

EU ETS Reform:

« Partial » Carbon Price Floor(s) and the Market Stability Reserve

Climate Change Advisory Council of Ireland
Carbon Price Floor Seminar - November 29, 2018

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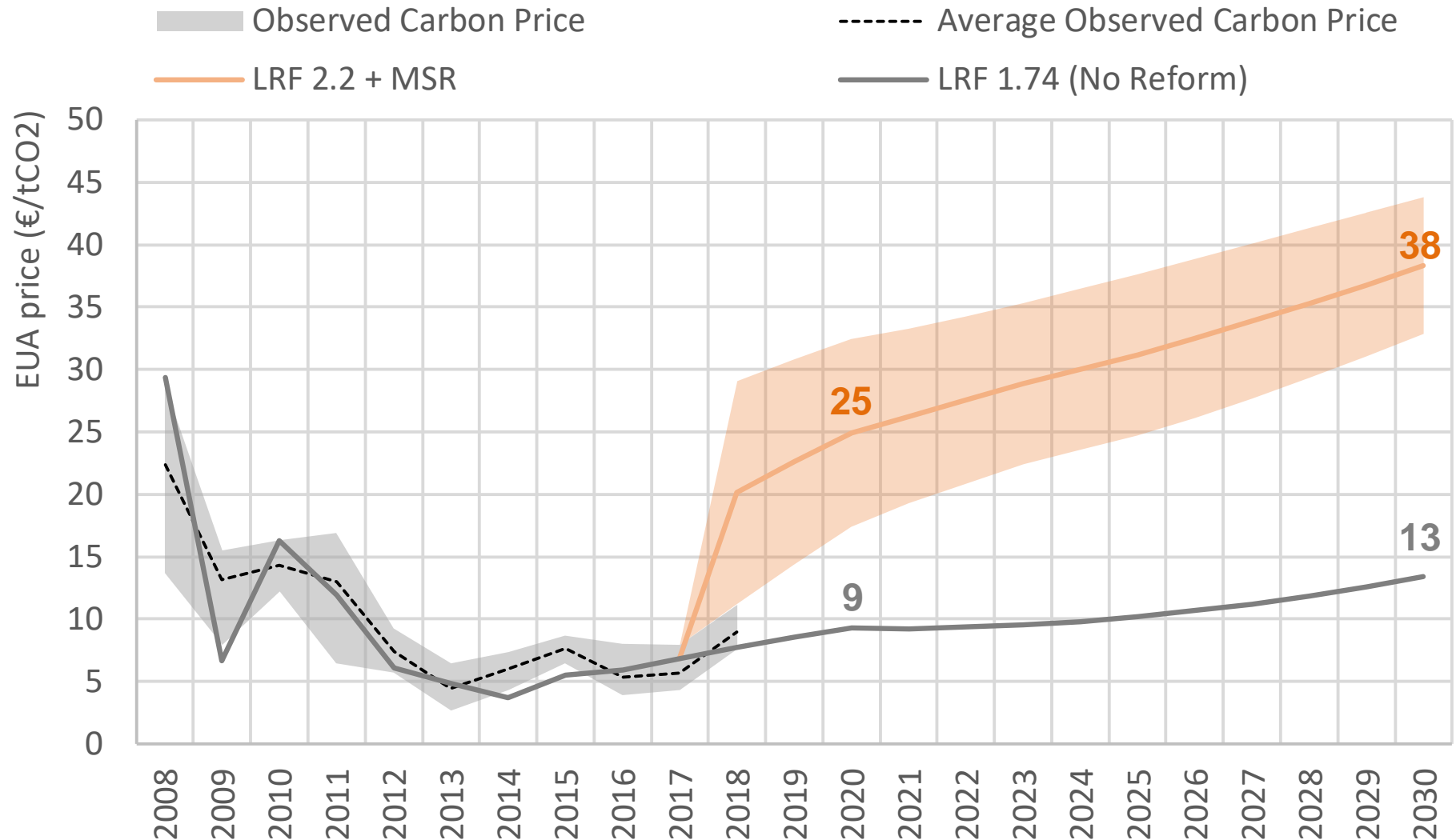
Reform and ZEPHYR model in a nutshell

- **Adopted policy package contains 3 provisions to raise ambition**
 - Increase in LRF & MSR implementation & invalidation of some EUAs in MSR
- **ZEPHYR: Stylized modelling of the EU-ETS with inter-temporal cost minimization in discrete time for a representative agent**
- **Determination of EUA price, emission and banking paths**
 - Comparison of relative impacts of alternative market design features (published in March 2018)



