

This archive contains programs used in ‘How do Fuel Taxes Impact New Car Purchases? An Evaluation using French Consumer-level data’ by Pauline Givord, Céline Grislain-Letrémy and Helene Naegele.

Data

The paper uses several data sources:

- the exhaustive dataset on the registration of new cars, provided by the Association of French Automobile Manufacturers (CCFA, Comité des Constructeurs Français d’Automobiles)
 - Access requires permission from the CCFA.
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 - It contains the following variables:
DATE; MARQUE (*brand*) ; MODELE (*model*); ENERGIE (*type of energy*); CARROSSERIE_CG (*model*); CYLINDREE (*model*); POIDS_VIDE (*weight*); PUIS_KW (*horsepower*); PUIS_FISC, (*fiscal horsepower*); PTR ; NB_PORTES (*number of doors*); NB_PL_ASS (*number of seats*); CO2 (*CO2 emissions*); DEPART (*French departments (counties) code*); COMM_INSEE(*zip code*); C_S_P (*occupation of the buyer*); AN_NAISS_PRO (*birthyear of the buyer*); PRIX_VEHIC (*list price*); VOLUME (*numbers of sales with same characteristics*)
 - This database is combined with several databases that are provided with this article.
 - * Local income database, provided by the Insee (data file **revenus.sas7bdat**); the conventions in ZIP code may differ from those in the registration database in some rare cases. Merging requires to use the dataset **tab_tau** that also adds a variable differentiation urban and rural areas.
 - * Car segments (datasets **monospaces.sas7bdat**, **liste4_4.sas7bdat**, **utilitaires.sas7bdat** and **citadines.sas7bdat**, **sports.sas7bdat** and **compactes.sas7bdat**) provided as lists of models belonging to each segment.
 - * Energy prices (diesel/gasoline) (dataset **prixessence.sas7bdat**) obtained here http://www.developpement-durable.gouv.fr/energie/petrole/se-cons_fr.html, and price deflators CPI (dataset **defcpi.sas7bdat**)
 - * prices of raw materials (dataset **donnees_export.sas7bdat** and dataset **indices_import_caoutchouc.sas7bdat**)

Libraries

To use the SAS programs one should name the SAS libraries as follows :

- *libbase* is the library corresponding to the folder containing the CCFA database
- *tau* is the library corresponding to the folder containing the datasets **revenu**, **tab_tau donnees_export** and **indices_import_caoutch_fer** and energy prices (**prixessence**).
- *petrole* is the library corresponding to the folder where the workable data will be saved
- *sorttemp* is the library corresponding to the folder where the temporary results (parameter estimates from the bootstrap, elasticity estimates) will be saved
- *sorties* is the library corresponding to the folder where the final results will be saved

Workable database

The construction of the database used for the results requires using the programs included in the folder "Data constructions" :

- **Raw data.sas** and **Intermediate data.sas** read the raw database and recode the variables using additional tables (car segmentation, users characteristics, cost per km, etc.);
- **Raw materials prices Data.sas** and **Calculations of Instruments (BLP and cost shifters).sas** compute our instrumental variables;
- **Final Data.sas** creates the database with the market shares by demographic groups, used for estimations;
- **Data with no buyer heterogeneity.sas** creates the database with the market shares ignoring demographic groups, used for estimations of the variant specification.

Descriptive Statistics

The program **0.Descriptives statistics** in the Folder "Estimation" provides Tables and Figures in the text.

Econometric results

The econometric results and simulations are obtained using the programs included in the folder "Estimations". It contains the following programs:

- Estimations are obtained using the program **2.Estimations_elasticities**. This program computes the main specifications and robustness checks, at the exception of the robustness check with only one categorical data, which is computed using **2bis.Estimations_elasticities**. It requires the four following SAS macros :
 1. **1.a.macro regression_nested_logit_gmm.sas** contains the SAS macro used for the econometric regressions (GMM)
 2. **1.b.macro bootstrap_elasticite.sas** contains the SAS macro used to bootstrap these regressions (in order to estimate elasticity precisions)
 3. **1.c.macro elasticite.sas** contains the SAS macro used to estimate tax and fuel elasticities
 4. **1.d.macro sortie_elasticite.sas** contains the SAS macro used to simulate the impact of hypothetical policies (introduction of a carbon tax, and gasoline/diesel price equalization)
- Programs **1bis.a.macro regression_nested_logit_gmm.sas** to **1bis.d.macro sortie_elasticite.sas** are the counterparts of these programs when ignoring demographic segmentation.
- The program **3.testWeakInstruments.sas** checks the strength of the instruments. It is based on Sanderson, E. and Windmeijer, F. (2016), "A Weak Instrument F-test in Linear IV Models with Multiple Endogenous Variables", Journal of Econometrics 190(2), 212-221.