Consumer preference changes and environmental consciousness

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Overview

We want to study the changes in preferences of Italian consumers in the long run, regarding the attitude toward environmental issues. A large stream of literature has studied demand behavior, also taking into account the issue of endogenous preferences, i.e. accounting for habit formation through time. The basic idea is that a set of parameters of the utility or of the cost function are time varying, following the evolution of tastes. Typical examples in the literature are constituted by the analysis of consumer attitude toward alcohol and tobacco. A classic method to model taste changes is represented by the use of lagged dependent variables. The idea is that past quantities, insofar as they have provided some utility in the past period, are incorporating the learning effect, so that the consumer develops new habits to consume goods through time. New social norms or knowledge, such a as medical evidence of the damages of smoking and alcohol use or abuse to human health, renders the consumer more alert of the consequences of this consumption, so that new attitude is developed.

Methodology

Along these lines, we model and empirically estimate habit formation in the consumption attitude toward a more environmental friendly life style. Consider a consumer who changes gradually life style, uses less and less the elevators, and uses more and more the bicycle. The result will be a reduction in the consumption of a variety of energy goods. However, form an empirical viewpoint, this reduction cannot be explained by market price changes.

The research question is how much in the change of energy consumption is due to relative prices effect and how much is due to changes on preferences? We use a large data set at household level from the Italian Statistical office survey form 1997 to 2013, in order to test the habit formation hypothesis. We model a two-stage demand system, for seven broad good groups at the first level: food, beverages and tobacco, clothing, housing and transportation, health, recreation, others; and four energy goods at the second level within housing and transportation group: solid, electricity, gas, fuels (gasoline and diesel). We experiment also the method set forth by Adams Blundell Browning and Crawford (AER Proceedings, jan 2014), using quantile demands estimation.

Results

The results show in detail the estimated preference parameters, which are significant and obey to usual demand restrictions (homogeneity, symmetry, adding-up). Given the two-stage structure, we compute both conditional and unconditional price and expenditure elasticity values, taking into account that a price change at the second stage has also an effect on the expenditure allocation at the first stage. In this way, we assess whether goods are complements or substitutes and necessities or luxuries in consumers’ preferences.

The estimation results show that the habit component is present in the preference structure of the Italian households. Moreover, habit component is significantly different across types of households and it is affected by various socio-economic characteristics, such as family size, educational differences and type of residence.

Conclusions

In this paper, we analyze consumer demand for goods and specifically for energy goods of Italian households. We find precise and significant estimates of expenditure elasticity values of own and cross price elasticity values both conditional and unconditional. We estimate a significant habit formation component in the preference structure. We interpret this as an indication that there is an environmental consciousness n the long run preferences changes of Italian households. In this way, we are able to disentangle the long run changes in energy consumption into two components: one is due to price effects and the other is due to preference modifications, in consequence of a learning process. In conclusion, our results offer some quantitative guidance for policy-makers to tackle the issue of energy saving and sustainable growth, combining energy taxation and public education strategies. In fact, if consumers change their attitude towards energy in response to both price and learning, an efficient policy strategy should use both instruments, namely prices and education, to achieve a comprehensive sustainable policy action.

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