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The impact of the Market Stability Reserve on the EU ETS

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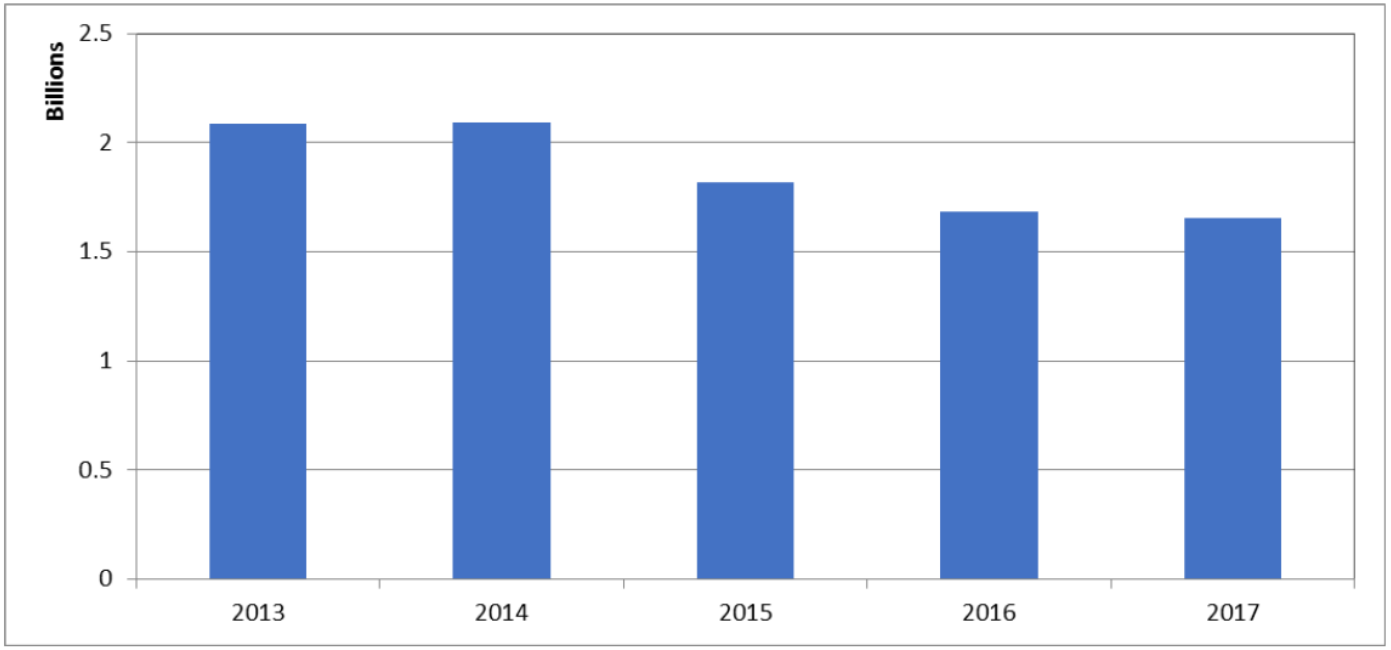
Outline

- The EU‘s diagnosis
- The EU‘s cure
- Expected response by the patient
- Interaction with other medicines and side effects

Source: Sandbag Carbon Price Viewer

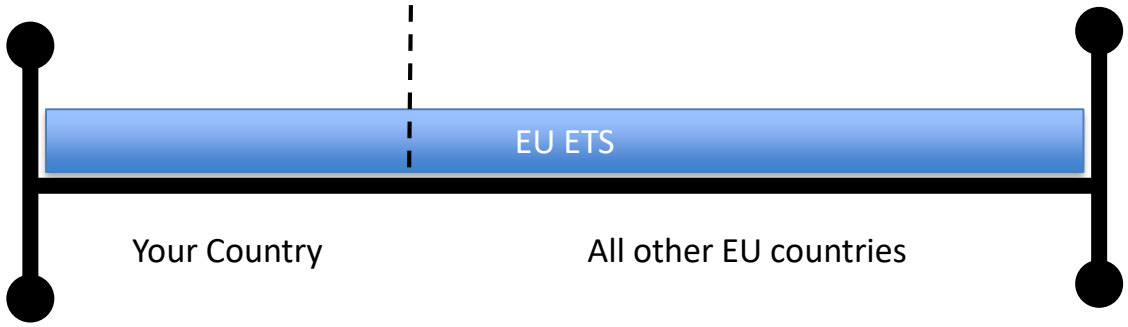
Figure 4: Development of the surplus in the European carbon market in 2013-2017



