Estimating the Price Elasticity of Demand for Fuel

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Long literature in this area

Only more recently have studies paid closer attention to exogenous sources of variation and instrumental variable strategies.

- I have a series of recent papers using odometer reading data to better understand the demand for driving
- These data are generally from vehicle inspections
  - CA: Gillingham (2013) – Identifying Elasticity of Driving
  - PA: Gillingham et al. (2015) – Heterogeneity in Response
  - Denmark: Gillingham & Munk-Neilsen (2017) – Tale of Two Tails

Relationship between Elasticities

The driving elasticity and gasoline demand elasticity are tightly linked:

$$\beta_{G,P^g} = \beta_{M,C} - \beta_{E,P^g} - \beta_{E,P^g}\beta_{M,C}$$

Where each of these is and elasticity and

- G is gasoline demand
- P^g is the price of gasoline
- M is the miles driven
- C is the cost per mile of driving
- E is the fuel economy in miles per gallon

Source: Gillingham (2011)

Key Findings

- During times of price shocks, consumers are more responsive
  - The responsiveness is lower during times of low and stable fuel prices
- The medium-run elasticity is around -0.1 to -0.25
  - Is likely larger in the long-run
- Lower fuel economy vehicles are more responsive
- Vehicles in urban areas with access to public transport are also more responsive
- This work can inform the elasticity of gasoline demand