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UNIVERSITÀ DEGLI STUDI DI PALERMO

Dynamics in Price and Income Elasticities over 20 years in Italy

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Introduction and background

- **Household and individual consumption expenditure** represent important measures used by policy makers to assess households' living standard conditions, inequalities and well-being (**Meyer and Sullivan 2011, 2012)**.

- **Consumption is considered a more appropriate measure for measuring individuals' material well-being compared to income** since *"it better reflects long-run resources instead of income measure that can fail to capture disparities in consumption that result from differences across families in the accumulation of assets or access to credit*" (Meyer and Sullivan, 2013).

- **Household budget allocation among different commodities** has been studied by using **household budget shares** – defined for a given commodity category/division *i* as the ratio between the expenditure for this category and the total consumption expenditure.

From these measures it is possible to assess **consumers' sensitivity to price** and the related **expenditure elasticity** which reveal valuable information on consumers' preferences by describing **how the expenditure and consumer sensitivity for a given commodity category vary with household total resources, socio-demographic characteristics as well as over time**.

Introduction and background

- However, it is essential to properly consider in the analysis factors and dimensions influencing **consumer behaviour and preferences**.

  - **Socio-economic characteristics of households have been considered as important issues associated with the heterogeneity in budget allocation and elasticity** (as examples Gallet and List, 2003 and Fernandez-Villaverde and Krueger , 2007 focused on the role of age while Jensen and Manrique, 2003 and Barigozzi, 2012 on **differences across income/expenditure levels**).

  - The **differences in price levels** across areas can play a role in determining budget allocation.

- Systems of demand equations – such as the **Almost Ideal Demand System** (introduced by Deaton and Muellbauer, 1980) – have enabled applied researchers to jointly consider these issues in order to carry out comprehensive and accurate analyses.

Introduction and background

- Starting from the availability of the microdata of the Italian Household Budget Survey for the years 1999-2016 and the ISTAT series of consumer price indexes (NIC) this paper has a twofold aim:

  ✓**to assess how the individuals' preferences has changed over time** according to differences in prices and levels of total expenditure

  ✓to estimate, by referring to the **Almost Ideal Demand Systems (AIDS)** specification, the series of **expenditure elasticity and own-price elasticity** in order to evaluate if and to what extent consumers' sensitivity differs over the studied period and within the various expenditure divisions.

The model: analyzing the Italians' consumption preferences and patterns

We rely on the **Almost Ideal Demand System (AIDS)** specification of an *n*-category system of demand equations:

$$w_i = \alpha_i + \sum_{j=1} \gamma_{ij} \log(p_j) + \beta_i \log\left(\frac{x}{P}\right)$$

- w_i : expenditure share allocated to division i
- x : total expenditure
- p_j : price of division j
- P : non-linear price index, as defined by Deaton and Muellbauer (1980):

$$\log(P) = \alpha_0 + \sum_k \alpha_k \log(p_k) + \frac{1}{2} \sum_j \sum_k \gamma_{kj} \log(p_k) \log(p_j)$$

Homogeneity implies: $\sum_j \gamma_{ij} = 0$

Simmetry implies: $\gamma_{ij} = \gamma_{ji}$

Data: the HBS survey and CPI data

- We created an original dataset for the **period 1999-2016** by merging two different sources of data:

  - Microdata on household consumption expenditure from the **Household Budget Survey - (HBS) carried out yearly by ISTAT** and designed to obtain information about the structure and level of households' consumption according to the main social, economic and territorial characteristics of resident households in Italy.

  - Price level data referring to the series of **Consumer Price Index for the whole nation (NIC) at regional level**.

- The HBS collects information of household expenditure for a detailed number of goods **without recording quantity and price information**. As proxies of prices we considered for each household included in the survey the NIC value by distinguishing:
  - the month and year in which the household participated to the survey
  - The region where households live by considering 18 Italian regions (Piemonte and Valle d'Aosta were considered as one region while Molise was not considered for missing data on price).

- The **total number of observations of the pooled dataset is 387,782 households** distributed across 18 Italian regions.