Source: European Commission, Carbon market report (2018)

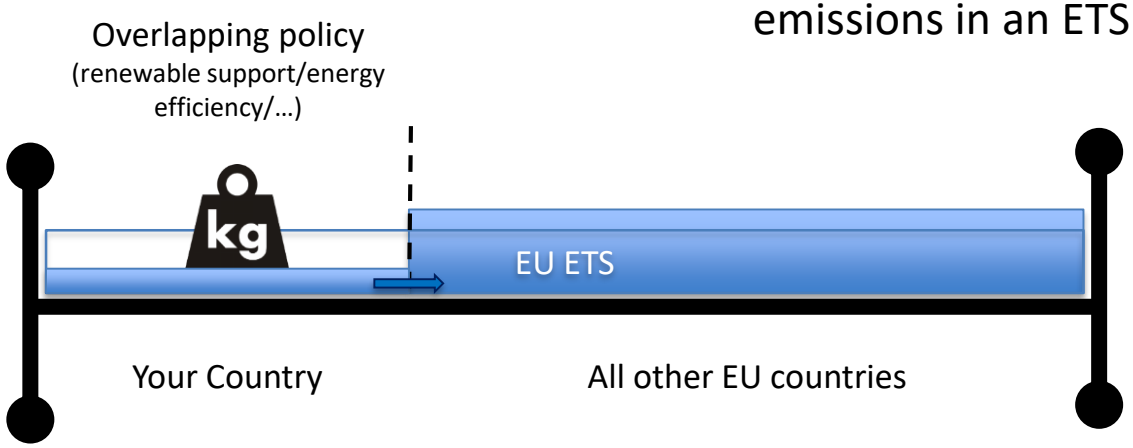
The waterbed effect

The waterbed effect



The waterbed effect

Key insight:
Overlapping policies do not affect total emissions in an ETS with a fixed cap.



The Market Stability Reserve

- Objectives (official list)
  - Reduce demand-supply imbalances
  - Increase resilience
  - Stimulate low-carbon investment
- Dynamic backloading
  - Issue date of allowances postponed
  - Trigger levels for 'bank'
    - 833 million (intakes stops)
    - 400 million (re-issuing starts)
    - Level on 31st Dec. 2017: 1.65 billion

