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The regional impact of a CO₂ tax on gasoline demand: a spatial econometric approach

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ABSTRACT

In order to reduce CO₂ emissions and mitigate climate change, several countries around the world have introduced a CO₂ tax on energy consumption. Switzerland has already introduced a CO₂ tax on gas and heating oil and is considering introducing a CO₂ tax on gasoline and diesel as well. The effectiveness of such a tax depends on the level of the short- and long-run price elasticity. Moreover, acceptance of a CO₂ tax by a society depends on both the distributional effects of such a tax among households and its spatial effects among regions. In this paper, the regional impact of a hypothetical CO₂ tax on gasoline consumption in Switzerland is analysed by estimating a demand function for gasoline using panel data from 547 Swiss municipalities from 2001 to 2008. Gasoline sales were collected from the five largest gasoline companies operating in Switzerland, covering about 60% of overall sales. Swiss municipalities are relatively small units, and car ownership and use in one municipality is thought to influence gasoline sales in the neighbouring ones. Accordingly, the method used in the model also accounts for spatial correlation in the consumption of gasoline. Overall, our spatial econometric analysis shows that the tax burden of a CO₂ tax will be higher in rural areas than in urban areas.

JEL: D, D2, Q, Q4, R2

Keywords: gasoline demand, aggregate panel data, spatial economic effect, spatial econometrics.

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