

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?

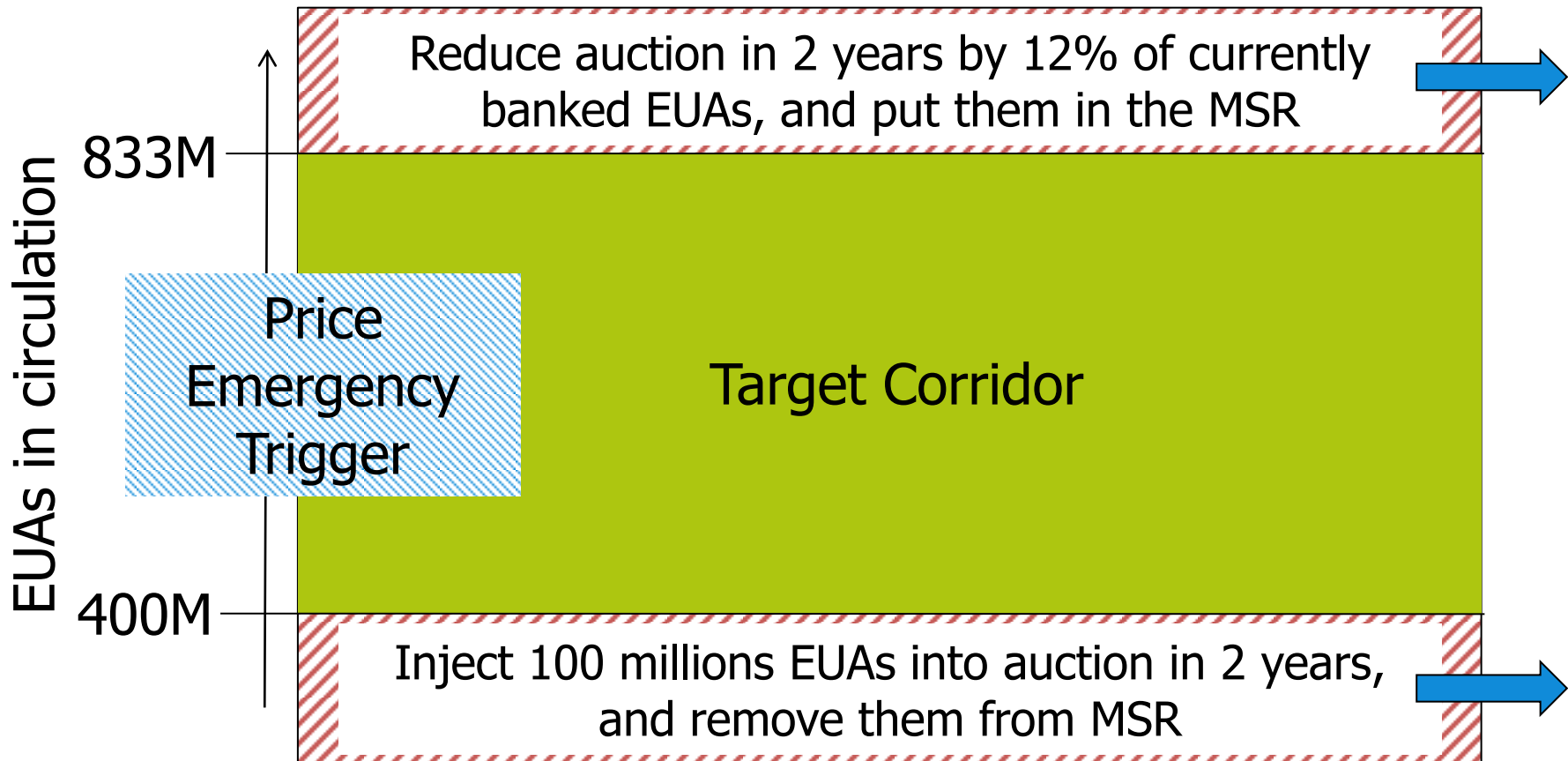
EU Emission Trading System

- 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

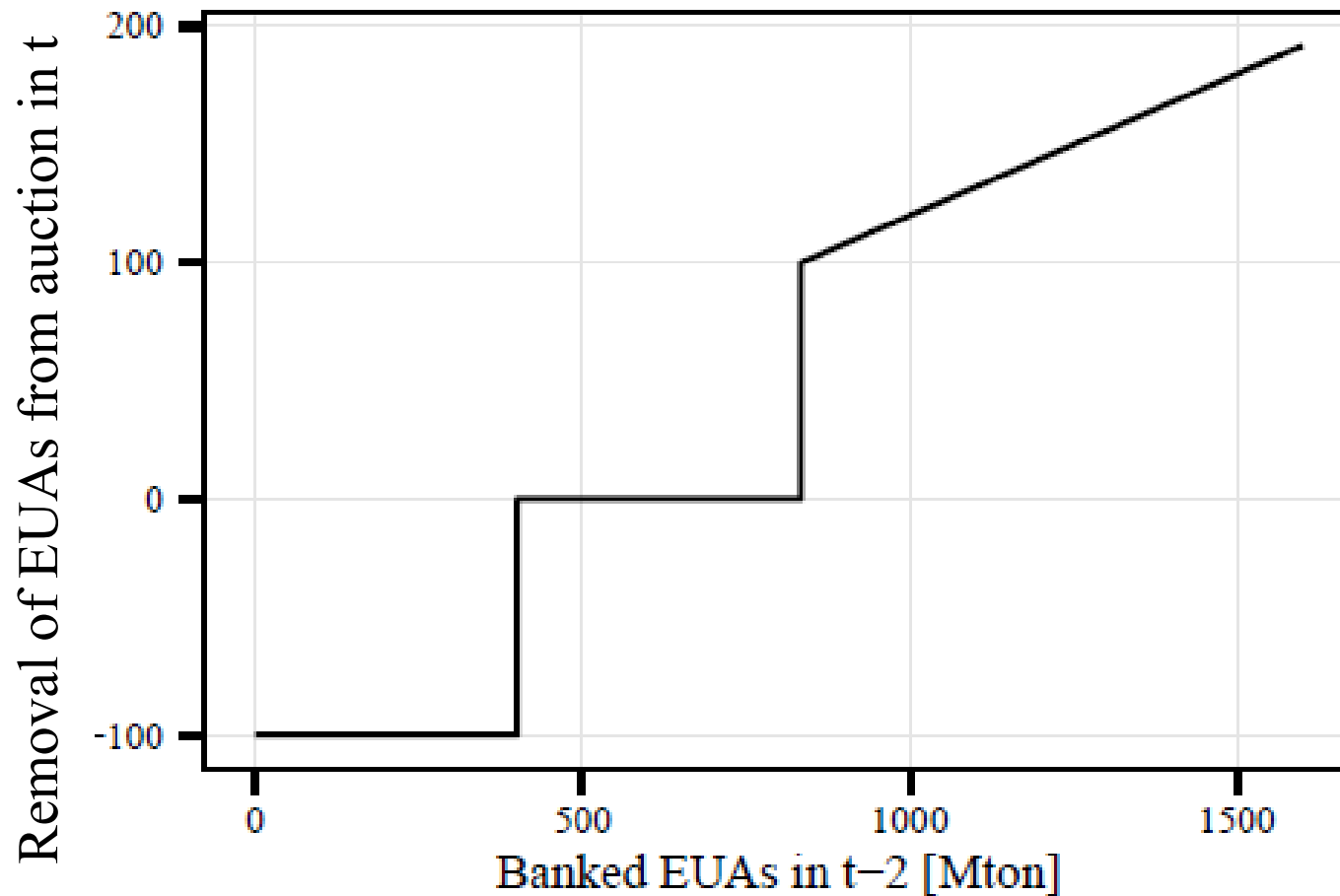
The Market Stability Reserve

A Quantity Based Instrument