Data: the HBS survey and CPI data

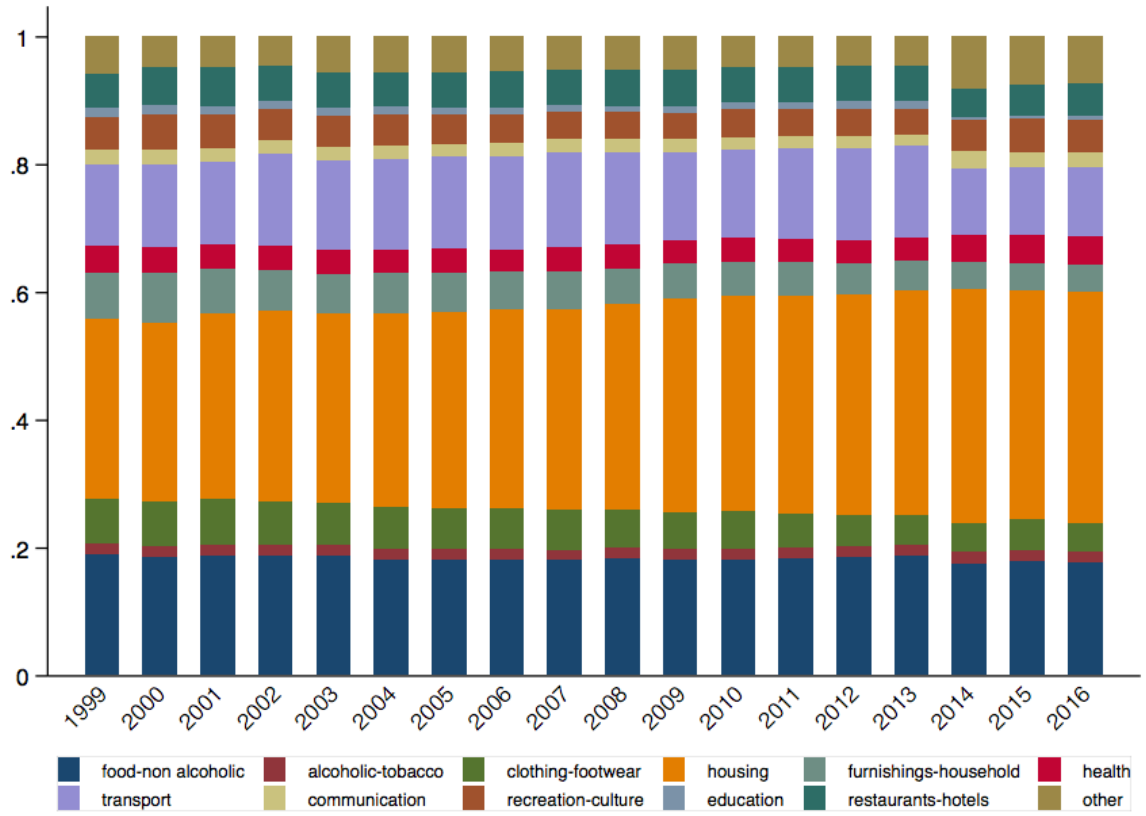
- The use of the European Classification of Individual Consumption by Purpose (**ECOICOP) classification** in the two sources of data ensures comparability and enabled us to merge the two datasets.

