Energy Economics, vol.148, pp.108645-1-108645-16, August, 2025.

Regional rebound effects of energy efficiency improvements in a spatial general equilibrium framework

T. Christou; P. Lecca; S. Salotti

Abstract-

We study the impact of energy efficiency improvements and associated rebound effects on regional economies in the European Union. We use a spatial dynamic computable general equilibrium model calibrated for 235 regions and 11 sectors. Our results suggest that the magnitude of the rebound effect differs when using multi-regional models compared to single-region or country models, mainly due to the endogeneity of trade flows. The results we obtain allow us to reconcile two opposing findings in the literature on the relationship between short-run and long-run rebound effects. Finally, we examine the role of regional pre-shock conditions in determining the variability of rebound effects across regions, such as trade openness and energy intensity. The latter explains about 65% of the variability in regional rebound effects, while pre-existing trade relations contribute up to 20%.

Index Terms- Regions; Computable general equilibrium; Energy efficiency; Rebound effects

Citation:
Christou, T.; Lecca, P.; Salotti, S. "Regional rebound effects of energy efficiency improvements in a spatial general equilibrium framework", Energy Economics, vol.148, pp.108645-1-108645-16, August, 2025.