The Market Stability Reserve

A Quantity Based Instrument



Four questions regarding the MSR

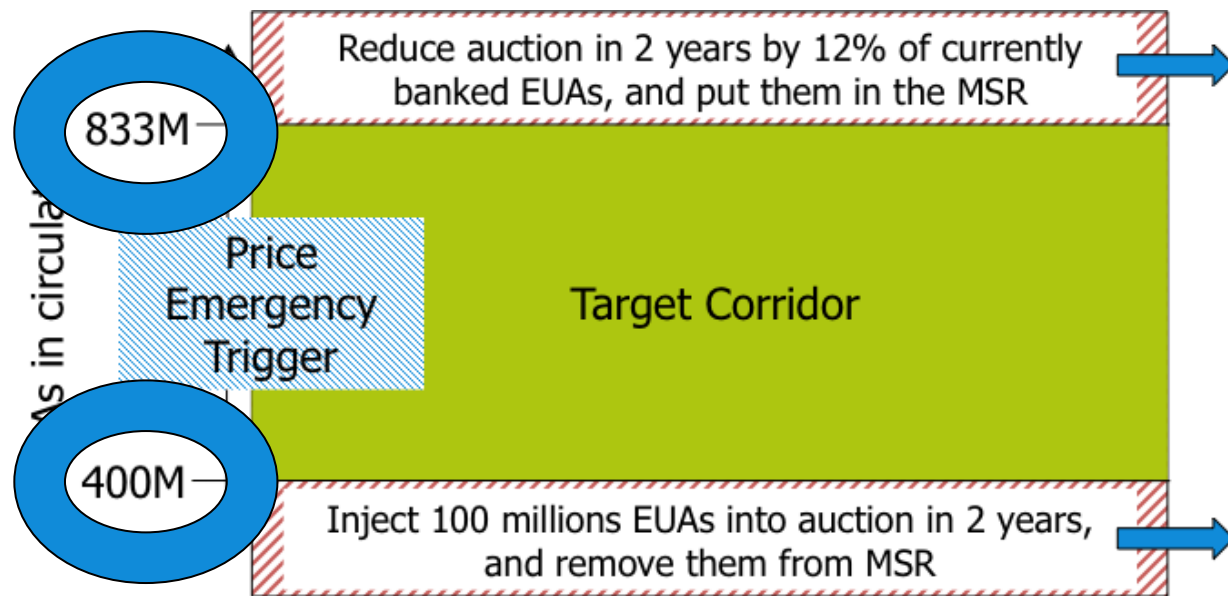
To help determine if it will live up to its name.

- 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?

Four questions regarding the MSR