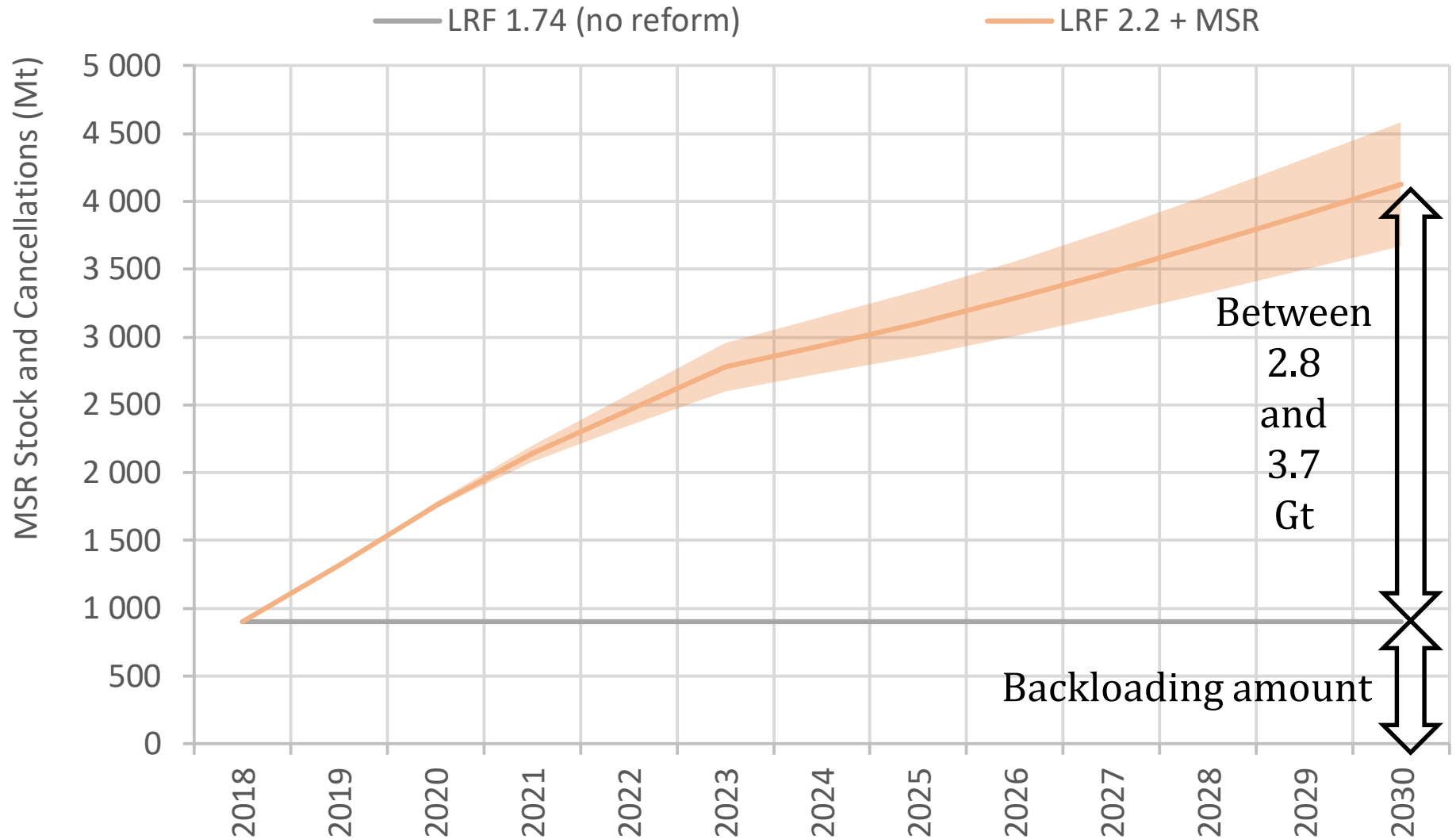
<https://www.chaireeconomieducimat.org/en/publications-en/eu-carbon-market-reform-impacts-stability-reserve/>

