



Economia, Finanza e Analisi dei Dati

Laurea Magistrale

Data Analysis for Economics

Topic 2: Prices and Taxation

Marco Nieddu

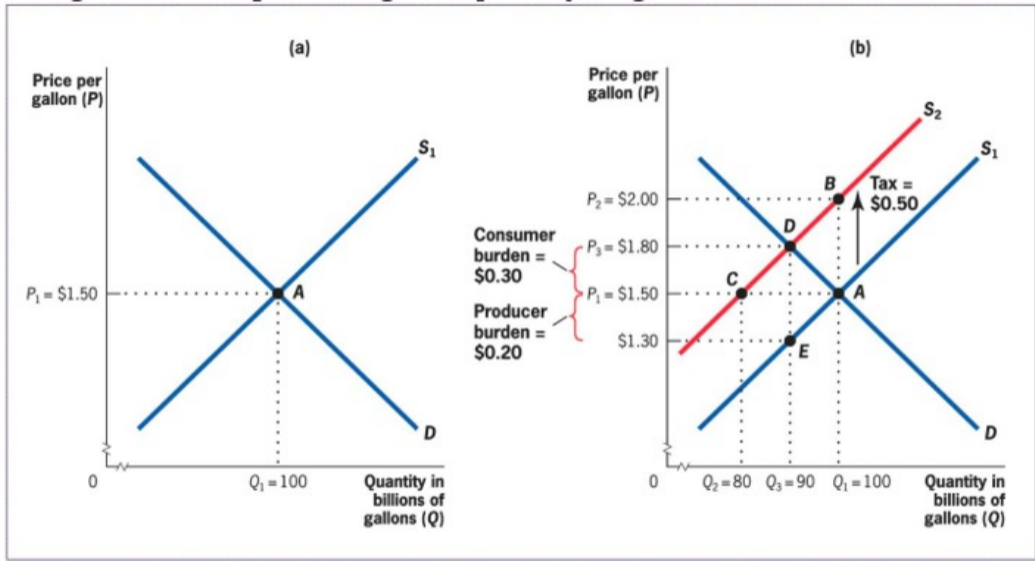
Fall 2025

Theoretical framework

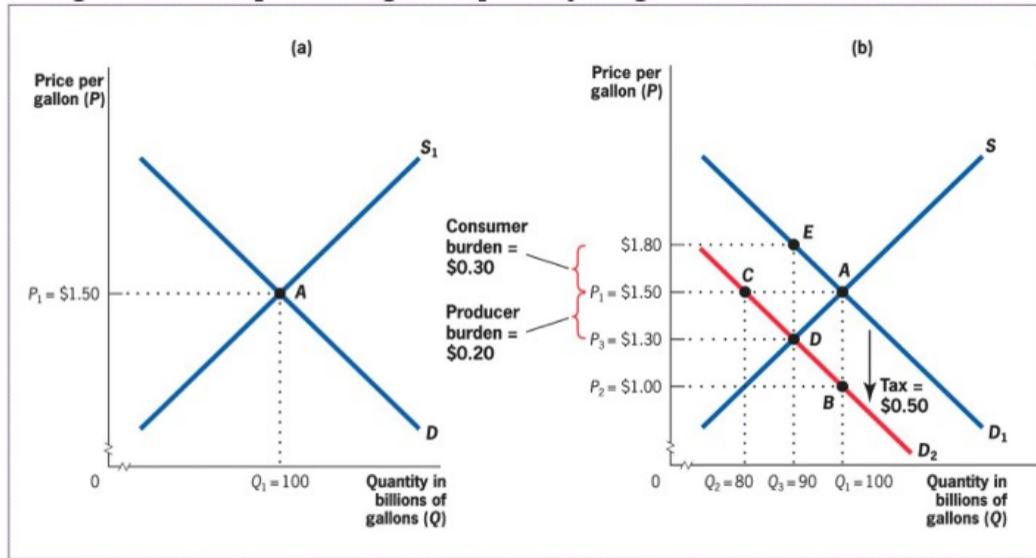
- ▶ How (equilibrium) prices respond to variations in taxes is a longstanding economic question, especially in the fields of Public Finance and Public Economics.
- ▶ More broadly, these questions relate to the distributional implications of taxation.
- ▶ **Tax incidence:** who ultimately bears the economic burden of the tax (economic incidence)?
 - ▶ 'Naive' answer: those who pay the tax to the government (statutory incidence).
 - ▶ Example: the statutory incidence of a tax paid by gasoline producers falls on those producers.
 - ▶ But *statutory incidence* \neq *economic incidence*.

