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To: European Commission
Directorate-General for Climate Action
Carbon Markets and Clean Mobility

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Executive Summary

In 2005, the European Commission implemented a novel scheme to control the level of emissions from European industries. First, they created an “emissions allowance”, which gives the owning entity the permission to emit one tonne of CO₂ or an equivalent greenhouse gas. Then, they implemented a cap-and-trade system called the Emissions Trading System (ETS) which capped the number of allowances auctioned off quarter-annually so that the total amount of emissions decreases over time. However, in the early stages of the ETS, an excess number of allowances were allocated to different entities. In 2019, the EU introduced the Market Stability Reserve to address the surplus of allowances and improve the resilience to shocks by controlling the supply of allowances to be auctioned². The current system is vulnerable to large price fluctuations in auction price, as witnessed during the COVID-19 pandemic and the onset of the Russian-Ukrainian war in 2022. Previous proposals have attempted to stabilize the auction price by introducing price floors and ceilings—i.e. if the price exceeds or drops below a threshold, then allowances are released from the MSR. However, hard price caps tend to dysregulate supply and demand in the long term. This ultimately detracts from the effectiveness of the allowances and demotivates industry stakeholders from continuing to operate within the EU.

Furthermore, the current implementation with the MSR faces criticism with its method of supply regulation. Critics of the MSR cite the long-term implications of the *waterbed effect* as evidence against the ETS's effectiveness. In economics, the waterbed effect refers to deflating prices of one sector resulting in inflated prices in another sector of a company's operations. In the context of the ETS, the waterbed effect entails that if the ETS has overly restrictive supply controls over the emissions allowances, then companies would move outside of the EU's jurisdiction and counteractively release unregulated emissions—thus defeating the purpose of the ETS. Though experts agree that the MSR temporarily punctures the waterbed retroactively by banking the surplus allowances from the past few auctions, critics assert that as the cap decreases linearly over the next few years, the hard ceiling cap of the MSR will be rendered ineffective and revive the waterbed effect.

We propose a dynamic price-based supply adjustment augment for the Market Stability Reserve (MSR) component of the Emissions Trading System (ETS) that responds in tune to oil, natural gas, and coal prices. If these prices fluctuate faster than a certain rate over a period of a quarter of a year, then we release a number of allowances that is proportional to the rate of change.

By releasing allowances for auctions accounting for demand and market factors, we predict that it would stabilize the price as well as reduce potential supply shortages or surplus issues. We partially address the waterbed effect by controlling price volatility and thus mitigating the primary incentive as the price for companies to relocate outside the EU. This also allows the EU to meet its emissions reduction targets more effectively by curbing available allowances whenever the market price is above the estimated price for an allowance.

Background

Reducing carbon emissions is a top priority in the EU's strategy to combat climate change. In 2005, the European Commission developed the Emissions Trading System, a novel initiative to reduce emissions by industry with the introduction of "emissions allowances" and a routine cap-and-trade auction for said allowances. An emissions allowance allows the holder to emit one tonne of CO₂ or an equivalent greenhouse gas. To control the number of allowances, the Commission instituted a total cap for the number of allowances in circulation. Additionally, as certain industries are vulnerable to outside competition, a set amount of allowances are given out for free. The aim is to decrease the total cap—and therein, the total amount of emissions emitted in the EU over time.

Due to the economic crisis since 2007 and the high imports of international credits, prices fell and the quantity of circulating allowances increased, inflating the number of allowances past the EU's projected annual targets. This inflation stagnated over the next decade. Finally, in response to the surplus problem, the EU created the Market Stability Reserve in 2019—a mechanism that regulates the number of allowances up for auction.³ As the system would not meet the proposed goal at the current rate, they set up a mechanism that created a "bank" of allowances. If the number of circulating allowances sinks below 400 million, the MSR releases 100 million allowances per auction until the MSR is empty. If the amount exceeds 833 million, then the number of allowances up for auction reduces by 12% of the circulating allowances until the total amount dips below the upper threshold.⁴ For the short-term solution to curb the surplus in 2014-2016, the Commission withheld 900 million allowances from being auctioned until 2019-2020 and "back-loaded" those allowances into the MSR to release as needed.¹ The MSR is intended to be the long-term solution to the allowance surplus. Since then, it has proven effective in reducing the excess number of allowances and moving closer to meet the EU's goals.

In 2022, the Commission released an ambitious new plan—the "Fit for 55" package—to reach emissions targets even faster. By 2030, it projects European industries to emit a total of 55% less emissions compared to 1990 levels and reach total climate neutrality by 2050.³

Predicted Key Findings

With EUAs, the pricing fluctuates wildly in response to major economic disruptions and oil and gas crises. Because certain external effects can affect demand outside of having adequate supply, we seek to look for the major factors that do influence the EUA price. So far, studies have shown that oil, gas, and coal prices seem to have the most sway over the EUA prices. A recent example that reflects these findings is the beginning of the 2022 Russian-Ukraine war, where the EU embargoed Russian crude oil and petroleum products. Since the Russian invasion in February 2022, the EU has banned over 43.9 billion in exports to Russia and 91.2 billion in imports. In June 2022, the EU explicitly prohibited the purchase or import of Russian crude oil and petroleum products, as Russian oil serves as a major source of European oil.² Within 5 days of the Russian incursion into Ukraine, EUA spot prices dropped from €95 per metric tonne to €55/t, a 35% drop in value.⁵ To stabilize the system and improve its response to market shock, we suggest using price as a factor in addition to the supply threshold used in the original model.

Previous research universally agrees that oil and gas factor into the current market price. We plan to build a model to estimate the right EUA price given the prices of oil, gas, and coal and back-test it against EUA prices. With the model, we intend on predicting future prices and dynamically and proportionally adjusting the amount of supply up for auction based on the difference between estimated and real prices.

Recommendations

We ask you to augment the MSR with this mechanism. In the interest of national security, the Committee has resisted collaboration with academics from foreign states, but based on our analysis of the system's state, we feel that this development can help resolve the price instability issue that the ETS has long struggled with. After all, the European model of the Emissions Trading System is the world's most advanced cap-and-trade system of its kind, and the effectiveness of its structure can serve as a model for other cap-and-trade emissions allowance schemes in other nations as they join the green transition. The EU Climate Action Committee ought to consider this proposal as part of the future deployment of Stage 5 policy for the ETS. This mechanism would fortify the system by partially immunizing the markets from future shocks and fluctuations in the price. As potential excessive inflation or deflation is restricted by this stability, it inspires more confidence from stakeholders buying or trading these allowances.⁶ The ETS has revolutionized carbon emissions markets worldwide, and there is still much work to be done by many people, especially as the Commission navigates balancing competitiveness of operating in the EU versus reaching climate targets. I hope that the Commission considers this approach as an opportunity to improve the current system.

References

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