Impacts of LRF 2.2 and MSR on the CO₂ price



- Emissions decrease by 50% in 2030 compared to 2005

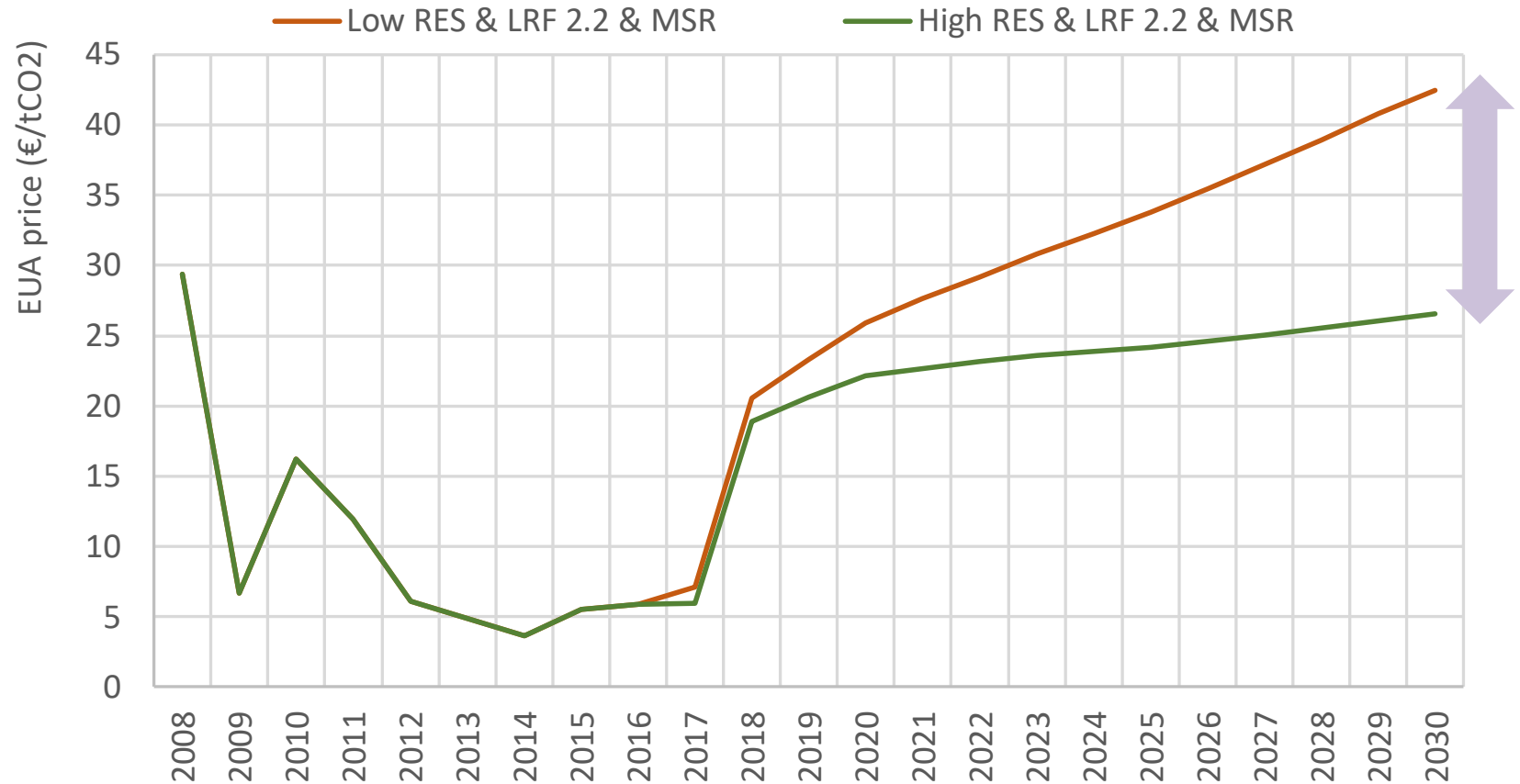
MSR stock and cancellations



The effect of LRF 2.2 and MSR

- Without any unexpected shocks and all things remaining constant, **it seems that the adopted reforms are sufficient to put the price back on a 25-40 €/t range** up to 2030
- **But** the main lesson from the EU ETS past is that **there will be unexpected shocks that will disrupt the market in the future**. The EC seems to think that the « stability » reserve would be able to deal with such future disruptions
- We tried to test with our model **two kinds of shocks similar to those encountered by the market since 2008**
 - A higher/lower share of RES impacting emissions independently of the carbon price
 - A economic crisis similar to that of 2008 affecting growth and industrial production over a number of years

