

Policy Instruments for a Low-Carbon Economy

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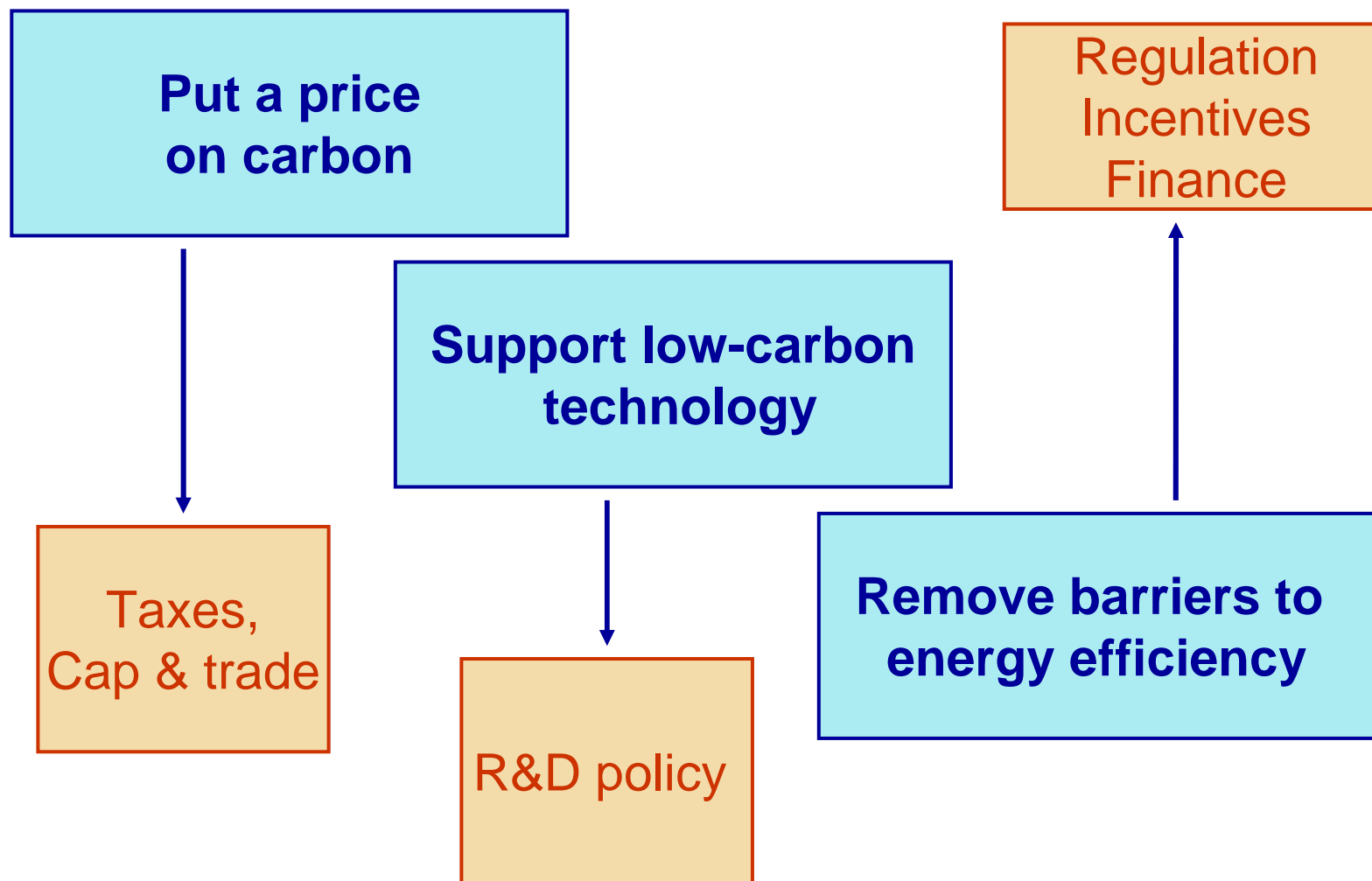