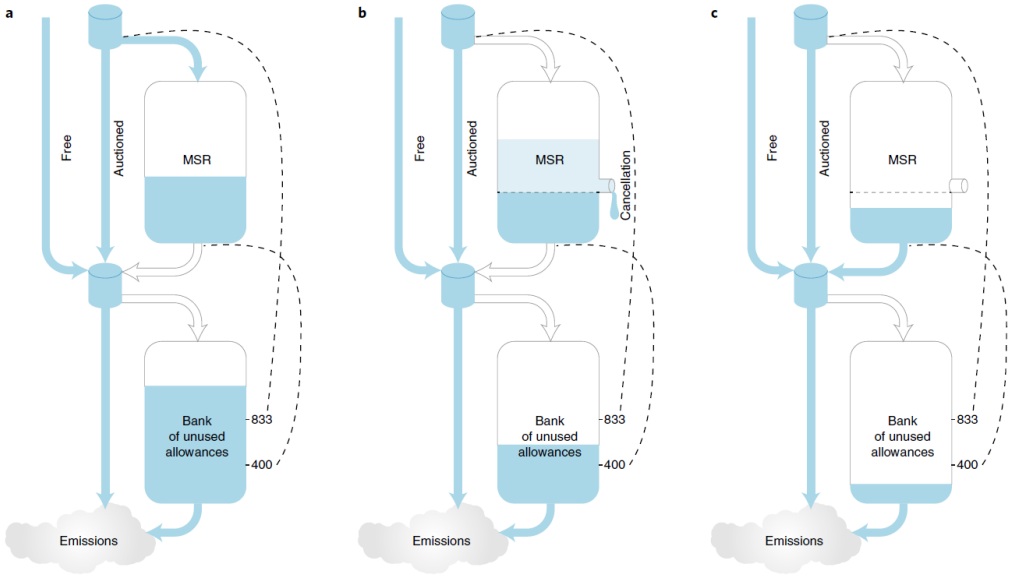
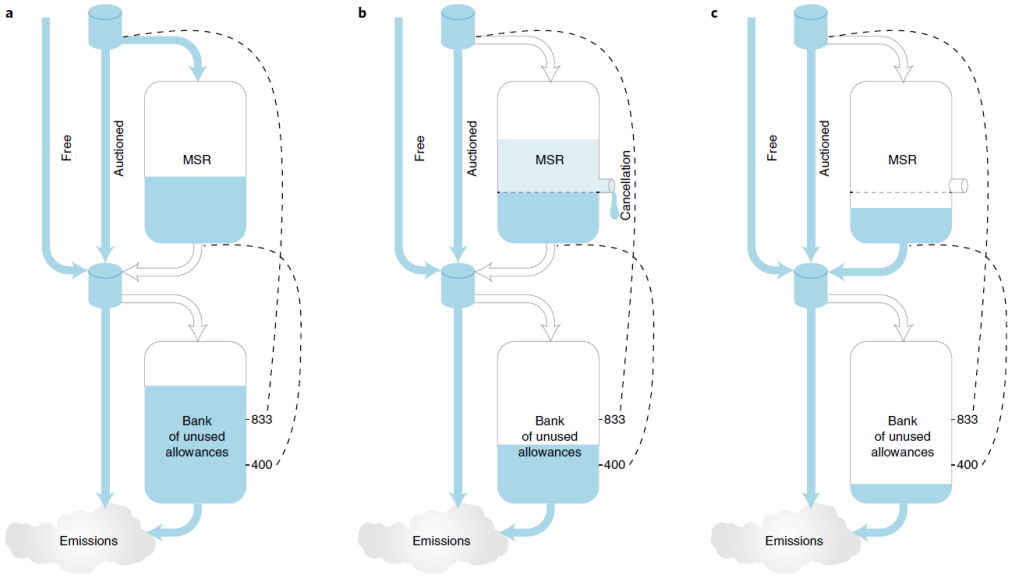


Fig. 1 | **The MSR in three operational states. a**, The bank contains more than the upper threshold (833 million). Allowances are withheld from auctions and placed in the MSR. This represents the year 2020, for example. Dashed lines starting at the two bank thresholds connect them to the switch they control. **b**, Allowances are not placed in the MSR nor does the MSR issue allowances, but some are cancelled (lightly shaded area above the dotted threshold represents total amount cancelled). This is expected to be the case in 2023, for example. **c**, The bank holds fewer allowances than the lower threshold of 400 million. Allowances move from the MSR back to the market. The cancellation threshold exists, but is non-binding. This represents a year towards the end of Phase 4.

Source: Perino (2018)

The Market Stability Reserve

- Upper bound on number of allowances held in MSR
  - Starting in 2023
  - Limit: Allowances auctioned in previous year
  - Allowances above the limit **permanently removed**
  - Because MSR will be seeded with over a billion allowances, **all allowances additionally placed in the MSR will be cancelled** (Perino/Willner 2017, Perino 2018).



