# Problem Set #2: Supply Side Estimation

Econ 356: Empirical IO

To answer the questions in this part of the problem set you need to use the dataset verboven_cars.dta. Use this dataset to implement the estimations describe below. Please, provide the STATA code that you use to obtain the results. For all the models that you estimate below, impose the following conditions:

- For market size (number of consumers), use Population/4, i.e., pop/4
- Use prices measured in euros (eurpr).
- For the product characteristics in the demand system, include the characteristics: hp, li, wi, cy, le, and he.
- Include also as explanatory variables the market characteristics: ln(pop) and log(gdp).
- In all the OLS estimations include fixed effects for market (ma), year (ye), and brand (brd).
- Include the price in logarithms, i.e., ln(eurpr).
- Allow the coefficient for log-price to be different for different markets (countries). That is, include as explanatory variables the log price, but also the log price interacting (multiplying) each of the market (country) dummies except one country dummy (say the dummy for Germany) that you use as a benchmark.

**Questions 1:**

Consider the equilibrium condition (first order conditions of profit maximization) under the assumption that each product is produced by only one rm.

- (a) Write the equation for this equilibrium condition. Write this equilibrium condition as an equation for the Lerner Index, $\frac{p_j - MC_j}{p_j}$

- (b) Using the previous equation in Q1(a) and the estimated demand in problem set #1, calculate the Lerner index for every car-market-year observation in the data.
- (c) Report the mean values of the Lerner Index for each of the counties/markets. Comment the results.
- (d) Report the mean values of the Lerner Index for each of the top five car manufacturers (i.e., the five car manufacturers with largest total aggregate sales over these markets and sample period). Comment the results.

**Questions 2:**

- (a) Using the equilibrium condition and the estimated demand, obtain an estimate of the marginal cost for every car-market-year observation in the data.
- (b) Run an OLS-Fixed effects regression where the dependent variable is the estimated value of the marginal cost, and the explanatory variables (regressors) are the product characteristics hp, li, wi, cy, le, and he. Interpret the results.