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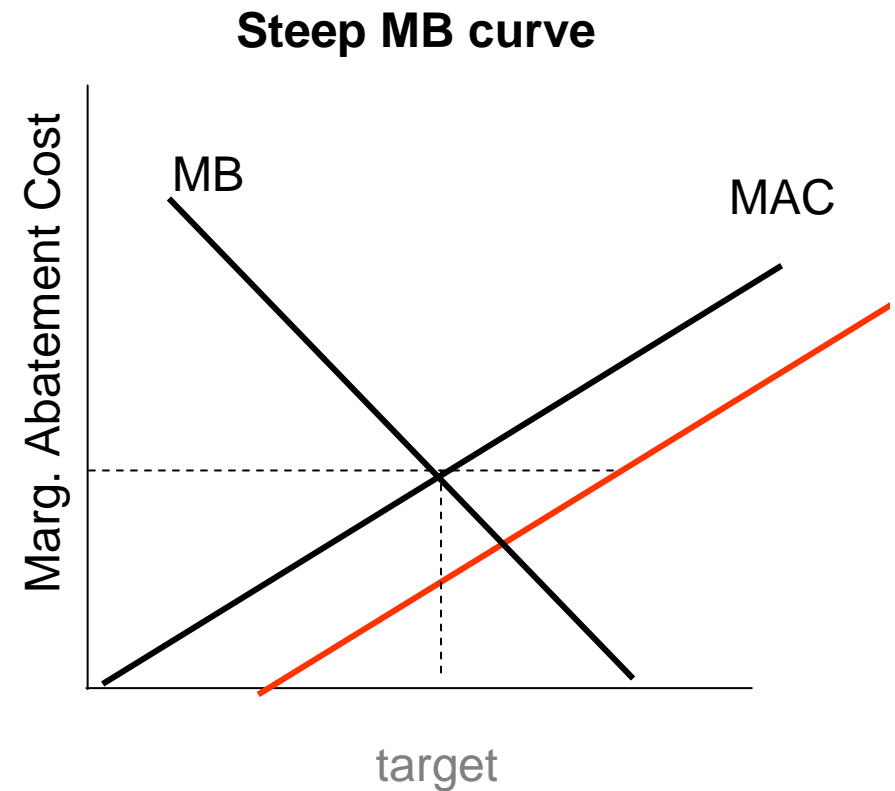
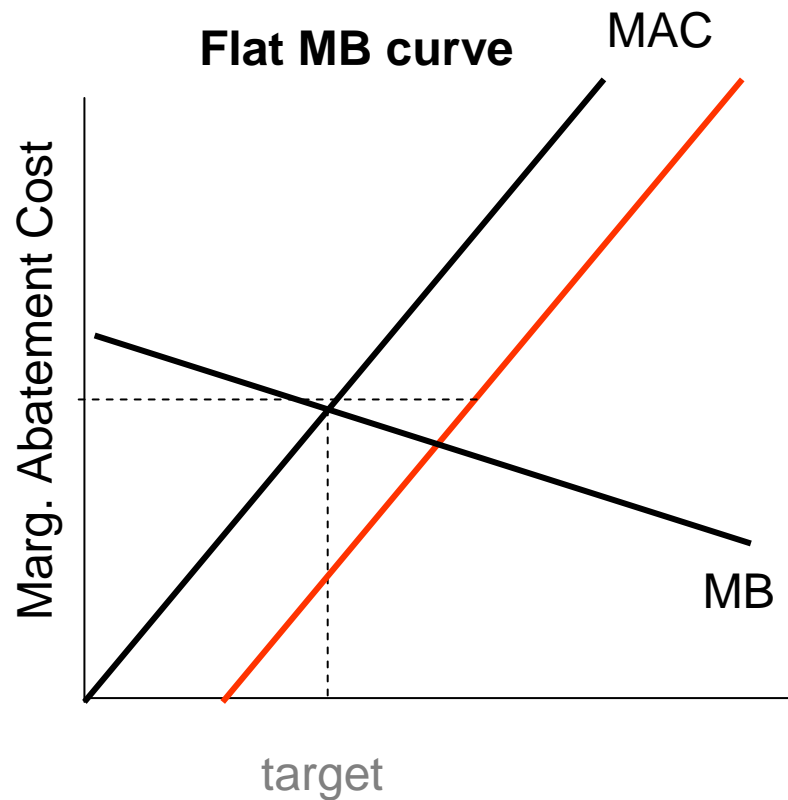
Overview

