The EU ETS Market Stability Reserve: A Responsiveness Mechanism

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What is the problem?

- By choosing a specific mode for implementing an intended policy (carbon tax or permits quota), the planners are at least temporarily locking themselves into certain consequences.
- The supply of permits is current inflexible and does not allow the system to respond to changes in the permits demand.
- In particular, the economic recession (a large-scale unforeseen economic shock) fundamentally changed the demand for permits, ultimately depressing prices.
Central control under certainty – first best

- An ideal instrument of central control would be a contingency message whose instructions depend on which state of the world is revealed (economic shock, technology advancement and new policies, for instance).

- By employing the ideal signal, the *ex ante* uncertainty has in effect been eliminated *ex post*, and we are back to the optimal solution – the first best.
Central control under uncertainty – second best

- In an infinitely flexible control environment where the planners can continually adjust instruments to reflect current contingencies, considerations about uncertainty are irrelevant.
- In any less hypothetical world the consequences of a single order (tax or permits) have to be lived with for at least the time until revisions are made.

**Indexing:** By indexing the instrument to changes of a specific target dimension (economic, volume or price indicator), the cost-effectiveness is improved.
The inter-temporal problem under certainty

- Under complete knowledge and perfect information, firms solve their inter-temporal decision problem spreading their abatement efforts optimally across the regulated phase.
The impact of uncertainty

- In reality businesses operate under uncertainty.

- Large-scale events may lead the market to deviate significantly from the original cost-optimal solution.
The EU ETS and the role of the MSR

- Allowance demand-supply imbalances – as measured by excessive over- or under-supply – can be the result of unforeseen, large-scale events:
  - economic shocks - economic recession that changes the fundamentals of permits demand;
  - technology advancements - penetration of new or cheaper technologies;
  - policy shocks - overlapping policies.
- The MSR aims at making the EU ETS responsive to shocks (post-shock supply adjustments) and thereby minimise the possible deviations from the cost-optimal pathway.
Assessing the MSR – the KT model

Kollenberg and Taschini (2014) model allows to test different mechanisms (different types of MSRs), checking their correcting effect.

The KT (2014) model allows us to test the impact of different MSRs (in particular volume-based and price-based) e.g. by varying:

- threshold levels (bandwidth);
- the size of the MSR intervention (withholding/injection quantities); and
- the MSR implementation year.
Economic shock and no MSR
Economic shock and MSR
MSR parameter considerations

- Uncertainty and incomplete information lead to sub-optimal outcomes and call for policy adjustments.
- The MSR could mitigate the impact of shocks and reduce sub-optimality.
- However, the MSR parameters matter:
  - withholding and injection thresholds (bandwidth) should be set properly (adjustable);
  - withholding and injection quantitates should be set properly too.
- Built-in flexibility for the MSR parameters is needed.
The change in abatement costs - no uncertainty

- Abatement costs change with changing withholding and injection quantities.

![Diagram showing the relationship between normalized abatement costs and withdrawal percentage, with injection quantity on the x-axis and normalized abatement costs on the y-axis.](image)
The change in abatement costs - no uncertainty

- Abatement costs change with changing withholding and injection quantities.
The change in abatement costs - uncertainty

- Abatement costs change with changing withholding and injection quantities.
The change in abatement costs - uncertainty

- Abatement costs change with changing withholding and injection quantities.
Thank you very much for your attention.

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Talk based on the paper Kollenberg and Taschini (2014)