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Source: Perino (2018)

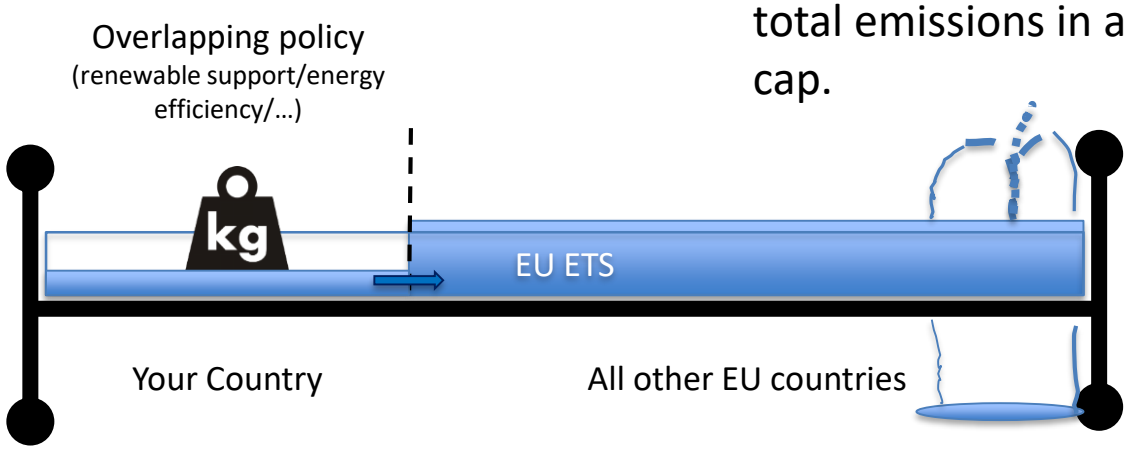
Expected impacts of msr

- Focus on permanent cancellations
  - Short-term changes in allowance supply (2015 version of MSR) considered irrelevant (Perino/Willner, 2017, Quemin/Trotignon, 2019 and Silbye/Sorensen, 2018)
- Focus on conceptual issues
  - Endogenous cap
  - Effect of overlapping climate policy measures

Emission impact of Unilateral policies

- MSR cancellation mechanism renders long-run cap endogenous
- Waterbed is (partially & temporarily) punctured (Perino 2018)
- Overlapping climate policies can now affect total EU ETS emissions

The waterbed effect – with puncture



Key insight:
Overlapping policies have some impact on total emissions in an ETS with a flexible cap.

Emission impact of Unilateral policies

- From cause to effect
  - Unilateral policy affects domestic allowance demand
  - And allowance demand by other EU ETS member countries (via product market interactions) – internal carbon **LEAKAGE**
- => net change in allowance demand

- Net change is industry/country/policy specific
  - Degree of output market integration (e.g. electricity market)
  - Relative emission intensity across countries
  - Cost raising (carbon price floor) vs. supply increasing (renewable support) policies

Emission impact of Unilateral policies

- Net change in allowance demand affects
  - Banking
  - MSR intake
  - Cancellations
- Waterbed effect?

Emission impact of Unilateral policies

- Extend of waterbed effect determined by
  - Timing of net change in allowance demand (t)
  - Point in time the MSR stops taking in allowances ($t_{B=833m}$)

Bank exceeds 833 million allowances (on December 31^{st})	Intake rate (%)
2017	16*
2018 - 2021	24
2021 - $t_{B=833}$	12

Table 1: MSR intake rates
* Two-thirds of 24 percent because the withdrawals that would be due in Oct.-Dec. 2018 do not materialize (European Commission, 2018).

Source: Perino et al. (2019)