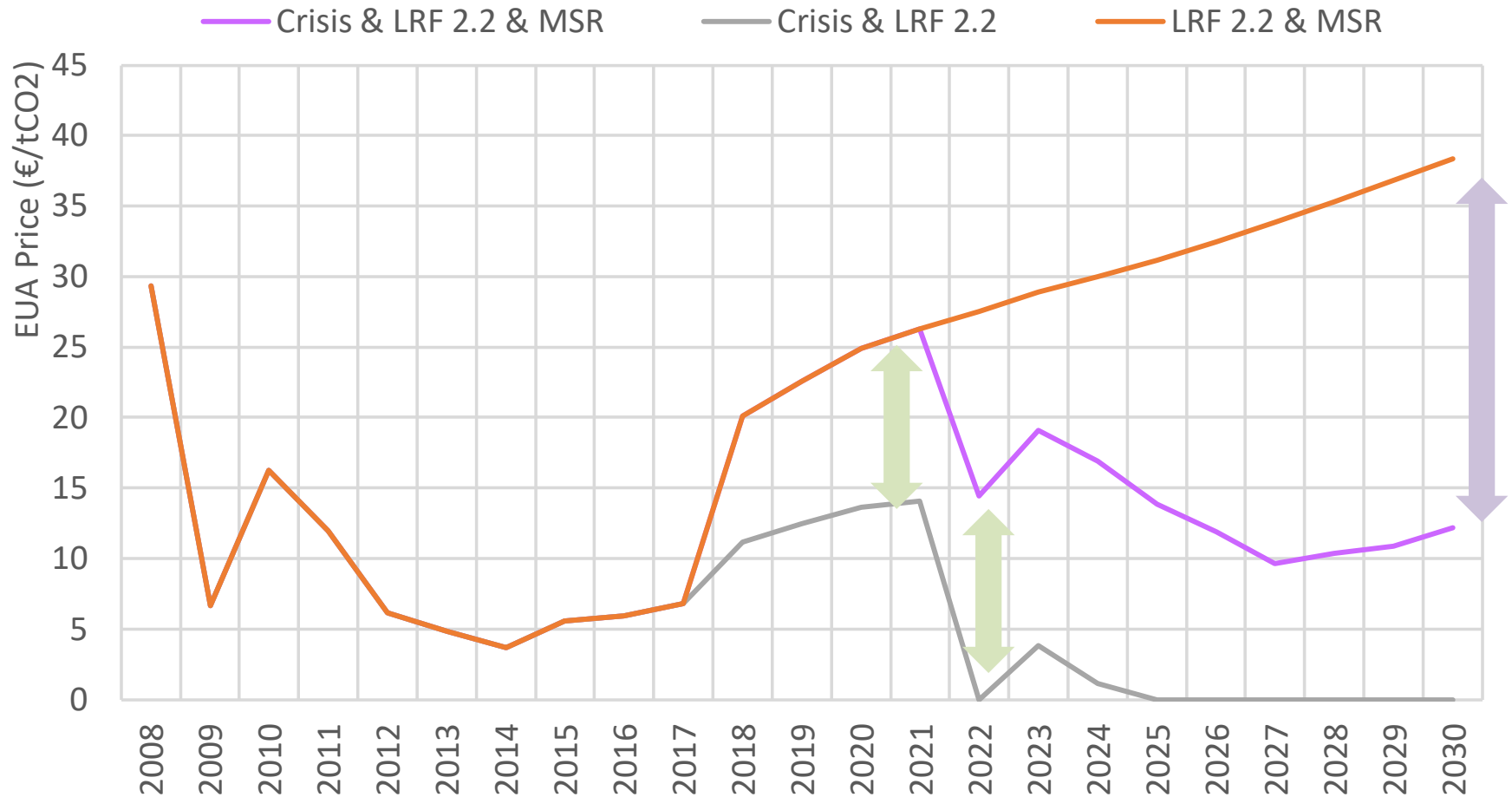
Testing the MSR stabilizing capacity (1/2)



- In the presence of the MSR, two different renewables development scenarios give two different carbon price outcomes
- It means that the MSR is not able to « neutralize » this kind of external shock (whether it might be desirable or not)

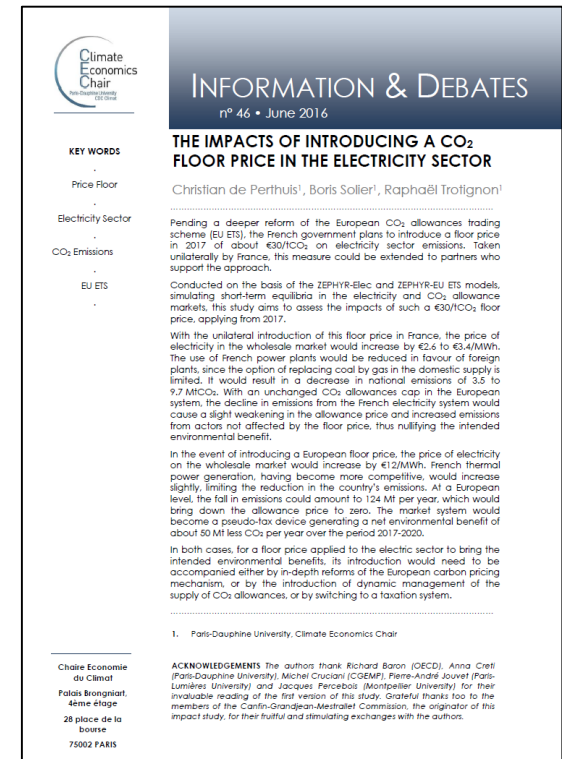
Testing the MSR stabilizing capacity (2/2)

Replicating the 2008 crisis in 2022...



