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CARBON PRICING DURING AN ENERGY CRISIS

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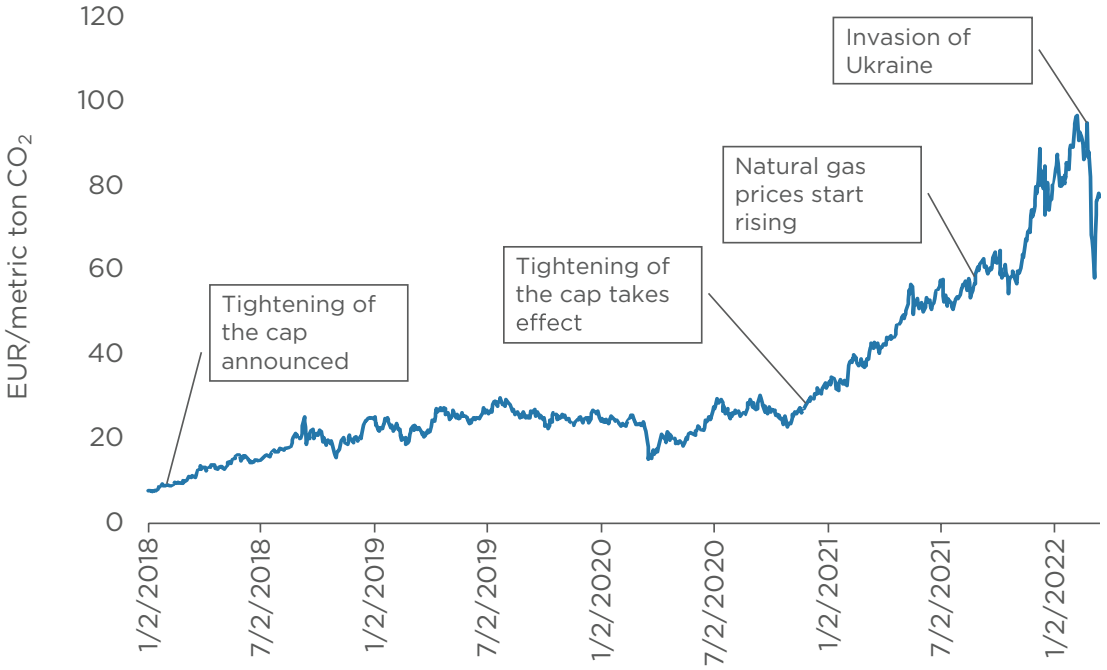
The European energy crisis, aggravated by the Russian invasion of Ukraine, amplifies the tension between climate mitigation action and energy affordability. Introducing a more effective safety valve to the EU carbon market could reduce affordability concerns and the political pressure associated with extreme price spikes, making the system more resilient. It could be accompanied by a more effective price floor too.

Tighter Emission Cap and More Expensive Natural Gas

The EU Emissions Trading System (ETS) is a cap-and-trade system. The basic principle is that CO_2 emitters bound by the scheme must hold enough allowances (or permits) to cover their annual emissions. Allowances can be bought at auctions; some manufacturers and airlines get a portion of theirs for free; permits can be borrowed (with limits) from future permit allocations; and finally, they may be bought from other permit-holders on a traded market. Participants can keep allowances for future compliance (a practice known as banking). Companies bound by the ETS (e.g., electricity generators, the manufacturing industry, oil refineries, and airlines) represent 40 percent of total European CO_2 emissions. The annual volume of new allowances is set by the European Commission (EC).

Unlike a carbon tax, a cap-and-trade system gives certainty regarding the aggregate level of emissions, but the price fluctuates. The current episode of a high carbon price (see Figure 1) is explained by the tightening of the cap and the sharp increase in the price of natural gas in Europe, relative to coal.