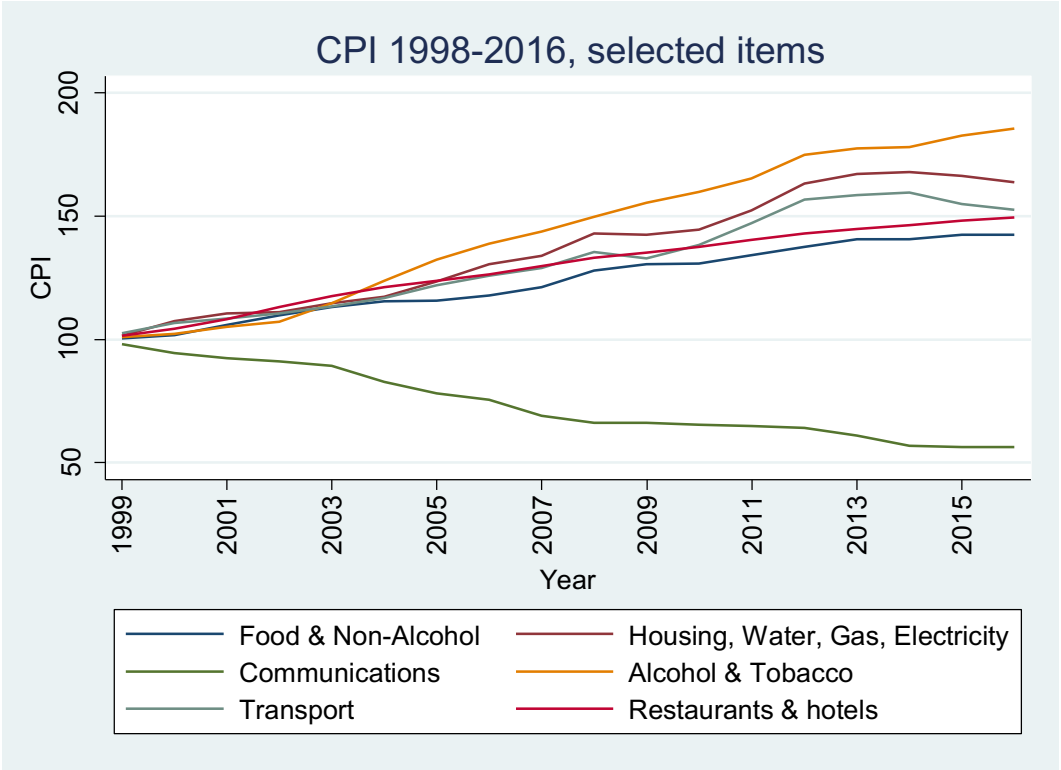
- In our study we referred to the following **12 ECOICOP divisions**:

(1) Food and non-alcoholic beverages;
(2) Alcoholic beverages and tobacco;
(3) Clothing and footwear;
(4) Housing, water, electricity and fuel;
(5) Furniture, and household services;
(6) Health services and health expenditures;

(7) Transport;
(8) Communications;
(9) Recreation, entertainment and culture;
(10) Education;
(11) Accommodation services and restaurants;
(12) Other goods and services.

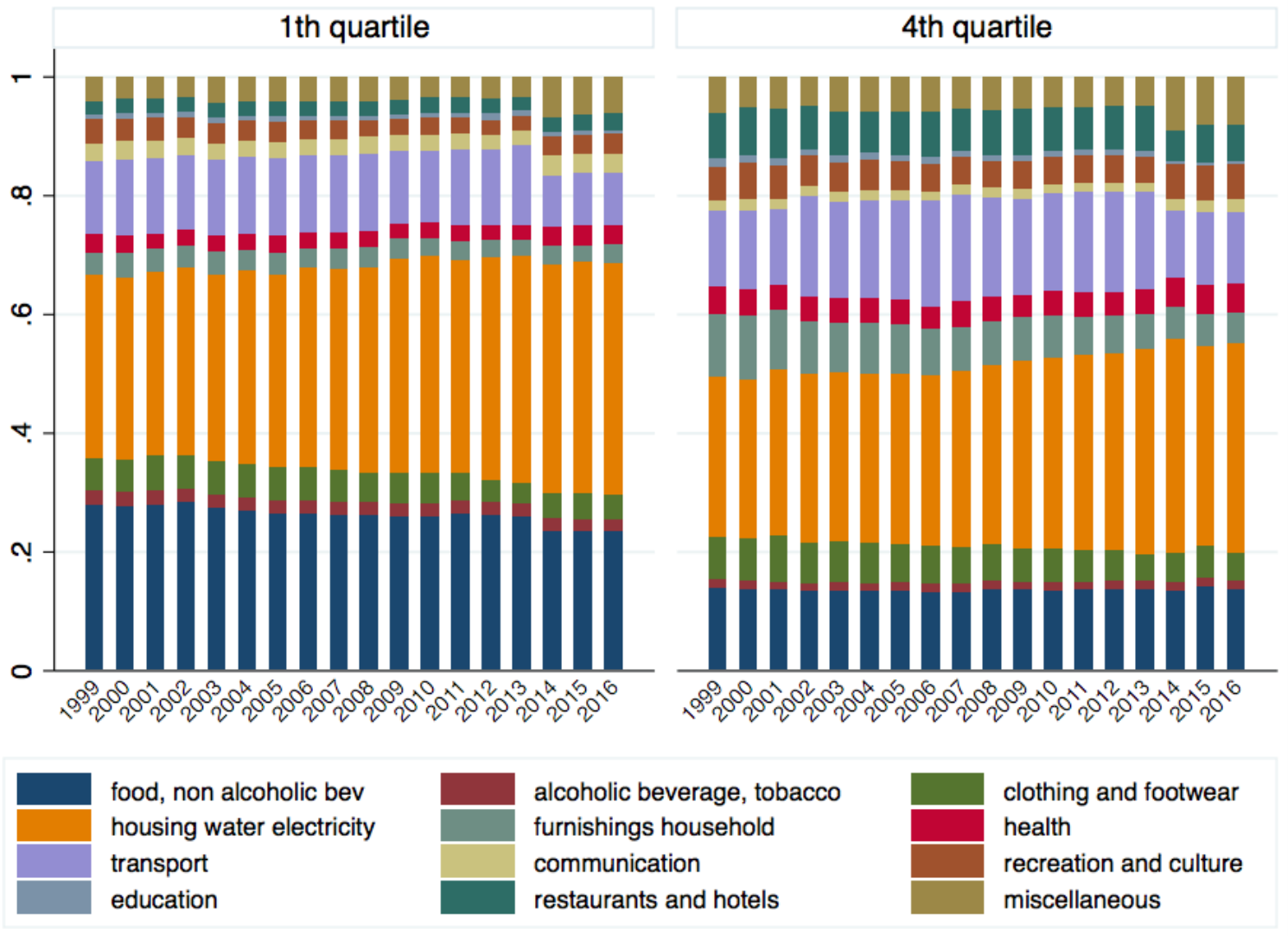
Data: Household expenditure share patterns





