

Estimating emissions offset from Danish wind energy production

Authors and affiliation: Simon Ravnsbæk Bruun, PhD student at Aarhus University (Department of Economics and Business Economics)

Abstract

By exploiting hourly data on energy production, consumption, and transmissions from the ENTSO-e transparency platform, I estimate the behavioral response of non-wind energy to wind energy production in Denmark. The results enable me to calculate the associated effect on greenhouse gas emissions in Denmark and the neighboring countries. My econometric approach leverages short run variation in wind conditions to elicit causal estimates. The results suggest that the majority of energy production and emissions offset from Danish wind energy occurs in the neighboring countries, which highlights the need to consider the international aspects when evaluating the effects of domestic wind energy production and related policies on emissions.