Empirical IO 2021-2022
Pierre Dubois
Homework
Deadline: December 17, 2021

Simulations can be done with the software of your choice (Stata, R, Matlab, Python). Provide the code and results for questions below.

Assume individual utility for the J goods is $(j = 1, .., J)$

$$u_{ij} = \xi_j - \alpha_i p_j + \varepsilon_{ij}$$

and outside good utility is

$$u_{i0} = \varepsilon_{i0}$$

where ε_{ij} is type I extreme value distributed (cdf is $F(\varepsilon_{ij}) = \exp(-\exp(-\varepsilon_{ij}))$) and α_i is log normal such that $\log(\alpha_i) \to N(1, 1)$.

Individual chooses good that maximizes indirect utility.

Question 1 Assume there are $I = 2000$ consumers and $J = 4$ goods with consumers tastes $\xi_j = j/5$. Each product is owned by one firm and their marginal costs of production are $c_j = j/10$. Compute the market share of each good, the Bertrand Nash equilibrium in prices and the profits of each firm.

Question 2 Now assume that the J firms sell the goods through a single retailer and use products two part tariffs contracts with RPM offered simultaneously to the retailer who needs decide simultaneously to accept or reject with a zero profit outside option. Assuming the marginal cost of distribution is zero and wholesale prices are equal to the marginal cost of production, what are the new equilibrium prices of goods and the profits of each firm?