- ✓ In the studied period the expenditure share **for housing and electricity was equal to 28.6% in 1999 and to 36.4% in 2016**
- ✓ However, the distribution of expenditure among the 12 divisions greatly differ if we distinguish the analysis for **quartiles of household total expenditure**.

Data: Household expenditure share patterns



- ✓ Over the studied period we found that the expenditure **share for food and non alcoholic beverage as well health** for households in the last quartile of total expenditure **was approximately twice the same share observed for households in the first quartiles**.
- ✓ Differences **were also found for expenditure share concerning leisure activities**
- ✓ An interesting insight was found for **communication services for which households in the first quartile a higher average share than the "richest" households**.

Estimation strategy

✓ Given the structure of the constructed data set, we introduced in the standard AIDS model:

- **Regional fixed effects**
- **Seasonal (monthly) fixed effects**

✓ The analysis was carried out:
- For the full sample (pooled data and by year)
- For quartiles of total expenditure (computed by year)

✓ To reduce the noise in the data we further aggregated the 12 divisions into 5 macro-groups:

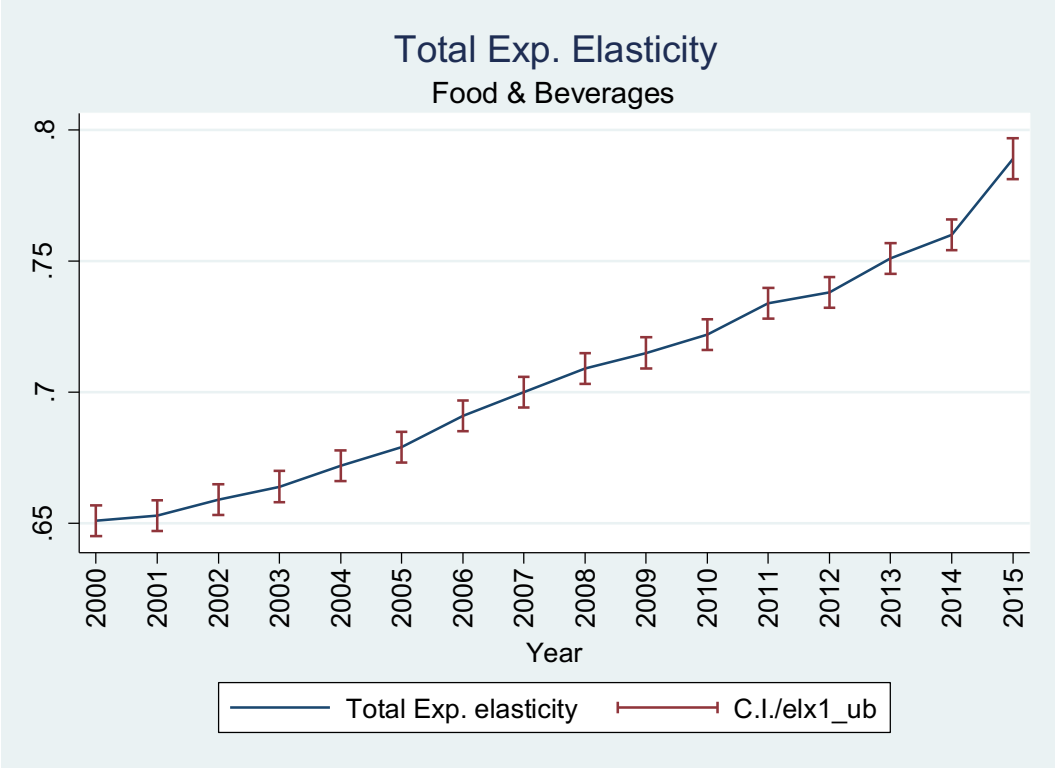
i. Food and Beverages
ii. Housing
iii. Transport
iv. Communication, Recreation and Culture
v. Other goods and services

