

Empirical Industrial Organization

Fall 2007
U.LB. and K.U.L

Assignment 1: Market power and conduct – homogeneous goods

Part 1

This assignment guides you to specifying and estimating a homogeneous goods supply and demand model. You can work in groups of about 2-4, but should not cooperate between groups.

You have a dataset on the Dutch coffee market, a monthly time series on the following variables:

qu:	per capita consumption of roasted coffee in kg
cprice:	price of roasted coffee per kg in current guilders
tprice:	price of tea per kg in current guilders
oprice:	price index for other goods
income:	income per capita in current guilders
q1-q4:	season dummies
bprice:	price of coffee beans per kg in current guilders
wprice:	price of labor per man hours (work 160 hours per month)

The data set is available at: <http://www.econ.kuleuven.be/public/NDBAD83/>

Suppose coffee demand depends on the coffee price, tea price, price of other goods, income and season dummies. Similarly, suppose marginal cost depends on the price of coffee beans, other goods (and possibly labor costs), but is independent of output.

1. Write down a linear demand specification (not the inverse demand) and a linear cost specification for this market. Verify that your demand equation is homogeneous of degree zero in prices and income, and that the marginal cost equation is homogeneous of degree one in factor prices, and interpret these restrictions economically. Interpret your cost specification as a fixed input proportions (Leontief) technology, and interpret your error terms.
2. Write down the implied empirical model of demand and supply, including a conduct parameter.
3. For the demand equation, suggest some alternative functional forms, where price does not enter linearly (e.g. quadratically, logarithmically, etc.). Do these alternative functional forms affect parameter identification? Write the supply equation implied by your alternative demand specification(s).
4. Present summary statistics of your variables.
5. Think about instruments and estimate the model. You can follow a simplified sequential approach (i.e. first estimate demand, then insert the relevant demand parameters in the supply equation and estimate supply, you do not have to correct the standard errors). Packages such as SAS or TSP etc. allow you to estimate the model simultaneously, but this is not required.
6. Extra: if you have spare time, you may check Genesove-Mullin's approach towards estimating the supply side.

7. Interpret the estimated parameters. E.g. the cost side parameters (knowing that 19% of raw coffee beans get evaporated during the roasting process), the implied price elasticities of demand, the conduct parameter, Lerner index, etc.

Part 2

Download the railroad cartel data from Porter's paper, available at <http://www.wcas.northwestern.edu/csio/data.html>

1. Specify the final demand and supply model as derived in class (using the linear approximation). Follow the first approach, i.e. where conduct shifts from cartel to collusion are known based on the price war dummy variable. Discuss identification of conduct parameter.
2. Specify your instruments and variables to be included, as in Porter.
3. Present summary statistics of your variables.
4. Estimate the model sequentially, i.e. first demand and then supply.
5. Make two alternative assumptions about conduct under the price war (since this is not identified). First, assume there is perfect competition under the price war, and second assume there is Cournot competition with identical firms under the price war. How does your interpretation of the estimated conduct parameter under the collusive phase change?