The Causal Effect of the European Union Emissions Trading Scheme: Evidence from French Manufacturing Plants*

Ulrich J. Wagner
Universidad Carlos III

Mirabelle Muûls
Imperial College London

Ralf Martin
Imperial College London

Jonathan Colmer
London School of Economics

Abstract

How do firms respond to regulation and market incentives? Using comprehensive plant-level data for around 9,500 French manufacturing firms, this paper explores the economic and environmental response of plants to the European Union Emissions Trading Scheme (EU ETS) – the EU's flagship climate policy. Our results suggest that ETS-regulated manufacturing plants in France reduced emissions by an average of 15.7%. The most marked reduction in emissions is observed during Phase II (2008-2013). In terms of economic outcomes, we find a statistically significant reduction in employment (10.4% in Phase II). We aim to understand whether these reductions are real global reductions in emissions or whether they are merely the result of carbon leakage. Leakage may occur because output shifts to unregulated plants, either within the EU or abroad. It may also occur because regulated plants outsource carbon intensive parts of the production process. We make some progress in providing evidence on this by looking at the fuel mix of plants. About half of the reduction in emissions can be accounted for by an increase in the share of gas, which is less carbon intensive than coal and oil. This is both consistent with carbon leakage, because of outsourcing, and real emissions reductions due to a technological change. Ongoing research will shed further light on this in the future. We also examine if there is leakage within firms by looking at firms with both, unregulated and regulated plants. However, we find no evidence in support of this.

*Still preliminary. Wagner: Universidad Carlos III de Madrid, Department of Economics, Calle Madrid, 126 28903 Getafe, Spain. Phone: +34 (0) 916 24 8488, email: uwagner@eco.uc3m.es. Muûls: Grantham Institute for Climate Change and Imperial College Business School, Imperial College London, South Kensington Campus, London SW7 2AZ and Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE. E-mail: m.muuls@imperial.ac.uk. Martin: Imperial College Business School, Imperial College London, South Kensington Campus, London SW7 2AZ and Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE. E-mail: r.martin@lse.ac.uk. Colmer: Centre for Economic Performance and Grantham Research Institute, London School of Economics and Political Science, Houghton Street, London WC2A 2AE. E-mail: j.m.colmer@lse.ac.uk. This project was gratefully supported by research funding from the Economic and Social Research Council (grant ES/J006742/1), the ESRC Centre for Climate Change Economics and Policy and the Grantham Foundation is gratefully acknowledged.