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**HOUSEHOLDS' DEMAND FOR ENERGY:
ECONOMETRIC ESTIMATIONS BASED ON THE AMERICAN
CONSUMER EXPENDITURE SURVEY**

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Estimating demand for energy by households as accurately as possible is necessary in order to forecast its evolution in the medium to long term range and thus assess the effects of various policies aimed at reducing consumption and contributing to greenhouse gases abatement. It is also welcome in order to appraise the equity effects of these policies, and compare the relative burdens borne by low income and affluent households.

This task is now possible owing to the availability of a comprehensive and very detailed survey on American Consumer Expenditure, covering a very long time interval -from 1984 to 2005- and providing annual data by classes of income and types of households ¹.

The paper presents the results obtained in the case of demand for gasoline (alone or included in the demand for private transportation) and in the case of demand for residential energy in three commodities -fuel oils, electricity and natural gas-, through a rank four iterative approximation method. This method yields econometric estimations of the main parameters of interest, income and price elasticities, direct and cross-, for the various categories of households (by class of income, size and class of age of households, and residential location). They are estimated together with a fundamental parameter, which is the "technical progress" and represents the change in behavior over time, independently of changes in price and income.

Beside its intrinsic interest in explaining the change over time in households' preferences, technical progress plays a major role in the econometric estimation of demand because neglecting this effect biases considerably the estimated values of elasticities.

Results of the econometric estimations confirm the expectation that households' demand for energy is fairly inelastic to prices, with figures in the range of -0.2 to -0.4 both for gasoline and for residential energy. They are mostly increasing with the level of income, which is an indication that the relative welfare cost of a price increase is bigger for low income groups than for average or high income groups.

¹ An important statistical work has been necessary to pair the series of expenditure and price by product, and to reinterpolate price series from 1984 to 1997, owing to a change in nomenclature from 1998.