- The key elements of carbon policy
- Putting a price on carbon
 - Tax vs trade
 - Tax and trade
 - Hybrid instruments
- Conclusions

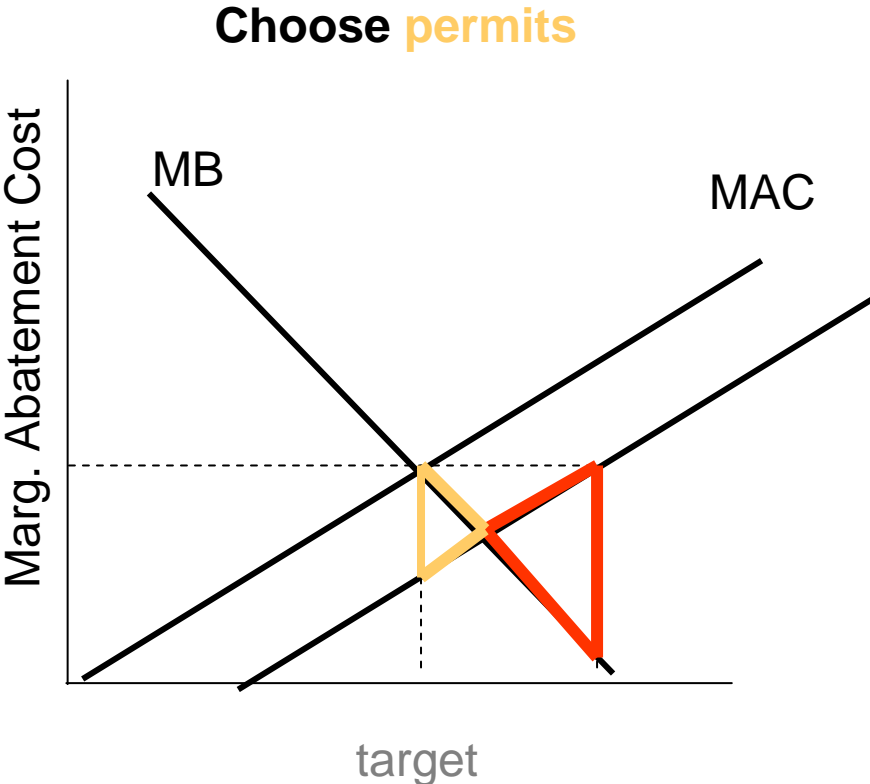
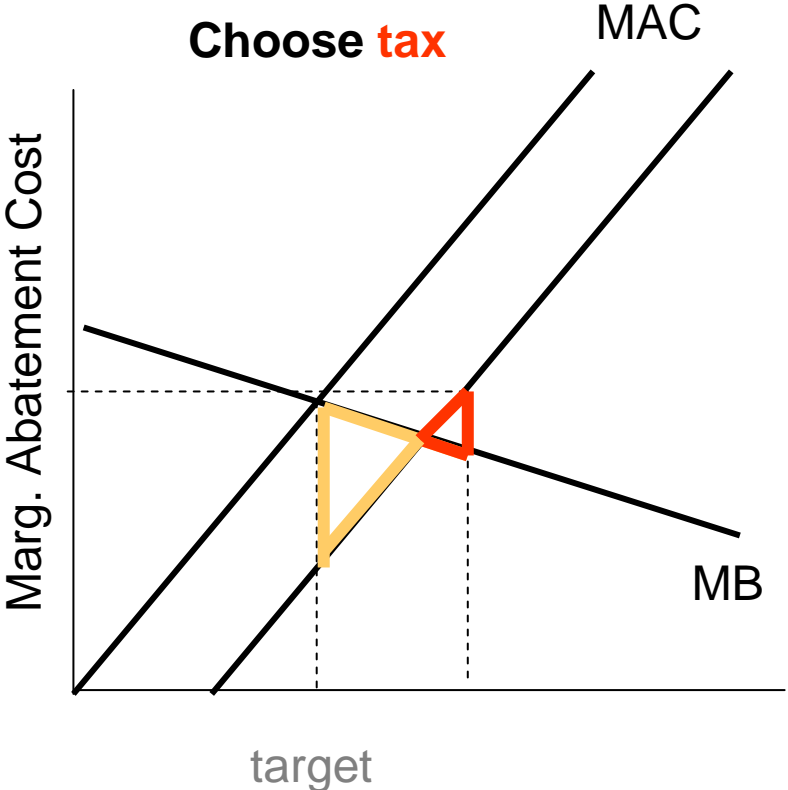
The key elements of carbon policy



