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The Impact of a Carbon Tax on Cross-Border Electricity Trading

Bowei Guo[a], David Newbery[a], and Giorgio Castagneto Gissey[b]

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Abstract

Market coupling makes efficient use of interconnectors by ensuring lower-price markets import until prices are equated or interconnectors constrained. A carbon tax in one of the market can distort trade and reduce price convergence. We investigate econometrically the impact of the British Carbon Price Support (CPS, an extra carbon tax) on GB's cross-border electricity trading with France (through IFA) and the Netherlands (through BritNed). Over 2015-2018 the CPS would have raised the GB day-ahead price by an average of about €10/MWh in the absence of compensating adjustments through increased imports. The actual price differential with our neighbours fell to about €8/MWh allowing for replacement by cheaper imports. The CPS increased GB imports 13 TWh/yr, thereby reducing carbon tax revenue by €100 million/yr. Congestion income increased by €133 m/yr, half transferred to foreign interconnector owners. The unilateral CPS created €28 m/yr deadweight loss. About 18% of the increase in the GB price caused by the CPS was passed through to higher French prices and 29% in higher Dutch prices..

Keywords Carbon tax; Interconnectors; Cost-benefit analysis; M-GARCH

JEL Classification Q48; F14; D61; C13

Affiliations: [a] Energy Policy Research Group, Faculty of Economics, University of Cambridge, Sidgwick Ave., Cambridge, CB3 9DD, UK; emails: dmgn@cam.ac.uk, bg347@cam.ac.uk [b] UCL Institute for Sustainable Resources, University College, Central House, 14 Upper Woburn Place, London WC1H 0NN, UK. emails: g.castagneto-gissey@ucl.ac.uk

Contact David Newbery, dmgn@cam.ac.uk

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