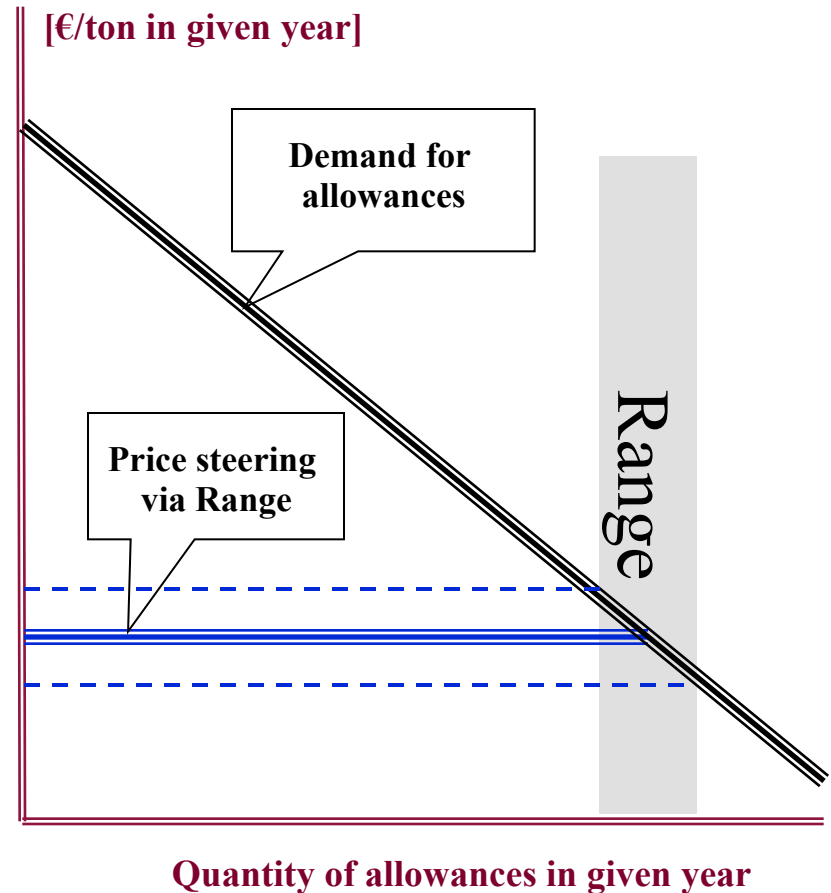


Market stability reserve = price steering

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Price of emissions
[€/ton in given year]





- **Uniform approach applied on Diverse realities**
 - **Not effective (CAP shrinking follows autonomous emission reductions by innovation and de-industrialization)**
 - **Not efficient ('playing fields' not leveled; disparity covered with a thin sheet of an almost zero carbon price)**
 - **Discriminatory (Aristotle)**
 - **Swindle profits, eroding social cohesion & resolve**
 - **Recurrent defects plastered with comitology spit & polish**
 - **Joke market – mainly speculation, hoarding**
- **Market-based instrument or captured regulator?**
 - **EU ETS champions meddling & muddling by politics, officials, stock-stakeholders**
 - **'Market' risks by uncertain comitology & lobbying outcomes**
 - **Theoretical mirage (toy of economists and eurocrats), but structurally flawed**



EU ETS: the wrong diagnosis & discourse (Sandbag as highlight)

- **Sandbag's take-away message**
The ETS is a powerful policy instrument to help the EU make a meaningful contribution to fight climate change, but its current design features are limiting its effectiveness
- **Europe needs a single, unified policy instrument on climate**
 - **Too many activities lead to GHG emissions to regulate each one individually**
 - **No single country can address the climate crisis on its own**
 - **A homogenous regulatory environment minimizes the impact on businesses**
- **Emissions trading is the most workable policy option**
 - **It avoids prescriptive command-and-control regulations, and provides an incentive for continuous innovation**
 - **A carbon price set *a priori* does not ensure an agreed-upon target is achieved**
 - **It does not encroach on Member States fiscal prerogatives**



- **Discourse:** Government CAPs emissions & Companies TRADE marginal surplus and shortfall permits in a perfect market
 - ⇔ **Reality:** Big corporates TRADE hoarded permits to CAP the price of the emissions
- **Discourse:** The market frees policy makers from difficult choices, e.g., picking the winning technologies
 - ⇔ **Reality:** public interest policy is overrun by big corporates ruling their own mitigation efforts and pace
ETS: today's most illustrious case of CAPTURED regulation
- **Discourse:** ETS flagship, most workable policy option, 'current' design needs a bit improvement, ...
 - ⇔ **Reality:** 'current' is 2005-2015 ... - EU ETS is structurally flawed, breathing on intensive care with effort spent on life-extension



- **Insane coalition of caretakers**
 - **Neoliberal economists, blinded by Langrange formula (bandwagon honours, publications, contracts)**
 - **Consultants (complicated, opaque, structurally flawed case)**
 - **Banks & trader cy's (may make some gains)**
 - **Eurocrats (discretionary power, exposure, career)**
 - **What administration can successfully construct & control a global, artificial, multi-billion market?**
 - **ETS companies:**
 - **Especially the big ones (billions profits, zero mitigation costs)**
 - **Power companies are leading the dance:**
 - **Control ETS regulation via comitology**
 - **Control permit prices via transactions and reserves**
 - **TINA believers: environmental NGOs, e.g. SANDBAG (no guts, nor brains to develop alternatives?)**

EU ETS turns dream in nightmare

**ETS = CAPTURED regulator
most illustrious case today**



Globally
Non-feasible