Taxes vs permits: the basic Weitzman result



Taxes vs permits: the basic Weitzman result



Applying Weitzman to Climate Change

- For stock pollutants the marginal damage curve is flat in the short run (Pizer, Hoel)
 - Because the atmospheric stock is large, emissions today have the same effect as emissions tomorrow
- Some countries have adopted (more or less) binding carbon constraints (UK, all of Annex 1)
 - Meeting a fixed target through a price is expensive (Fehr): their marginal benefit curve is steep
- Political economy favours cap and trade



Combining taxes with trade

- Policy makers are increasingly willing to combine taxes with trade
 - Either to underpin the price (UK, France) or create a safety valve (US, Australia)
- They also combine other market instruments with trade (e.g. renewable energy support)
- Multiple market failures justify multiple instruments
 - e.g. the case for R&D support
 - But there can be unintended consequences

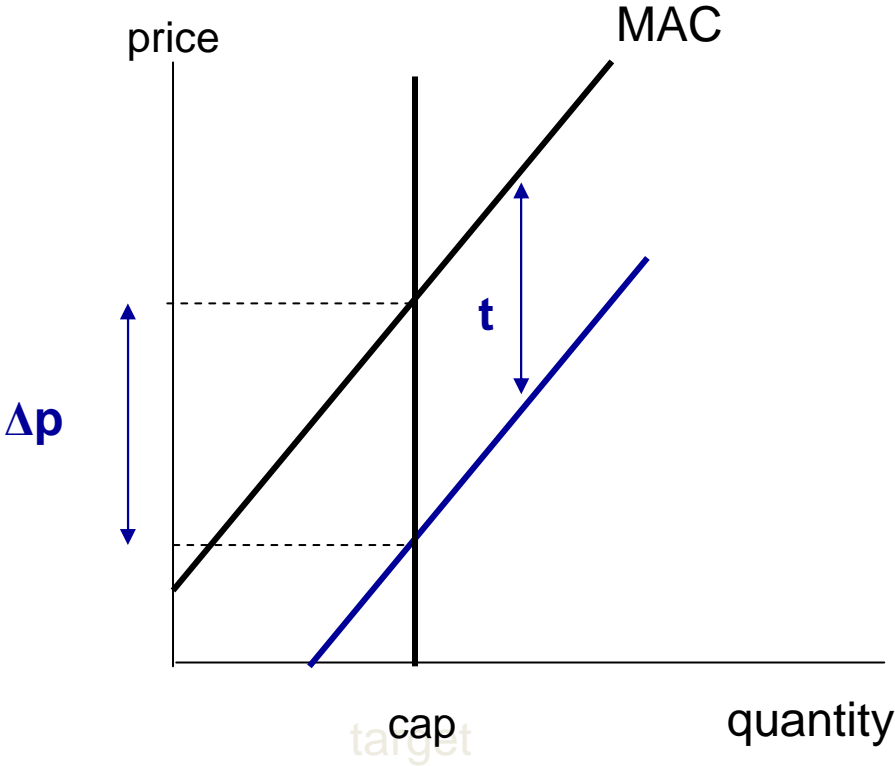
Example: UK policies parallel to the EU ETS

- Tax and trade
 - Climate Change Levy
- Subsidy and trade
 - Renewable heat incentive; small-scale feed in tariff
- Trade on trade
 - CRC Energy Efficiency Scheme
- Regulation and trade
 - Renewable energy obligation, energy performance standards