Estimation results: estimated expenditure and *own-price* elasticity

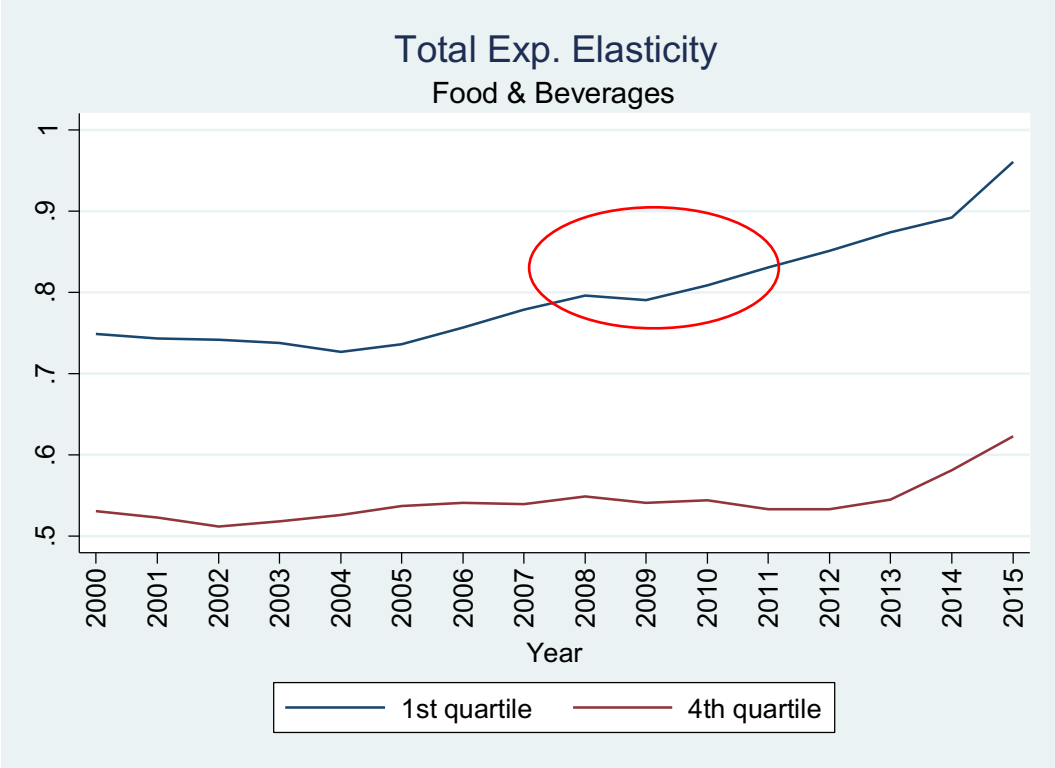
	Estimated elasticities (s.e. in brackets)	
	Total expenditure	**Own Price[a]**
Food & Non-Alcoholic Beverages	0.689***	-0.777***
	(0.001)	*(0.052)*
Alcohol & Tobacco	0.841***	-0.788***
	(0.004)	*(0.221)*
Clothing & Footwear	1.245***	-1.296***
	(0.003)	*(0.117)*
Housing, Water, Gas, Electricity	0.867***	-0.899***
	(0.001)	*(0.043)*
Furnishings & Household Equipment	1.705***	-2.174***
	(0.005)	*(0.321)*
Health	1.310***	-2.237***
	(0.005)	*(0.187)*
Transport	1.122***	-0.596***
	(0.002)	*(0.119)*
Communications	0.722***	-0.817***
	(0.002)	*(0.060)*
Recreation & Culture	1.259***	-0.969***
	(0.003)	*(0.181)*
Education	1.129***	-1.075*
	(0.012)	*(0.493)*
Restaurants and hotels	1.585***	-0.954***
	(0.005)	*(0.158)*
Miscellaneous Goods & Services	1.234***	-1.330***
	(0.003)	*(0.140)*