Partial waterbed effect

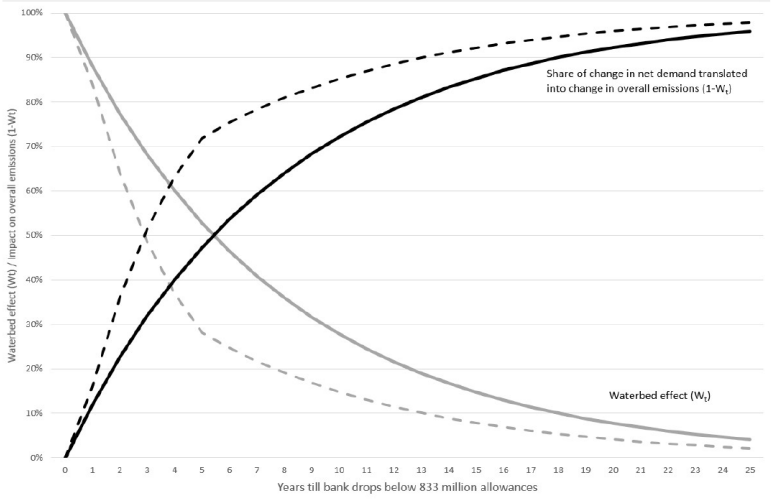


Figure 1: Eventual impact of a marginal change in net allowance demand on overall EU ETS emissions $1 - W_t$ (black) and waterbed effect W_t (grey) as functions of the number of years until the aggregate bank drops below 833 million allowances $t_{B=833}$. Dashed: Effect in 2017 or earlier; Solid: Effect in 2022 or later; Effects for 2018-2021 in between (not shown); Calculations assume fixed carbon price path.

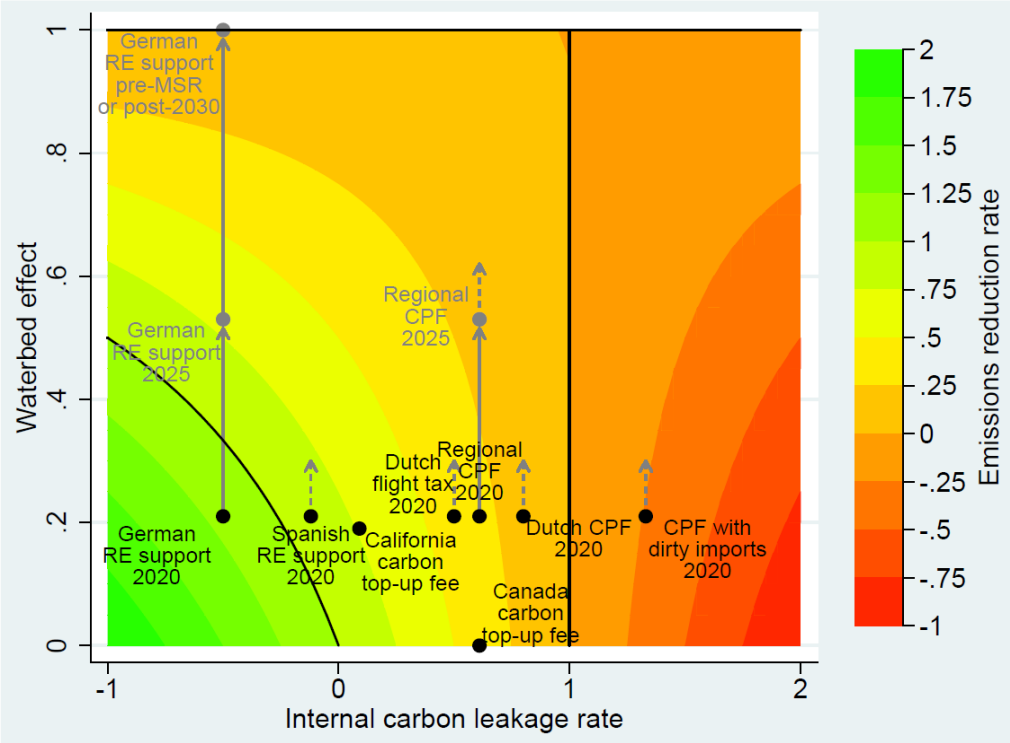
Source: Perino et al. (2019)

Problems:

- Policy impact crucially depends on years till MSR stops intake
- Projections vary substantially
  - Early 2020s (Perino/Willner 2017)
  - About 2030 (Vollebergh, 2018)
  - About 2040 (Silbye/Sorensen 2019)
- Substantial uncertainty about policy impact

Illustrative examples

- Different unilateral policies overlapping a carbon pricing scheme
  - Separate internal carbon leakage vs. waterbed effect
  - Impact on total emissions given by colour scheme
- All EU ETS policies move up year by year as waterbed effect returns.



Source: Perino et al. (2019)

conclusion

- MSR has changed character of EU ETS
- Overlapping / unilateral policies now have emission impact (*for some time*)
  - Size of impact varies with country, industry, policy instrument and time
- Abating GHG emissions by policies overlapping the EU ETS does NOT follow the uniform pricing rule – its much like regulating a local pollutant with highly heterogeneous marginal damages

conclusion

The EU ETS evolved from

- a clear but often unintuitive (waterbed effect)
- to a highly complex system

to interact with as a national/regional/local government.