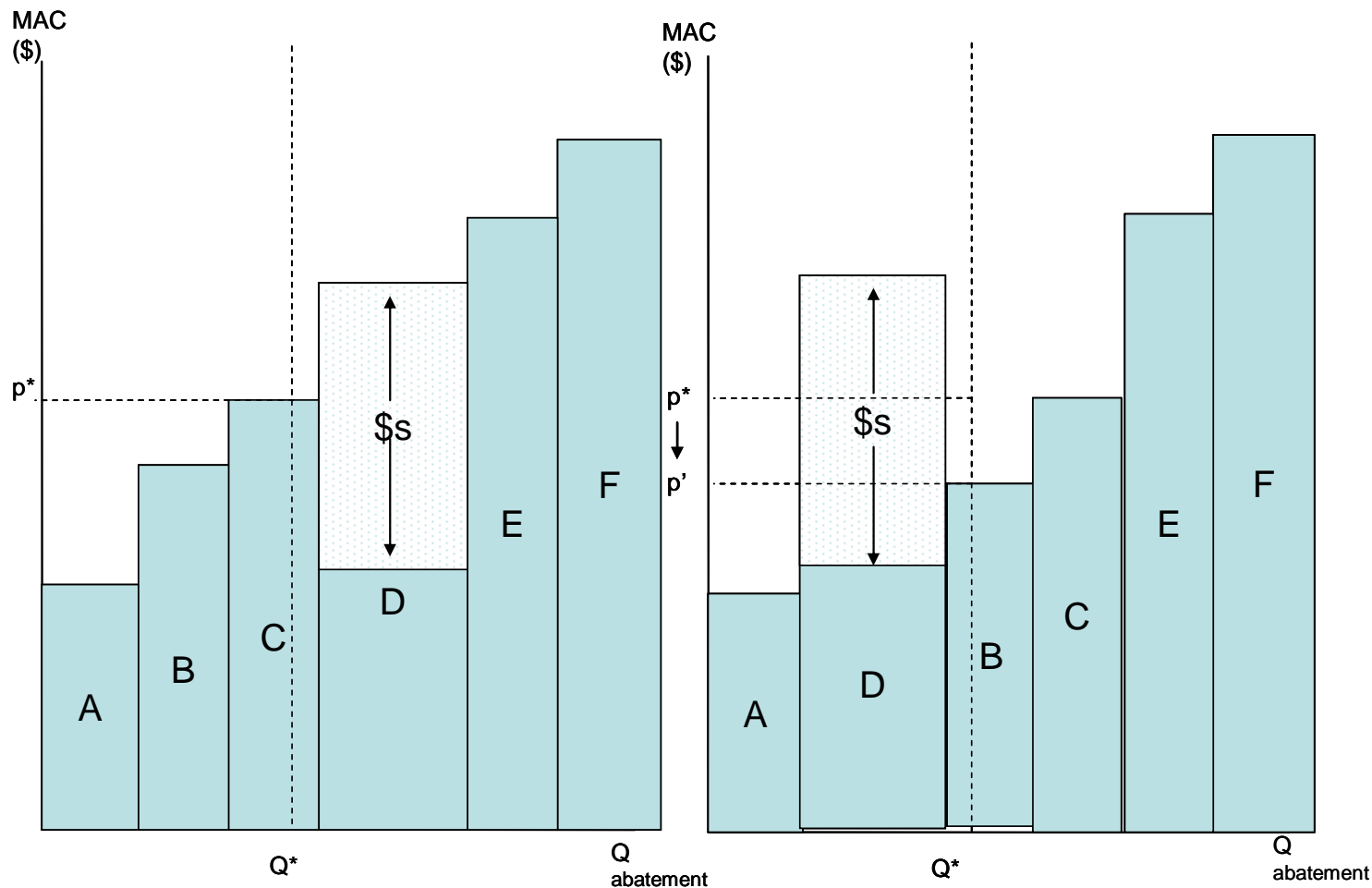
Combining taxes with trade: the simplest case

A tax on top of the cap reduces the carbon price by the same amount. The overall price signal ($t+p$) is constant, but the carbon market is undermined