Estimation results: estimated expenditure and *own-price* elasticity

FOOD & BEVERAGE



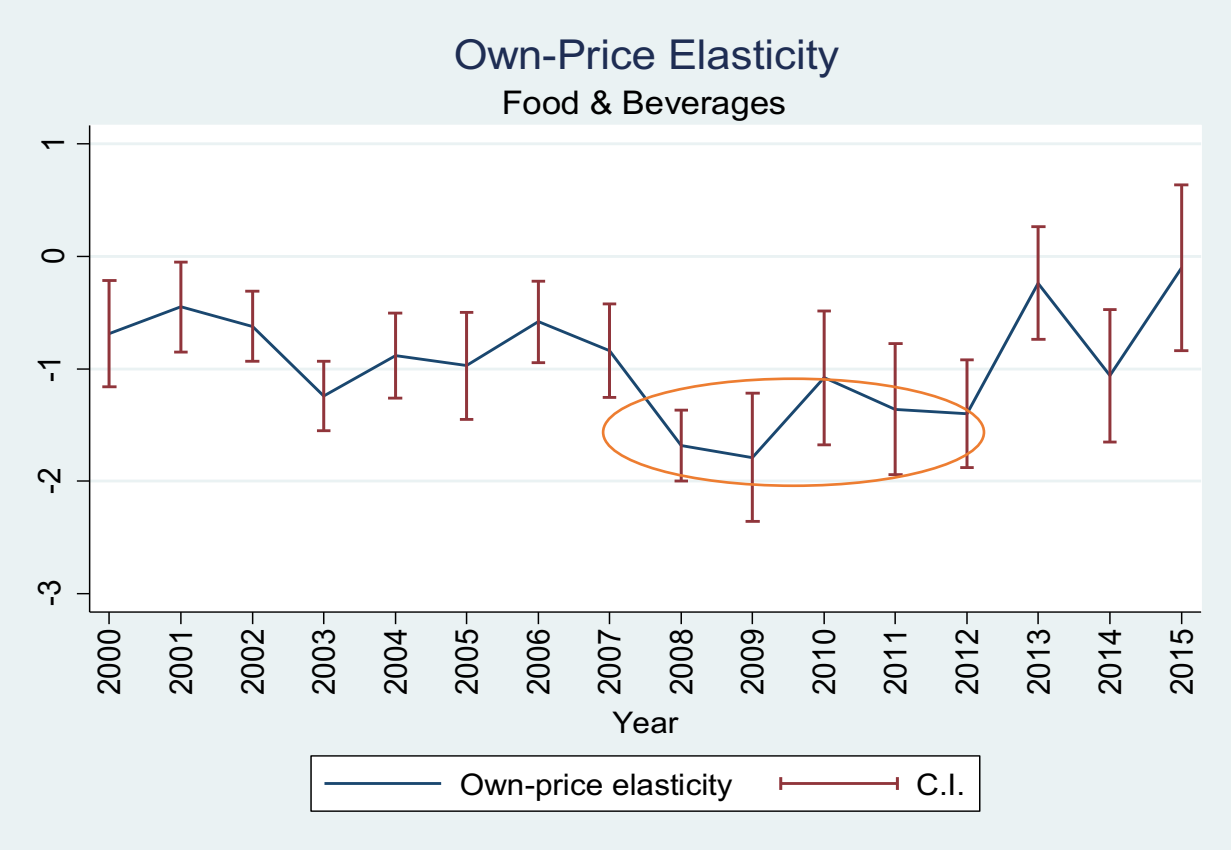
EXPENDITURE ELASTICITY



EXPENDITURE ELASTICITY (I and IV quartiles)

