Will the Market Stability Reserve in the EU Emission Trading scheme live up to its name?

Jörn C. Richstein, Emile Chappin & Laurens de Vries
What is the EU ETS missing?

EU Emission Trading System

Volatile carbon price and recent low:

- Economic development
- Renewable policy
- Kyoto credits
- ...
What is the EU ETS missing?

EU Emission Trading System

- The endogenous reason for volatility:
  - Quantity of permits is fixed
  - Carbon reduction cost curve is non-linear and delayed

- Problem:
  - Possible carbon lock-in
  - Dynamic inefficiency

➢ Need for flexibility of supply
The Market Stability Reserve
A Quantity Based Instrument

- Reduce auction in 2 years by 12% of currently banked EUAs, and put them in the MSR
- Inject 100 millions EUAs into auction in 2 years, and remove them from MSR

Price Emergency Trigger
Target Corridor

EUAs in circulation:
- 833M
- 400M
The Market Stability Reserve

A Quantity Based Instrument
Four questions regarding the MSR

To help determine if it will live up to its name.

- Are the trigger levels set correctly?
- Is the proposed response curve a good one?
- Is an early introduction of the MSR beneficial?
- What effect will the two year delay of the MSR have?
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EMLab-Generation

Electricity Market Laboratory

- Agent-based simulation of two connected electricity markets with equilibrium elements (cf. Richstein et al., 2014)
- Here: electricity sectors of Central Western Europe and Great Britain
- CO₂ policies
  - ETS incl. banking allowances based on imperfect market expectations
- Analysis always based on Monte-carlo simulations
- Available as open source on https://github.com/EMLab/emlab
The trigger levels
And the hedging demand of power companies

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<td>EU &quot;average&quot;</td>
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- Uncertainties:
  - Percentage of closed EUA hedges (70-100%)
  - Changes over time
  - Other sectors

Source: Eurelectric (2010)
The trigger levels
And the hedging demand of companies

Source: Adapted from Schopp and Neuhoff (2013), added MSR triggers
The response curve

Asymmetric and non-continuous
The introduction time

2021 or 2017

• Earlier introduction would coincide with return of backloaded permits

• Stabilises EUA prices, since avoids up and down of banked permits

• Further improvement? Placement of backloaded permits directly in MSR
The two year delay

Two possible problems with the delay

• Rear-view mirror effect

• Price cycle exacerbation
Simulation results

4 cases

These EUA prices do not constitute a forecast, due to model limitations.
Conclusions

And recommendations

• The trigger levels might be set relatively low
• The non-continuous response curve could have unintended side effects
• An earlier introduction would stabilise EUA prices
• The two year delay of the reserve might lead to more instability
Thank for your listening! Discussion?

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Our model is open-source, please visit:
https://github.com/EMLab/emlab-generation

The work was supported by the Erasmus Mundus PhD Fellowship and the TU Delft. The authors would like to express their gratitude to all partner institutions within the programme as well as the European commission for their support.
Literature