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

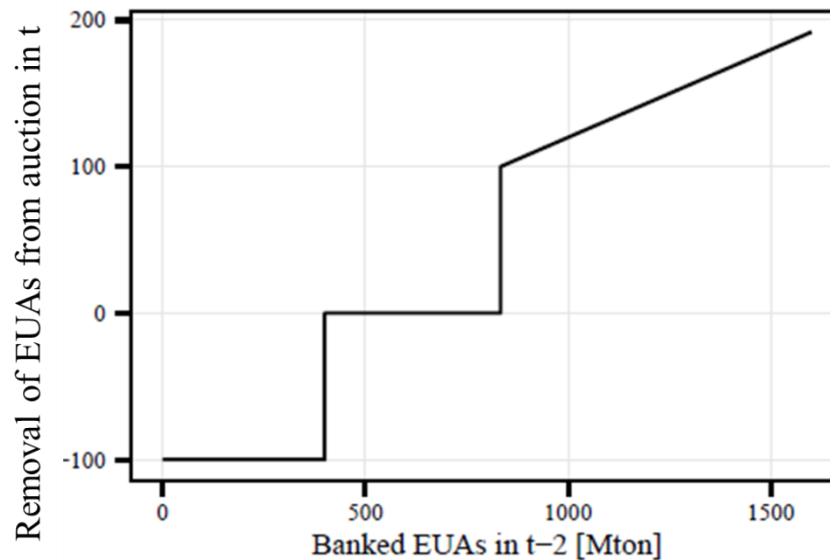
- **Are the trigger levels set correctly?**
- Is the proposed response curve a good one?
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Four questions regarding the MSR