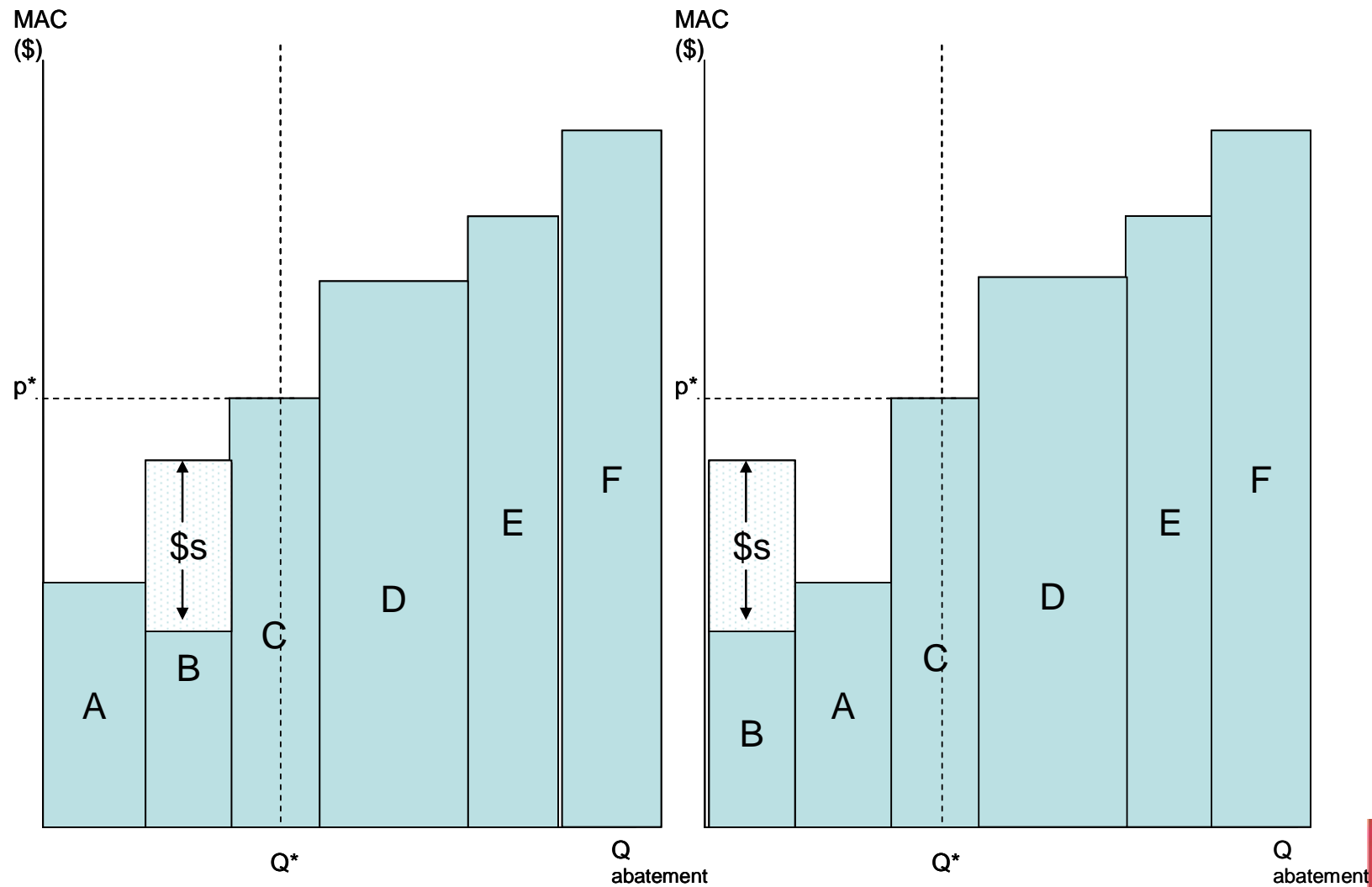


Targeted taxes or subsidies may have the same effect

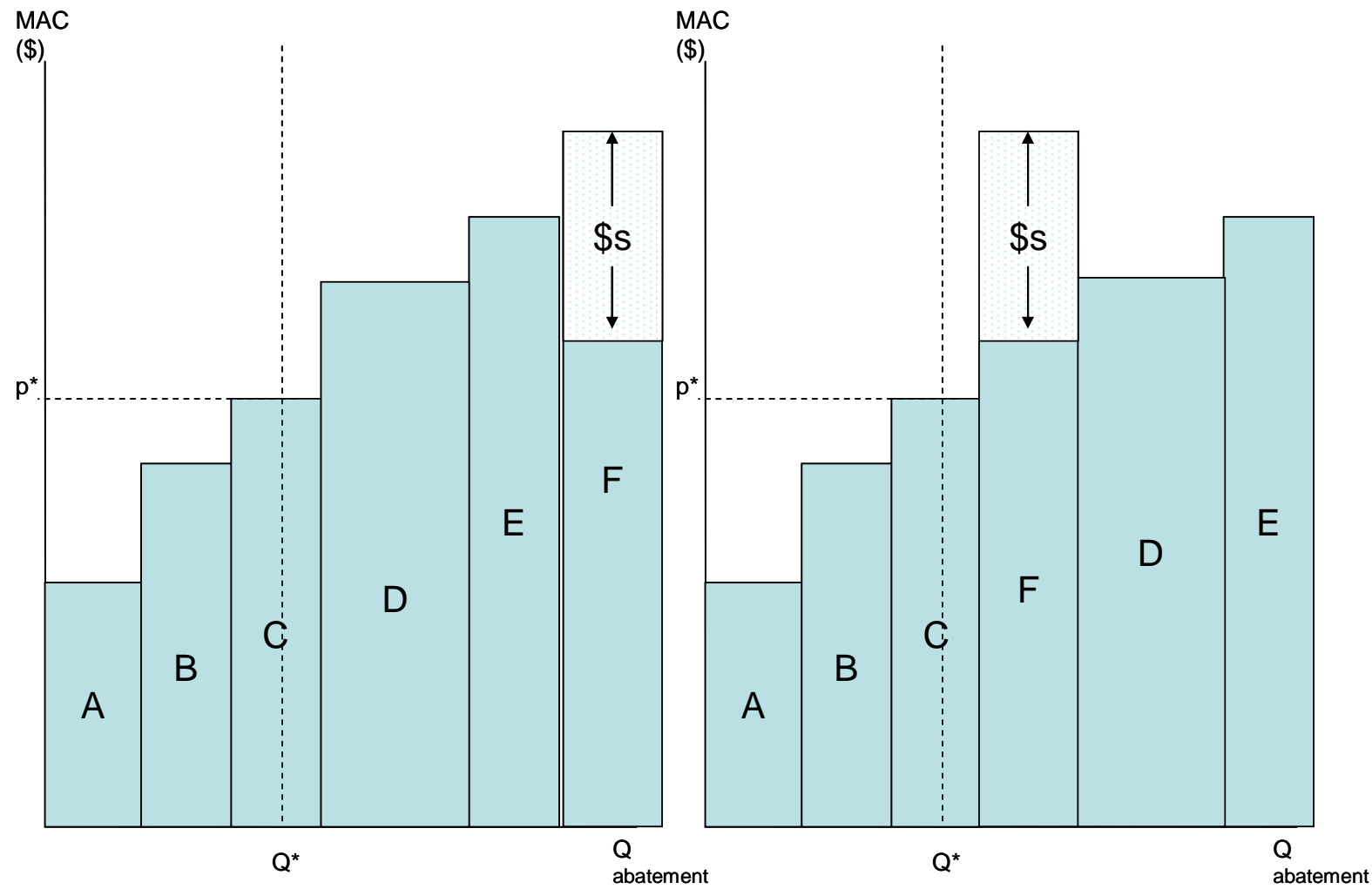
The expensive mitigation action D (renewables?) is forced into the mix, reducing the price at the margin and crowding out action C



