

A Dynamic General Equilibrium Model of Driving, Gasoline Use and Vehicle Fuel Efficiency

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Abstract

The paper constructs a dynamic stochastic general equilibrium model to study the endogenous determination of gasoline use, driving and vehicle fuel efficiency. Before vehicles are produced, their fuel efficiency can be chosen optimally. Once produced, their fuel efficiency cannot be changed. The model generates endogenously different short-run and long-run price and income elasticities of gasoline use and vehicle miles of travel. We find that although gasoline taxes, the CAFE standard and mileage taxes can all reduce gasoline use in the long run, they are different in terms of the magnitude of responses and the dynamic paths followed by key variables.

JEL code: Q43, Q48, E60, H23

Key words: fuel efficiency, vehicle miles of travel, putty-clay, gasoline taxes, CAFE, mileage taxes

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