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- **Is the proposed response curve a good one?**
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Four questions regarding the MSR

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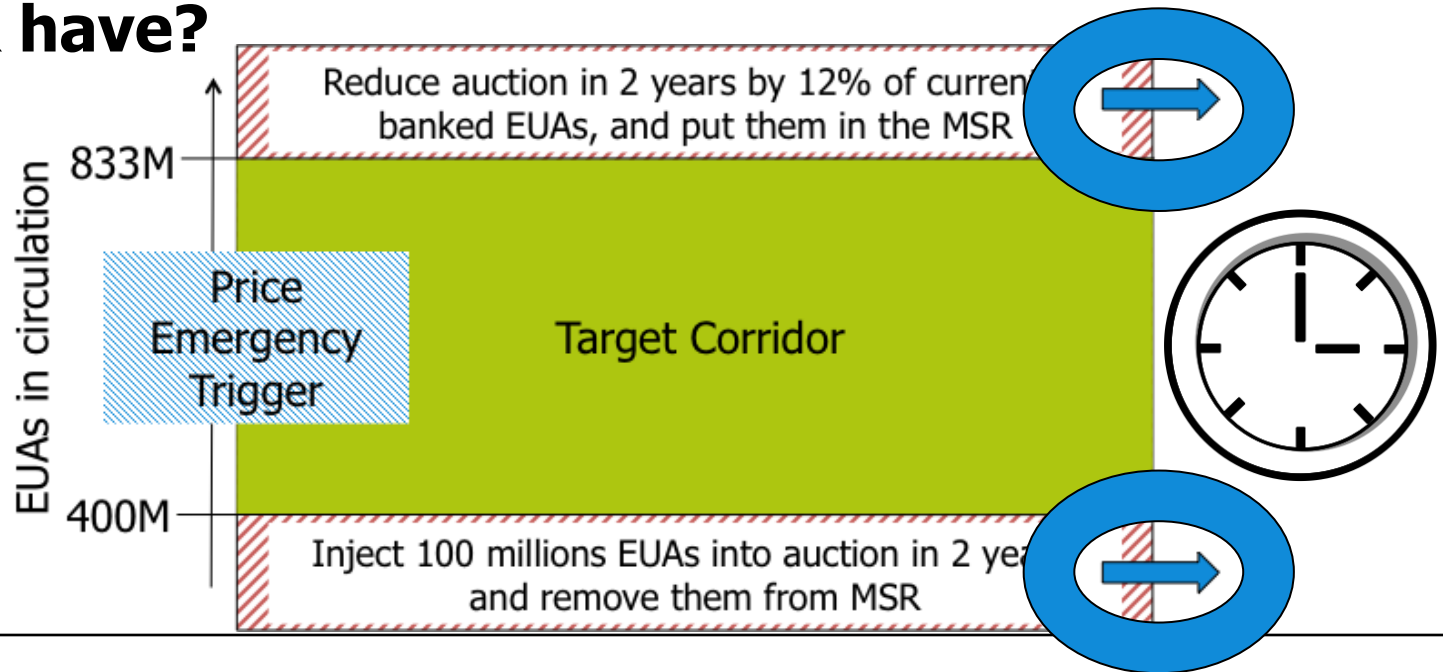
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2017 ← 2021

Four questions regarding the MSR

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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

