EU ETS and the waterbed effect

### Knut Einar **Rosendahl, Norwegian University of Life Science**

Due to the new rules of the EU Emission Trading System (ETS), Perino (2018)1 argues that the so-called waterbed effect is temporarily punctured. That is, additional abatement efforts can reduce cumulative emissions – if they occur within a few years. However, two critical perspectives are lacking from Perino’s argument. First, if the abatement efforts are permanent rather than temporary, the waterbed effect is likely restored. Second, if abatement efforts take place later rather than sooner, cumulative emissions will increase rather than decrease.

As a response to low allowance prices and a huge surplus of allowances in the EU ETS,2-3 the EU introduced a Market Stability Reserve (MSR) in 2015.3-4 When the total number of banked allowances is sufficiently large, parts of next year’s allowances are put into the reserve instead of being auctioned, reducing the short-term supply of allowances. In 2018, the MSR rules were revised, now stating that when the MSR exceeds a certain threshold, the allowances exceeding the threshold become permanently canceled. Hence, the long-term supply of allowances is reduced too.

Perino1 argues that this new MSR rule temporarily punctures the waterbed effect of the ETS. The waterbed effect denotes the phenomenon that if additional abatement efforts are implemented, e.g., due to some supplementary climate policy,5 total emissions will not change because the overall emission cap is fixed.6 Instead, emissions from other sources will increase correspondingly, e.g., in a future year. With the waterbed punctured, Perino calculates that one ton of additional abatement within the EU ETS in 2018 will lead to a net long-term emission reduction of 0.4-0.8 tons. The intuition is that lower current emissions imply more banking and therefore increased input of allowances into the MSR, and subsequently increased cancellation of allowances. The puncture of the waterbed is only temporary though, ending when the MSR no longer takes in allowances.

Perino’s finding is interesting but incomplete. First of all, abatement efforts are typically long-term rather than short-term, such as new regulations or additional investments. Hence, additional abatement efforts today will in many cases reduce the demand for allowances both today and in the future. This is not accounted for in Perino’s article. Second, many abatement efforts are announced today, but will take effect in the future. Again, this is not dealt with in Perino’s article. As I explain below, Perino’s finding can be eliminated or reversed in these cases.

Starting with the latter case, consider a situation where it is announced or expected today that some additional abatement efforts will be imposed in one or more future years – after the MSR has stopped taking in allowances. This will reduce the demand for allowances in those years, leading to lower future prices of allowances. When market participants anticipate this, banking of allowances becomes less profitable than before. Less banking implies fewer allowances enter into the MSR, and hence fewer allowances become canceled. In other words, cumulative emissions will increase rather than decrease, and the abatement effort can have counterproductive effect.

As an example, when the German coal commission delivered its final recommendations in late January 2019, the allowance price “tumbled by more than a euro … amid speculation that Germany’s coal phaseout deal would prompt big-emitting utilities to unwind generation hedges”.7 The main impacts of the German coal phaseout are expected to occur after 2030.8 Following the reasoning above, the policy measure may *increase* rather than decrease cumulative emissions regulated by the EU ETS. That is, unless the coal phaseout is followed up with cancellation of allowances, which the coal commission also proposes.9

If an abatement effort takes place immediately, but is permanent rather than temporary, demand for allowances will decline both before and after the MSR stops taking in allowances. Hence, both the mechanism pointed to by Perino, and the one pointed to in the previous paragraphs, will be in effect. The net effect on cumulative emissions is thus ambiguous. However, as demand for allowances are expected to drop not only today but in all future years, the incentives to bank allowances are not much changed, implying that cumulative emissions are also little affected.

How important is the effect pointed to in this comment? That remains to determine, and merits further investigation and quantification. My own (not yet peer reviewed) research indicates that the effects might be quite substantial.10

Whereas Perino’s conclusion is quite optimistic when it comes to the effects of supplementary climate policies, my message is more detrimental. Continued efforts to strengthen the cap on emissions thus seems to be a more productive approach. At the same time, supplementary policies that lead to lower ETS prices might make it politically easier to strengthen the cap in the future. If so, the case for supplementary policies is more ambiguous. In any case, announcing supplementary policies that are not followed up in due course will be particularly detrimental.

Last, but not least, even though the new cancellation rule of the EU ETS leads to some unintended effects,11 this comment should not be used to conclude that the new rule has been counterproductive. Quite the contrary, the cancellation rule is likely to reduce cumulative emissions by several gigatons of CO2.12

# Acknowledgement

I am grateful for valuable comments from Reyer Gerlagh, Yan Qin as well as the handling editor and reviewers of this journal, and for financial support from the Research Council of Norway (Norens project).

# References

1 Perino, G. (2018): New EU ETS Phase 4 rules temporarily puncture waterbed, *Nature Climate Change* 8, 260-271.

2 Ellerman, A.D., C. Marcantonini and A. Zaklan (2016): The European Union Emissions Trading System: Ten Years and Counting, *Review of Environmental Economics and Policy* 10, 89–107.

3 EU (2018): COMMUNICATION FROM THE COMMISSION. Publication of the total number of allowances in circulation in 2017 for the purposes of the Market Stability Reserve under the EU Emissions Trading System established by Directive 2003/87/EC.
<https://ec.europa.eu/clima/sites/clima/files/ets/reform/docs/c_2018_2801_en.pdf>

4 European Commission: Market Stability Reserve
<https://ec.europa.eu/clima/policies/ets/reform_en>

5 Bertram, C., G. Luderer, R.C. Pietzcker, E. Schmid, E. Kriegler and O. Edenhofer (2015): Complementing carbon prices with technology policies to keep climate targets within reach, *Nature Climate Change* 5, 235–239.

6 Böhringer, C. and K.E. Rosendahl (2010): Green Serves the Dirtiest. On the Interaction between Black and Green Quotas, *Journal of Regulatory Economics* 37, 316–325.

7 Carbon Pulse (2019): EU Market: EUAs drop a euro in wake of German coal deal, 28 January 2019.
<http://carbon-pulse.com/67927/>

8 CarbonBrief (2019): Analysis: How far would Germany’s 2038 coal phaseout breach Paris climate goals? 29 January 2019
<https://www.carbonbrief.org/analysis-how-far-would-germanys-2038-coal-phaseout-breach-paris-climate-goals>

9 Carbon Market Watch (2019): Germany: Coal phase-out must go hand-in-hand with emission permit cancellation to keep CO2 prices up, 5 February 2019.
<https://carbonmarketwatch.org/2019/02/05/germany-emission-permit-cancellation-and-coal-phase-out-must-go-hand-in-hand/>

10 Rosendahl, K.E. (2019): EU ETS and the new green paradox, CESifo Working Paper No. 7645.
<https://www.cesifo.org/en/publikationen/2019/working-paper/eu-ets-and-new-green-paradox>

11 Gerlagh, R. & Heijmans, R. J. R. K. (2019): Climate-conscious consumers and the buy, bank, burn program. Nat. Clim. Change 9, 431–433.

12 Refinitiv Carbon (2018): EUA price forecast: A new era for European carbon or calmer waters ahead? Report 16 October 2018. Refinitiv.