Figure 1: European CO_2 emission allowance price

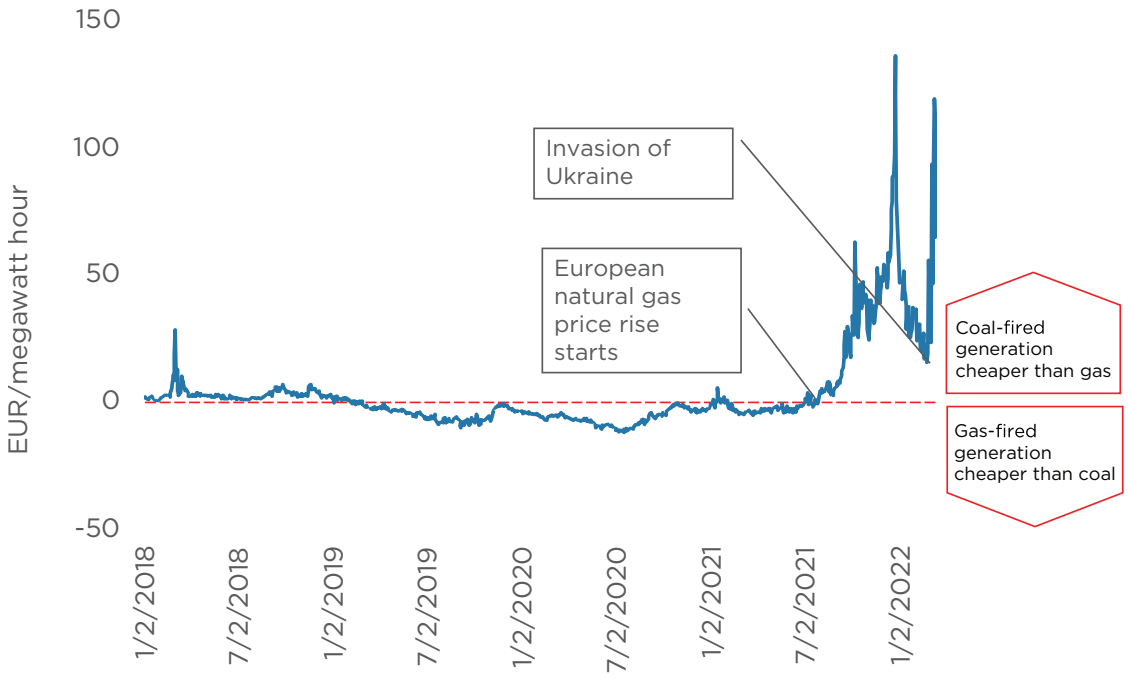


Source: Bloomberg

Long frustrated by what they saw as low permit prices, driven in part by the 2008–09 economic crisis, European regulators decided in 2018 to lower the cap for the 2021–30 period.[1] In 2021, they signaled further tightening, as part of an EU legislative package to achieve a 55 percent CO_2 emissions reduction by 2030, compared to 1990.[2]

From the summer of 2021 onward, the explosion in the price of natural gas in Europe improved the relative economics of coal-fired electricity generation (see Figure 2), which emits twice the CO_2 per kilowatt hour. The demand for emission allowances increased accordingly.

Figure 2: Relative economics of coal-fired and gas-fired electricity generation in northwest Europe



Note: The chart shows the difference between the price of natural gas (TTF) and the gas price that equalizes the profitability of coal-fired and gas-fired generation (taking into account the prevailing carbon price).

Source: Authors' calculations, based on data from Bloomberg.

Implications of High Carbon Prices

The gradual tightening of the cap reflects a European political choice to be serious about climate change policy. The rise in the emission allowances' price is the mechanical implication of this choice, in the prevailing economic and energy circumstances. The ETS, therefore, does what it is supposed to do: the higher prices disincentivize consumers from purchasing emissions-intensive goods and incentivize producers to invest in less emissions-intensive forms of production.

The issue is that, during a full-fledged energy crisis compounded by the Russian invasion of Ukraine, the economic implications of Europe's commitment to serious climate policy might become too high for political leaders to embrace. The tension between carbon pricing and energy affordability risks weakening the relatively strong political consensus in favor of serious climate policy prevailing in most European countries.

The French government, traumatized by the Yellow Vest protests of 2018–19, decided to spend tens of billions of euros to shield households from the first six months of the electricity

and natural gas price explosion.[3] In the UK, the rise in energy prices is central to the "cost of living crisis" that the country is going through. These challenges come right after the COVID-19 pandemic, which has strained fiscal capacity to the limit, and at a time when monetary policy needs to be tightened in the face of rising inflation—all while economic growth will be hit by the fallout from the economic isolation of Russia, especially the supply shock to commodity markets.

Controlling Carbon Prices

A Market Stability Reserve (MSR) was implemented in 2019, removing a "surplus of allowances" that kept the carbon permit price low. The European Commission claims that the MSR also "improves the system's resilience to major shocks,"[4] but that can be debated.

The MSR, which operates according to pre-set rules as opposed to political decisions, removes permits from future allocations and places them into the reserve when the total number of allowances in circulation (TNAC) at the end of the year is above a certain threshold. Reciprocally, if TNAC falls below a certain threshold, permits are released from the reserve and added to subsequent auctions.