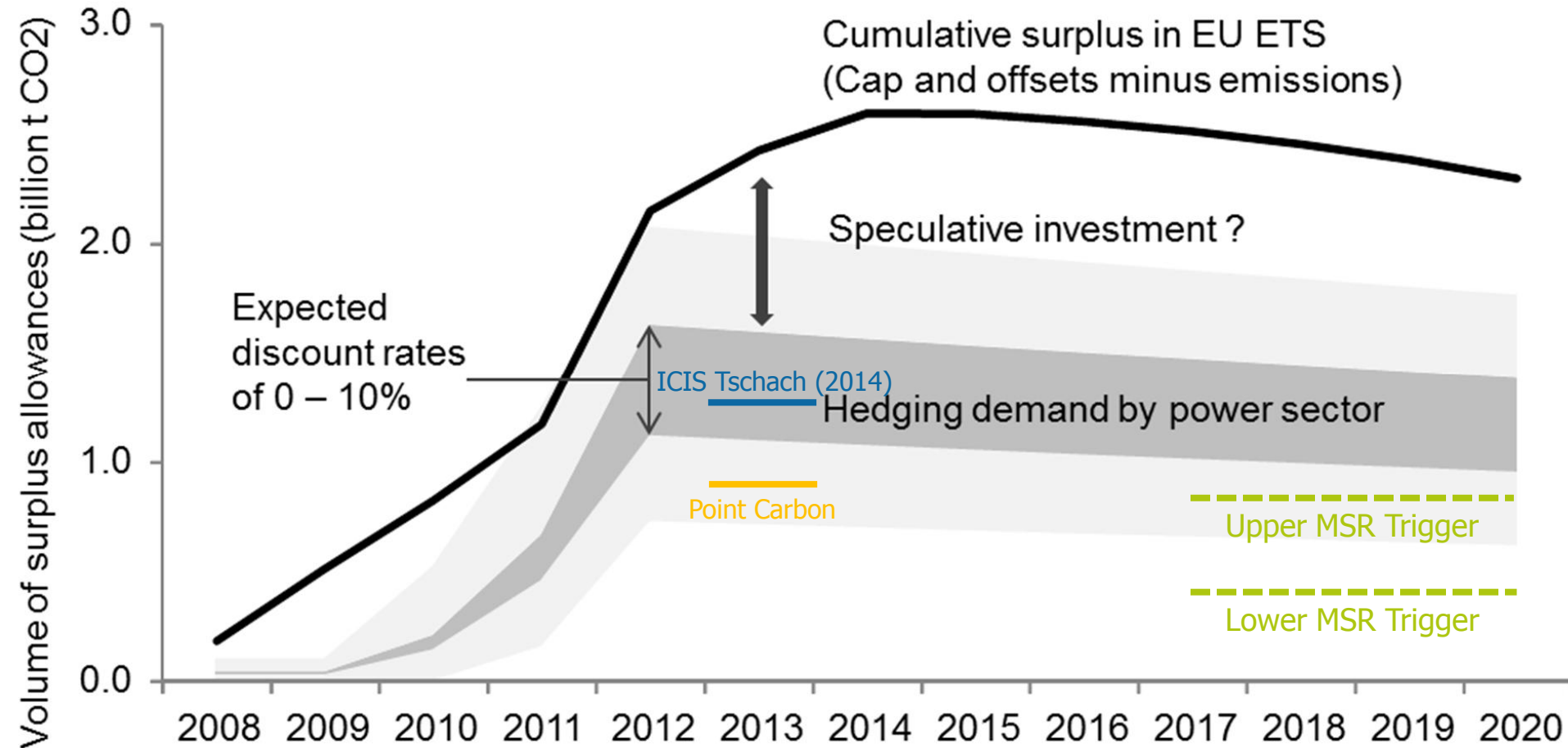
COUNTRY/REGIONAL MARKET	Year				Total
	n-3	n-2	n-1	n	
Nordpool/Nordic	20	25	25	30	100
UK	10	35	50	5	100
Ireland (Single Electricity Market)	0	5	80	15	100
Central East	5	5	75	15	100
Central West	35	40	20	5	100
Iberian	10	30	40	20	100
EU Weighted	18	28	32	21	99
EU "average"	20	20	40	20	100

Source: Eurelectric (2010)

- Uncertainties:
 - Percentage of closed EUA hedges (70-100%)
 - Changes over time
 - Other sectors

