Cost effectiveness of EU ETS reform options

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EU ETS

- in operation since 2005
- cornerstone of EU policy framework for climate & energy (with RED, EED, reduction targets for other sectors)
- power sector + energy-intensive industry + domestic aviation
- EU28 + EEA-EFTA
- ~45% total EU GHG emissions
- cap is reduced over time
EU ETS reform - why?

CO₂ price EU ETS (€₂₀¹₄/tCO₂)
EU ETS reform - why?

- Low demand...
  - economic stagnation
  - interacting policies (renewables)
  - international offsets (CDM & JI)
  - banking provision (surplus > 2 billion allowances)

- ... and fixed supply: **low price and large surplus**

But...

- even with low price emissions will not exceed the cap
- even with large surplus CO₂ price still >0

Insufficient incentive for long-term low-carbon investments

- low level of CO₂ price
- uncertainty about future CO₂ prices
EU ETS reform - how?

How to make EU ETS more robust to external shocks?

- **Economic literature:**
  - floor price (+ price ceiling)
    - auction reserve price
    - fixed or variable tax

- **European Commission**
  - reduce supply of allowances (tighten cap, permanent set aside)
  - market stability reserve (adjustment of supply based on surplus)
EU ETS reform - how?

- Our analysis:
  1. tighter cap (-2.6 billion EUAs)
  2. permanent set aside (-900 mln EUAs)
  3. auction reserve price €20 – unsold EUAs into reserve
  4. variable CO₂ tax on top of EUA price (sum equal to €20)
  5. fixed €20 CO₂ tax on top of EUA price
Method

- **WorldScan**: Global multi-region multi-sector CGE model
  - detailed representation of EU ETS
    - EU regions and ETS-sectors
    - annual and regional supply and demand of allowances
    - banking of EUAs
  - recursive dynamic model, but...
  - ... forward-looking behavior on allowance market
    (banking => more abatement now, less in the future)

- **Business-as-usual scenario:**
  - EU ETS: current legislation extended to 2030
  - renewables policies + non-ETS targets
  - surplus of 2008-2012 and banking (time horizon 2030)
Results

Effective CO₂ price

EUA price

ETS GHG emissions

€/tCO₂

M t CO₂
Results – compliance cost

% HEV in BAU income

-0.50%
-0.25%
0.00%
0.25%

TCAP | PSA | AUCT | VTAX | FTAX

Other new MSs
France
EU27
Poland
Robustness check – low economic growth

Effective CO₂ price

EUA price

ETS GHG emissions

- BAU
- BAU_lgdp
- TCAP
- PSA
- AUCT
- VTAX
- FTAX

2013 2017 2021 2025 2029

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80 60 40 20 0

80 60 40 20 0

2400 2100 1800 1500 1200
Conclusions

- Changing the cap does not make ETS robust to future shocks
  - new demand shocks would require new supply adjustments

- Auction reserve price and fixed or variable CO₂ tax introduce effective price floor
  - ETS more robust to future unexpected developments
  - more predictable prices will lower risk premiums on investments
  - sound scientific basis and included in other ETS (California, RGGI)
  - implementation may, however, be difficult:
    - difficult negotiations on price floor level
    - with auction reserve price widely divergent compliance cost
      (relatively large impact in new MSs)
    - (fixed or variable) CO₂ tax requires unanimity among EU MSs