So far, the mechanism has only led to additions to the reserve, increasing scarcity to prevent price collapse. The 2020 year-end TNAC, published in May 2021, was nearly double the upper threshold. While the TNAC will surely be reduced significantly for 2021 as regulated entities used banked permits in the face of record-high permit prices, it would have to fall by over 70 percent from 2020 levels to trigger permit releases from the reserve. As such, it is quite possible that the MSR framework will offer no permit price relief in 2022 and beyond, despite the extraordinary circumstances Europe is experiencing. If it does, it might come too late to make a difference to the crisis.

A Potentially More Effective Approach: the Price Collar

The two carbon trading systems in the US—the Regional Greenhouse Gas Initiative in the Northeast and California's system—both include some version of a price collar, which puts a floor and ceiling on the price for permits. The UK introduced a carbon price floor to its ETS, and a mechanism to intervene in periods of sustained high prices. A price collar, which can be designed in different ways, reduces uncertainty for investors and shields the economy from extreme scarcity.

The price floor sends a clear and predictable price signal to participants regarding minimum returns on their CO_2 abatement strategies and can lower emissions below the cap levels during sufficiently low abatement cost periods. The price ceiling provides the economy with a clear upper bound to compliance costs. With the European MSR, in situations of extreme market tightness companies are left wondering how much higher prices can go, which can be detrimental to optimal investment and management of carbon credits over time. Furthermore, under the European MSR there is a considerable time lag between the spike to permit prices (or their collapse) and the change to permit allocations. A collar system, on the other hand, continuously signals the upper and lower bounds of compliance costs.

These advantages of a price collar system over the European MSR seem particularly important in times of energy crisis, like Europe's today. But capping the CO_2 price can weaken environmental ambition, in that the emissions cap is *de facto* loosened when the price reaches the ceiling. Too low a ceiling would not be compatible with ambitious emissions reduction targets. However, the price floor triggers a *de facto* tightening of the cap when the price collapses. Overall, studies have shown[5] that price collars can be designed to meet the same expected cumulative emissions target over time at lower expected costs than a cap-and-trade policy alone or one with an MSR similar to that used in the EU ETS.

Price Swings amid the Current Crisis

Russia's war in Ukraine worsened the European gas price shock, but counter-intuitively coincided with a fall in the ETS price, from €95 on February 23 (the day before the invasion) to €58 on March 7. It had rebounded to €78 on March 14, still well below its peak immediately before the war. This paradox has several likely causes, including the pricing of an increasingly likely economic recession in Europe. Another explanation is that traders have concerns about the political viability of the EU ETS in extreme circumstances. Given the inability of the MSR to effectively contain the price spike, market participants may have anticipated a political intervention, such as a temporary suspension of the ETS.

The ETS is a vital tool for the EU to achieve its long-term emission reduction goals in a cost-effective manner. Extreme price spikes, such as the one triggered by the European energy crisis and aggravated by the war against Ukraine, generate tensions between climate policy and energy affordability. The current crisis, therefore, could be seized by Europe to implement a more effective safety valve for its carbon pricing regime. A price collar system is one way to do that.

Notes

1. "EU Emissions Trading System reform: Council approves new rules for the period 2021 to 2030," European Commission, https://www.consilium.europa.eu/en/press/press-releases/2018/02/27/eu-emissions-trading-system-reform-council-approves-new-rules-for-the-period-2021-to-2030/.

2. "European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions" European Commission, https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3541.

3. While the Yellow Vest movement was not triggered by the ETS but rather by a carbon tax on transport fuels, it made the French government extremely sensitive to issues of energy affordability.

4. "Market Stability Reserve," European Commission, https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/market-stability-reserve_en.

5. See, for example, H. Fell, "Comparing policies to confront permit over-allocation," *Journal*

of Environmental Economics and Management 80 (November 2016): 53–68, https://www.sciencedirect.com/science/article/abs/pii/S0095069616000024.

About the Authors

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Since 2013, Dr Noel has worked extensively on energy and environmental policy strategies in emerging Asia. He has focused on the economic and political drivers of the competition between coal, LNG and renewables, in a context of growing concerns about the local and global environment.

Prior to joining CGEP, Dr Noël was a Senior Fellow in Economic and Energy Security at the International Institute for Strategic Studies (IISS), based successively in Singapore and London; before that, he was a Senior Research Associate with the Energy Policy Research Group (EPRG) at the Judge Business School, University of Cambridge (UK).

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