The trigger levels

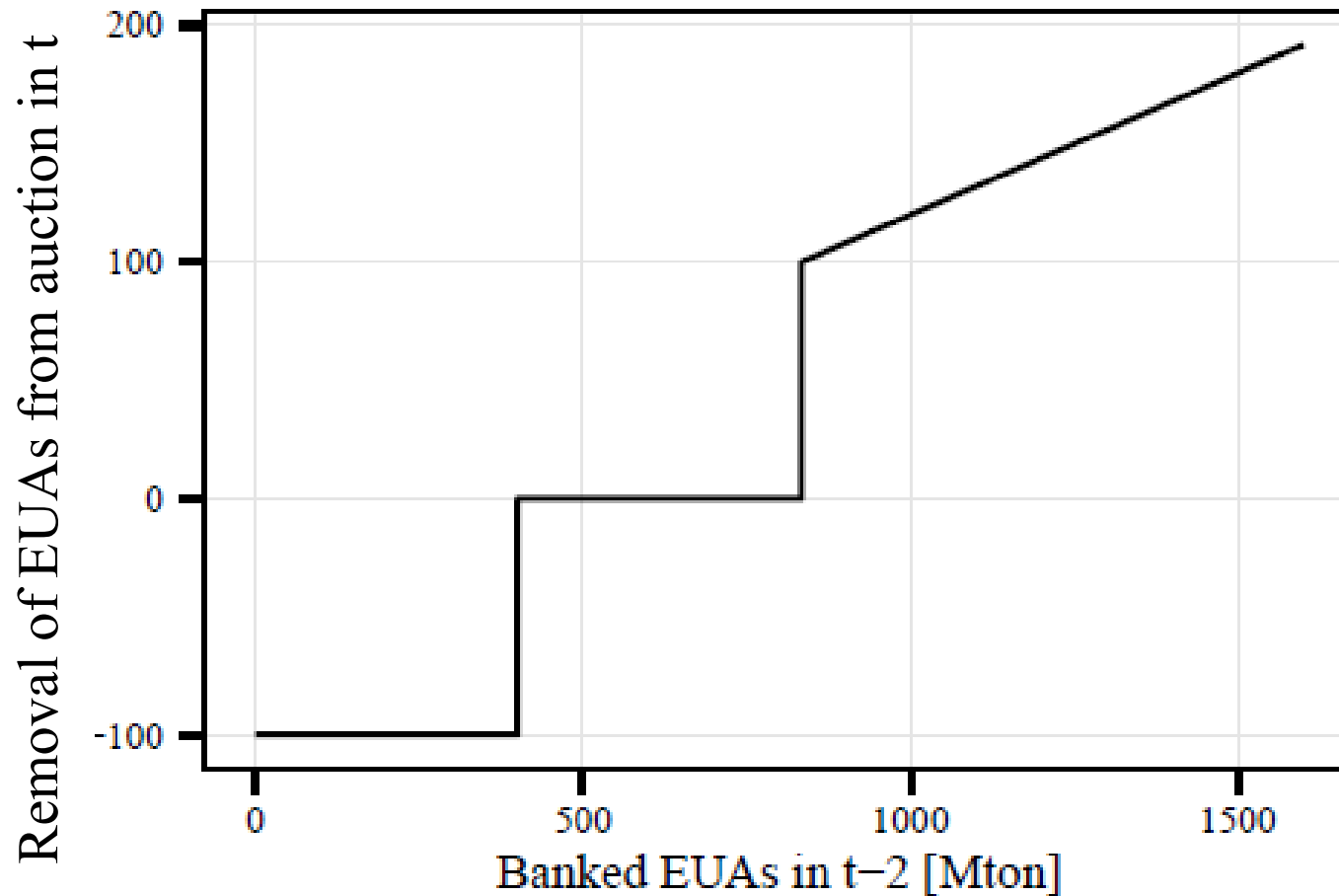
And the hedging demand of companies



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

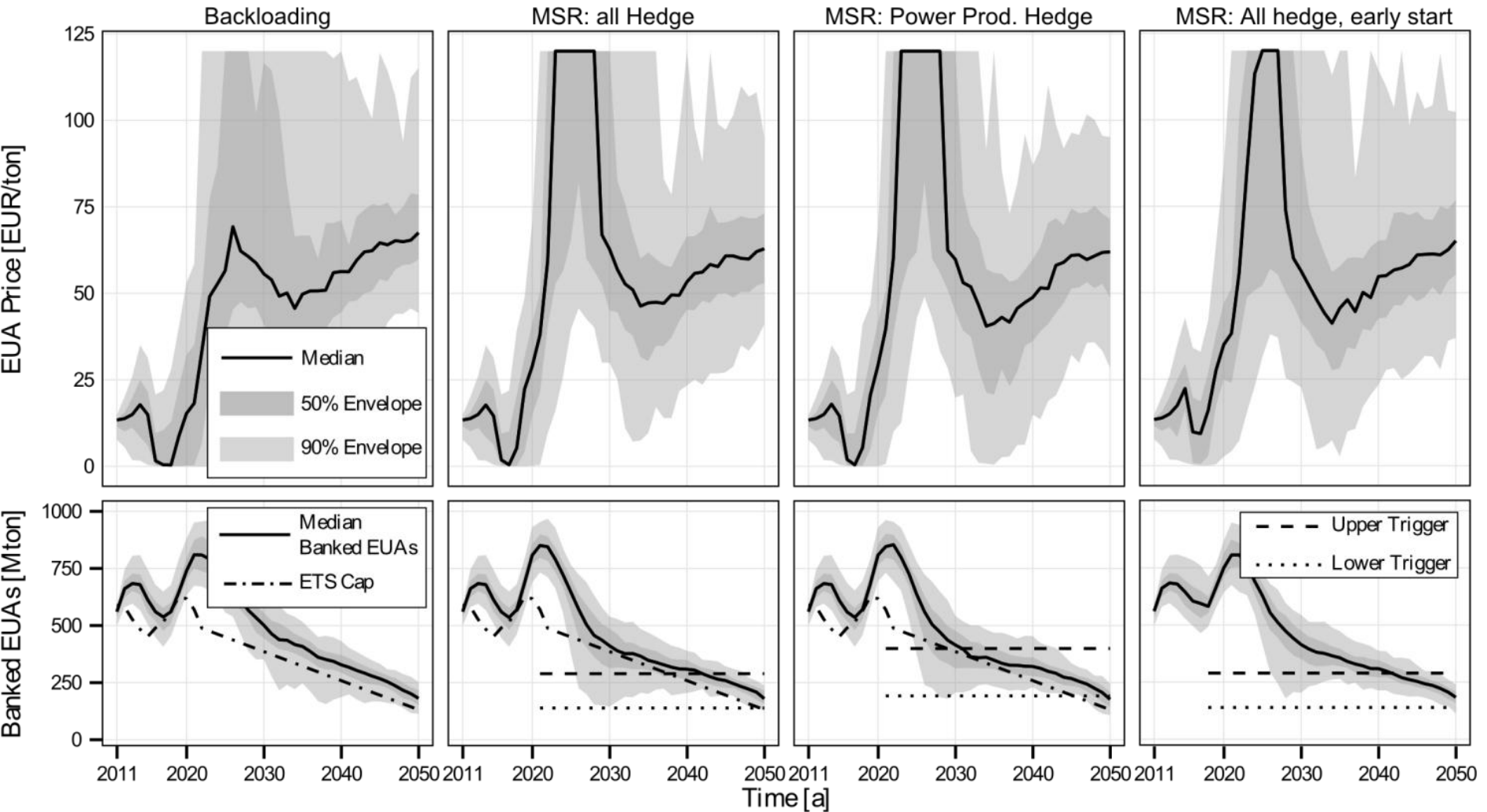
Two possible problems with the delay

- Rear-view mirror effect
- Price cycle exacerbation

Simulation results

4 cases

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



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>

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Literature

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