From Taxes to Transition: The Impact of the Swiss CO2 Levy on Residential Heating Energy Demand

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Abstract

This paper assesses the impact of the Swiss CO_2 levy on residential heating energy demand and the associated CO_2 emissions. Using the synthetic control method, the results show that the levy led to an average annual reduction in CO_2 emissions of 6.5% during the post-treatment period ($2008 - 2021$), corresponding to a decrease of 0.1 metric tons of CO_2 per capita per year.

To deepen the understanding of policy effectiveness, I estimate price elasticities for heating oil and natural gas, distinguishing between market-driven and policy-induced price changes. The results indicate that households respond more strongly to levy-induced price increases than to retail price changes. Short-run elasticities amount to -0.055 (retail) and -1.264 (levy) for heating oil, and -0.261 (retail) and -0.623 (levy) for natural gas. In the long run, these elasticities increase to -0.087 (retail) and -2.007 (levy) for heating oil, and -0.520 (retail) and -1.24 (levy) for natural gas.

The findings provide robust evidence that the Swiss CO_2 levy is an effective tool for reducing emissions in the residential heating sector, underscoring the importance of climate policy for long-run sustainability and the welfare of future generations.