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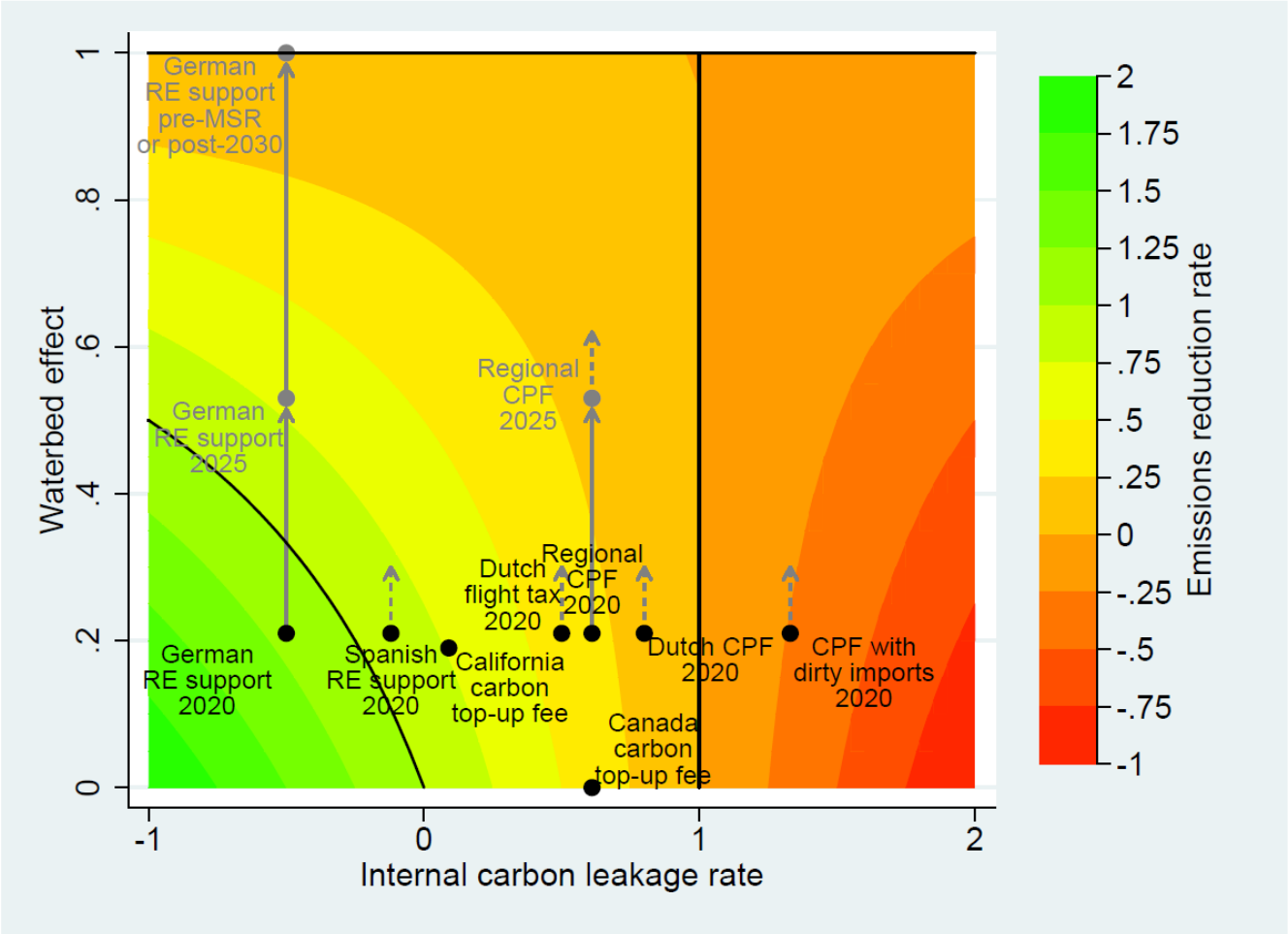

Source: Perino et al. (2019)