Estimation results: estimated expenditure and *own-price* elasticity

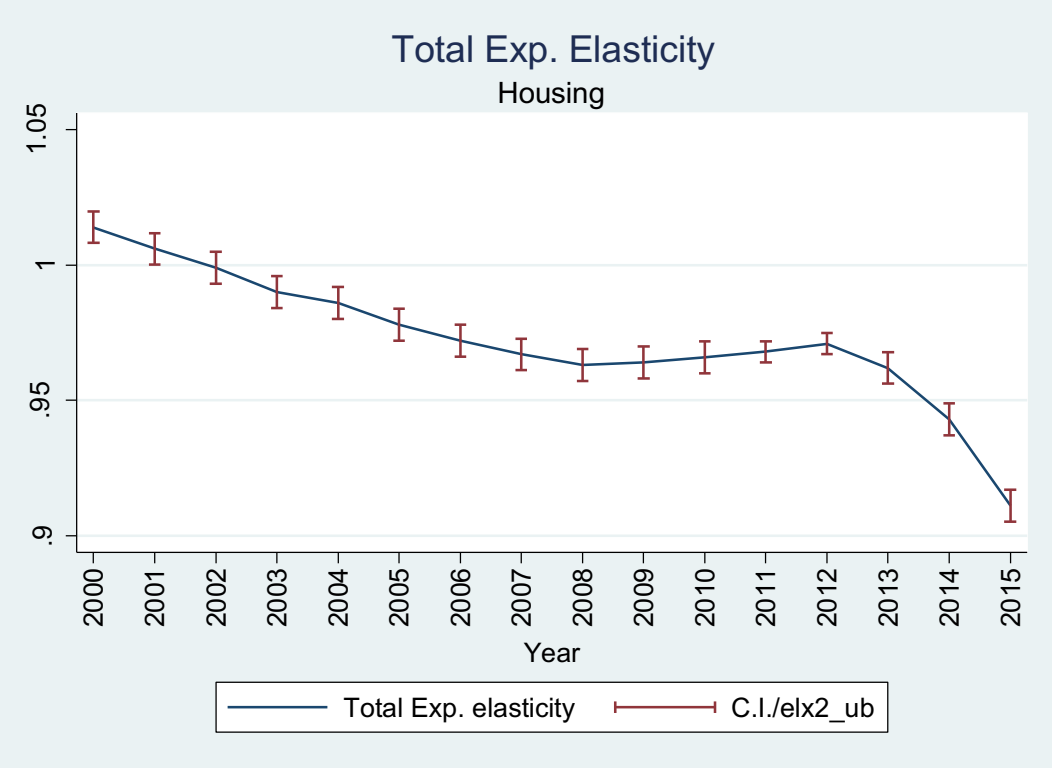
FOOD & BEVERAGE



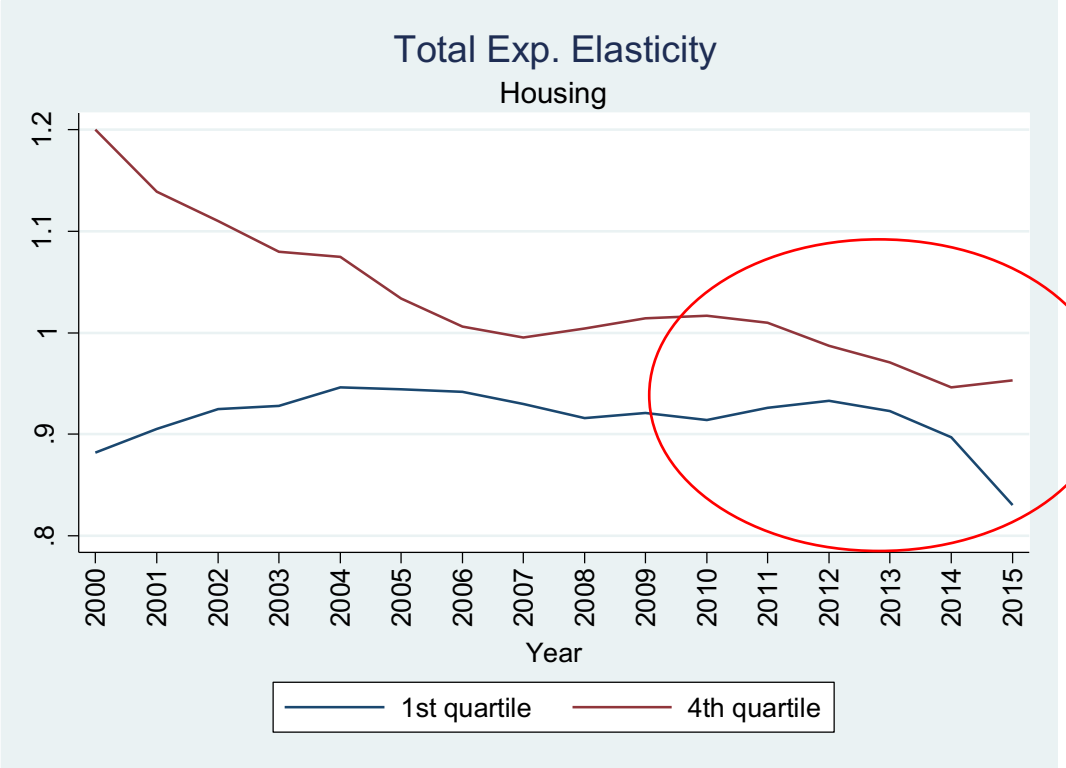
OWN-PRICE ELASTICITY

Estimation results: estimated expenditure and *own-price* elasticity

HOUSING & FURNISHING



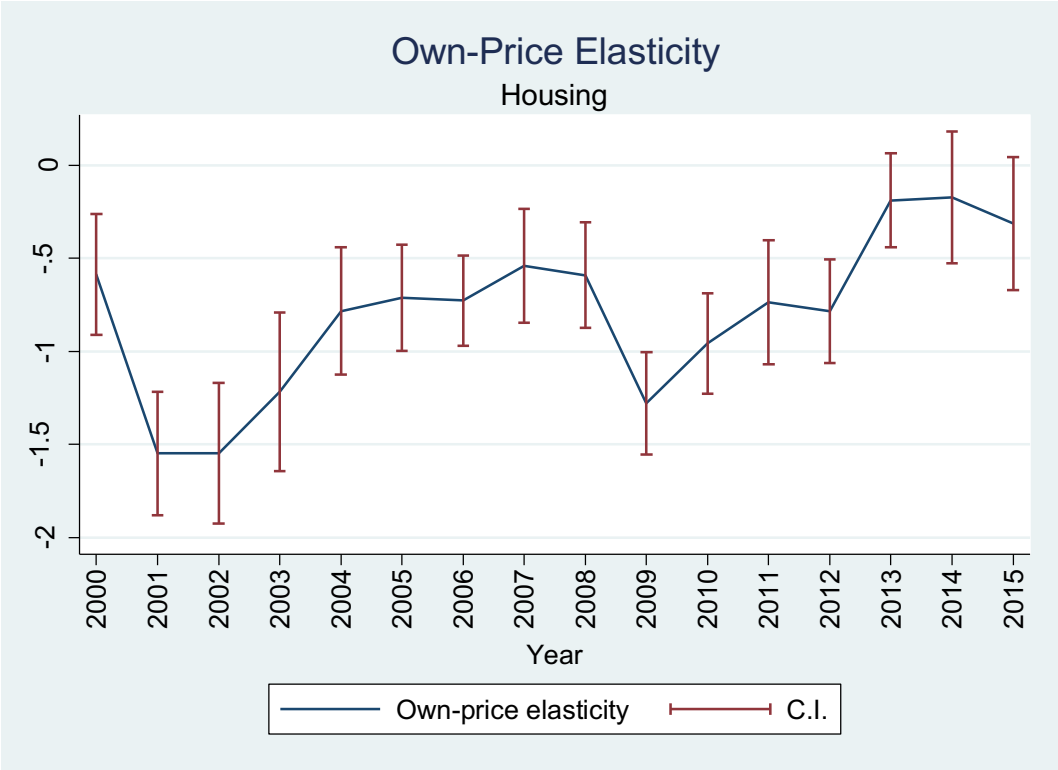
EXPENDITURE ELASTICITY



EXPENDITURE ELASTICITY (I and IV quartiles)

Estimation results: estimated expenditure and *own-price* elasticity

HOUSING & FURNISHING



OWN-PRICE ELASTICITY

Concluding remarks and research ongoing

- Confirmation of **heterogeneity in consumers' behaviour over time and different expenditure levels**

- Importance of **reliable elasticity estimates for (fiscal) policy purposes**

Further research:

- Trade off between territorial and commodity disaggregation
- Price information

THANK YOU
FOR
YOUR ATTENTION!

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