Support of intra-marginal activities creates rent



Support of extra-marginal activities has no price effect

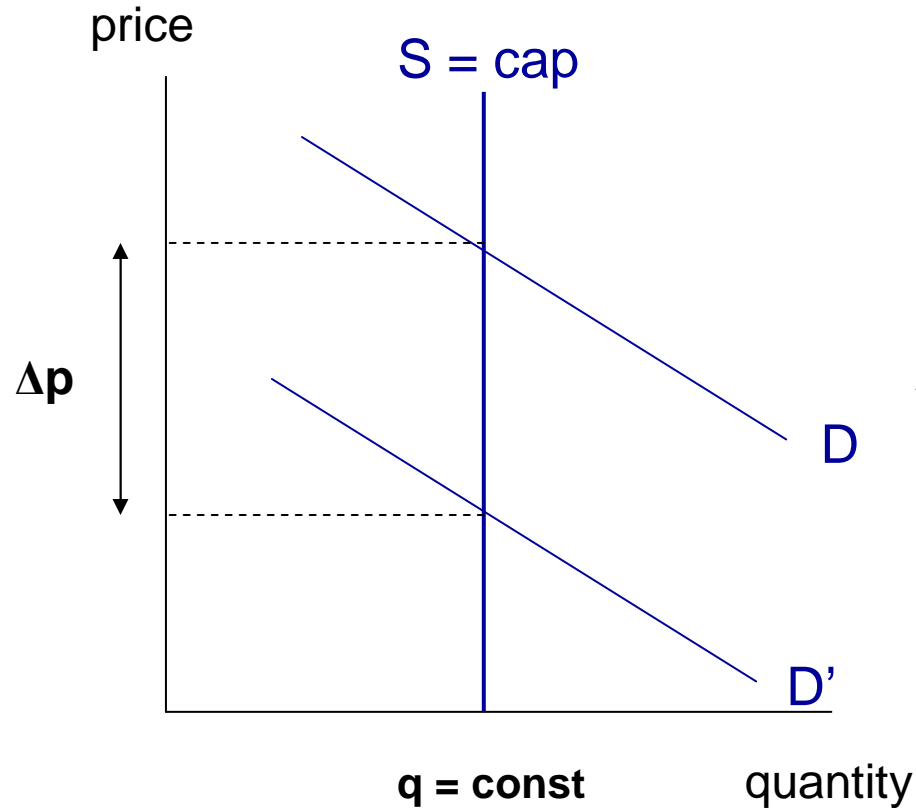


Hybrid instruments

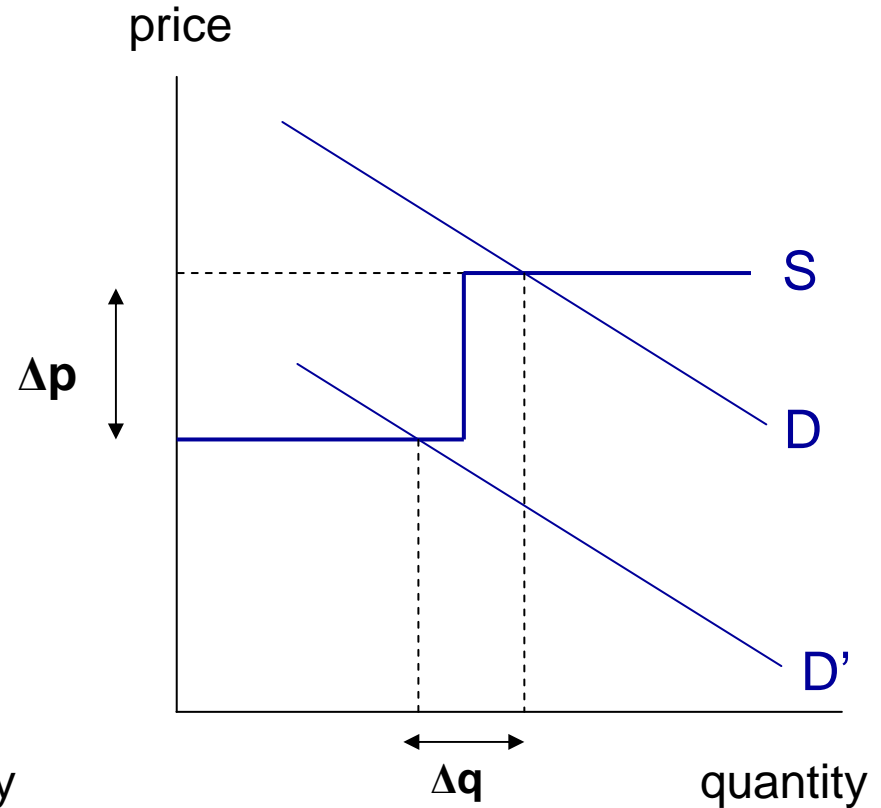
- Auction reserve price
 - Underpins the carbon price
- Safety valve
 - Curtails the carbon price
- Cap and collar
 - Combines reserve price and safety valve
- Contract for differences
 - Stabilises the carbon price

Collar creates an upward sloping supply curve

Reduces price fluctuation but introduces quantity uncertainty



Fixed cap



Collar



Conclusions

- Price ceilings and underpins (cap and collar) may be justified if excessive price fluctuations are undesirable
- Support for particular technologies (renewables, CCS) may be desirable from a long-term perspective
 - Subsidising the move down the learning curve
- Hybrid instruments are better at stabilising the carbon price than pure tax and trade

Other work by the LSE Carbon Market Group

- Linking regional cap-and-trade schemes
- Hybrid schemes and other price containment mechanisms
- Understanding Carbon Price Fluctuations
- Understanding the CDM – EUA spread
- Impact of Carbon Regulation on Technology Uptake and Innovation



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