Exposed Industries in the EU ETS: Modelling Company Decisions on Output and Capacity

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Overview

The European Union Emissions Trading Scheme (EU ETS) was originally conceived as a cap-and-trade scheme, but has been revised to incorporate elements from performance standard rate trading where output is higher. Allowances are still handed out for free to energy-intensive industries exposed to international competition. Since 2013 the initial distribution of free allowances to companies is based on emission benchmarks and production capacity. A 'Partial Cessation of Operations' (PCO) rule, which requires a minimum use of capacity for receiving free allowances, has added to complexity. In this paper we examine how, in an international oligopolistic market for output of fuel-intensive companies, the change in rules impacts upon capacity and output of European industry.

Methods

In this paper we examine the previous and current rules under the EU ETS by building a Cournot oligopoly model to see how these legal changes affect emissions trading. Particular attention is paid to company decisions on output, capacity investment and use of capacity for production by those energy-intensive industries that are exposed to international competition. This should also shed light on how such decisions could affect 'carbon leakage': the undesirable moving of companies, and thus emissions, to countries without a carbon pricing scheme.

Results

The move from grandfathering allowances as a lump-sum subsidy to companies in the EU ETS towards handing out free allowances for output capacity as of 2013 was the decisive step in leaving 'pure' cap-and-trade to safeguard the position of EU fuel-intensive companies on the international output market. The drawbacks of this change, however, soon became apparent when policymakers were working out the details of the new rules. The fear that the new rules for obtaining free allowances might incentivize companies to create idle capacity in order to receive free allowances that could be sold on the market, must have been the motive for the European Commission to add the so-called 'PCO rule', which punishes idle capacity by taking back a substantial part of the allowances not used for covering emissions from output. The PCO rule has made the EU ETS considerably more complex, but in practice this rule was and still is unnecessary. Investments or restrictions of output to create idle capacity will only occur when the price of allowances is extremely high relative to the price of fossil fuel intensive output. However, due to an over-allocation of allowances to companies at the start of EU ETS and the economic crises that followed from 2008 to 2014, the actual price of allowances relative to the price of output has been extremely low. We have demonstrated not only that in those circumstances the incentive to create idle capacity is lacking, but also that the EU ETS has the same impact on the level of output as a scheme of credit trading. Our modelling results indicate that the EU ETS operates (inefficiently) as a credit trading scheme in the long-run planning of capacity and output as well as (efficiently) in the short-run planning of output after unforeseen changes in the market.

Conclusions

We conclude that the change in rules of the EU ETS over the past years has transformed the scheme from its original equivalence with cap-and-trade into a system that is more similar to a credit trading scheme with trade in reduction credits based on emission performance standards. These legal changes are consistent with a deliberate political move, away from giving the highest weight to economic efficiency in emission reductions towards giving priority to support industry output and contain carbon leakage.

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