Complementing the MSR with a price floor?

- **Although the MSR increases the EUA price and reduces “surplus”**
 - it exhibits a limited demand shock smoothing out potential
 - and does not solve the governance issue (the amounts of EUA automatically removed from circulation are not directly linked to evaluations of external shocks and policy interactions nor explicit carbon price targets)
- **Considering additional control tools ?**
 - Option 1: EU-wide price floor (all sectors) e.g. auction reserve price
 - Option 2: Coalition-wide price floor(s) → Waterbed issue



<https://www.chaireeconomieducimat.org/en/publications-en/information-debates/id-46-the-impacts-of-introducing-a-co2-floor-price-in-the-electricity-sector/>

Analysis of a unilateral carbon price floor

- Study performed in 2016 to evaluate the effect of a **30€/t unilateral carbon price floor imposed by France on domestic electricity sector emissions** (Canfin-Grandjean-Mestrallet Commission)
- Using the **Zephyr-Electricity model** (short term dispatch)
 - combination of available generating technologies enabling electricity demand to be met at least cost on an hourly basis over a given year
 - given hourly available capacities, and hourly fuel and CO₂ prices
 - Representation of interconnection capacities in the form of « border technologies » to which marginal costs are assigned.
 - Outputs are electricity mix composition, electricity prices, and CO₂ emissions.
- **Effect on the EU ETS** by introducing the lesser demand for EUAs from electricity plants in the Zephyr model market equilibrium

The case of France in 2017: results

- A €30/tCO₂ floor price raises the cost of domestic thermal power generation and leads to, at unchanged demand, a **fall in production in favour of imports**.
 - An increase of **€2.6 to €3.4 in the price per MWh** in the wholesale market as an annual average;
 - A **reduction in domestic emissions of 3.5 to 10 MtCO₂** depending on relative prices of coal and gas, and an **increase in import-related emissions of 3.7 to 6.2 MtCO₂**;
 - Limited substitution from domestic coal-fired to gas power plants due to cross-border trade.
 - The **impact of the measure on the equilibrium of the EU ETS would be small** because of the limited weight of French electricity sector emissions (around -0.5€/tCO₂)

The case of an EU wide electricity sector floor

- A European floor price of €30/tCO₂ improves the competitiveness of the French low-carbon electricity sector, which **reduces imports to the benefit of production**.
 - An **€11.6 increase in the price per MWh**
 - **Little change in domestic emissions** (with increased use of gas power plants and small decline in coal-fired plants) and a **decline in import-related emissions**;
 - The **European electricity sector reduces its emissions by 125 MtCO₂ a year**. Without adjusting the EU ETS cap, the **price of EUA drops to zero for the non-electricity sector** “waterbed effect”);
 - The **MSR is not able to prevent the price drop for the other sectors** : It only absorbs 12% of additional induced surplus each year (60 Mt removed in 2020 against 500 Mt reduced emissions over 2017-2020)

Conclusion (1/2)

- Up to 2030 and even more up to 2050, **the market will have to deal with new disruptions** such as policy interactions, economic cycles... Some future adjustment of the supply (down, or maybe up) will seem desirable/needed
- Contrary to what its name implies, the market « stability » reserve **does not stabilize the market, nor the price**
- If one wants to introduce a price stabilizer, then the « right » way to do it would be to have a **uniform price floor for all sectors and all countries** (as is the case for example in the US)

Conclusion (2/2)

- The option of having a **partial price floor** on some countries/sectors instead of entire ETS perimeter **seems like an additional destabilizing factor**. The kind of factor the MSR will **not** be able to deal with
- To « preserve » the market from this effect, one should **identify, quantify, and remove from the effective cap** the corresponding quantities of EUAs in a frequent, reactive, and transparent way: **major governance issue**. This could create more problems than it solves...
- From a broader perspective:
 - Even with a uniform ETS price floor (and ceiling), the **temptation/necessity to « reform »** the price levels over time would still exist
 - Carbon pricing relies on **political credibility** and cannot work « on its own », even with very sophisticated legislation



Thank you for your attention

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