Theoretical framework

- ▶ The economic burden of a tax on a good may fall on consumers, producers, or both, regardless of which party it is levied upon.
- ▶ What actually matters is the elasticity of demand and supply.
 - ▶ Consumers with more *elastic* demand are better able to avoid the economic burden by switching to alternative products or markets.
 - ▶ Similarly, producers can adjust by changing production levels.



Gruber, *Public Finance and Public Policy*, 6e, © 2019 Worth Publishers



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A more realistic perspective

- ▶ The predictions of the standard supply and demand model rely on several assumptions, such as:
 - ▶ perfect competition,
 - ▶ perfectly rational agents (complete and symmetric information/attention).
- ▶ We have reasons to believe that these assumptions are often not satisfied.
- ▶ For example, standard tax incidence theory suggests that tax cuts and hikes should have symmetric effects on prices.

What Goes Up May Not Come Down

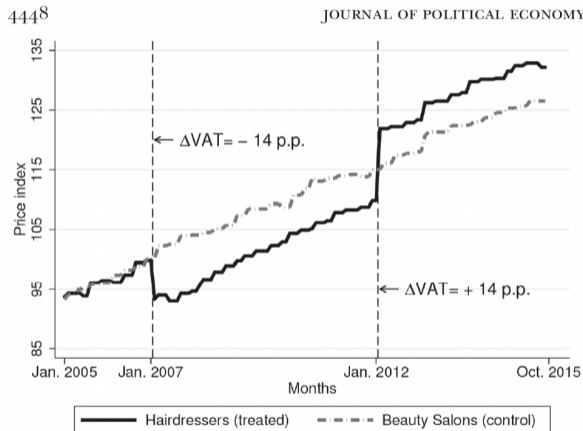


FIG. 1.—Finnish hairdressing sector VAT reforms. This figure shows the price of hairdressing services and beauty salons before and after the 14 percentage point hairdressing services VAT cut in January 2007 and the 14 percentage point VAT hairdressing services hike in January 2012.

A (very short) literature

- ▶ Gruber, J. (2022). *Public Finance and Public Policy*. Worth Publishers.
- ▶ Benzarti, Y., Carloni, D., Harju, J., & Kosonen, T. (2020). What goes up may not come down: asymmetric incidence of value-added taxes. *Journal of Political Economy*, 128(12), 4438–4474.
- ▶ Kilian, L., & Zhou, X. (2024). Heterogeneity in the pass-through from oil to gasoline prices: A new instrument for estimating the price elasticity of gasoline demand. *Journal of Public Economics*, 232, 105099.
- ▶ Harju, J., et al. (2022). The heterogeneous incidence of fuel carbon taxes: Evidence from station-level data. *Journal of Environmental Economics and Management*, 112, 102607.

This project

- ▶ We utilize detailed data on daily gas prices at the gas station level.
 - ▶ The data cover all gas stations in Italy from 2015 to the present.
 - ▶ The database is updated quarterly: <https://www.mimit.gov.it/index.php/it/open-data/elenco-dataset/carburanti-archivio-prezzi>
 - ▶ Two files: one for prices (*prezzi*) and one for gas station characteristics (*anagrafica*).
 - ▶ Also, time series of prices with and without taxes:
<https://sisen.mase.gov.it/dgsaie/open-data>

Our goals

- ▶ Investigate price-setting dynamics in the fuel retail industry.
- ▶ Provide suggestive evidence on the pass-through of tax cuts and hikes to consumers.
- ▶ Study the role of competition (gas station density).
- ▶ Study the role of a policy mandating gas stations to post the average regional price (if we have time)

Sample restrictions

- ▶ Given the large volume of data, we will apply a few restrictions:
 - ▶ Focus only on Sardinia, at first.
 - ▶ Limit the time span to 2019–2024.
 - ▶ Consider only petrol (*benzina*) and diesel (*gasolio*).
 - ▶ Consider only self-service prices.

Project outline

1. Theoretical framework and dataset construction

- ▶ We will aggregate all individual daily files into a final dataset.
- ▶ The final dataset will be at the gas station \times day level.

2. Analysis

- ▶ Examine both geographical and longitudinal (time) variation.
- ▶ Produce visualizations such as maps, time series analyses, and price decompositions.
- ▶ Test the role of competition (gas station density).
- ▶ This dataset can potentially be used for a policy evaluation exercise:
 - ▶ Assess whether the “regional price” policy was effective in reducing the level and dispersion of fuel prices.

3. Add web scraping to automatically collect and organize data.