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Pass-through of CO2 Emission Costs to Hourly Electricity Prices in Germany

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I estimate the level of emissions cost pass-through to hourly wholesale electricity prices in Germany, based on spot market data. I control for contemporaneous shocks to demand and supply by constructing a detailed supply curve for fossil generation and intersecting it with residual demand for fossil-based electricity for every hour. Determining the marginal generator allows me to use marginal fuel and allowance costs (rather than prices) as explanatory variables in order to identify the level of cost pass-through directly and with a high level of precision. I find that allowance costs are passed through to electricity prices completely (or nearly completely) on average, but that the degree of pass-through varies over the load curve. My results suggest that there is no economic reason for free allowance allocation to the German electricity sector, and thus I support the updated allocation rules in phase 3 of the European Union Emissions Trading Scheme.

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