

Questions for Precepts Week 2: September 27, 28

Elasticities for Empirically Estimated Demand Function

F. Gasmi, J.-J. Laffont, and Q. Vuong (Journal of Economics and Management Strategy, Summer 1992) estimated the following demand functions for Coke and Pepsi:

$$\begin{aligned} Q_C &= 26.17 - 3.98 P_C + 2.25 P_P + 2.60 (A_C)^{1/2} - 0.62 (A_P)^{1/2} + 0.99 I + 9.58 S \\ Q_P &= 17.48 + 1.40 P_C - 5.48 P_P - 4.81 (A_C)^{1/2} + 2.83 (A_P)^{1/2} + 1.92 I + 11.98 S \end{aligned}$$

The symbols are as follows:

- Q_C = quantity of Coke per quarter (units of ten million cases)
- Q_P = quantity of Pepsi per quarter (units of ten million cases)
- P_C = price of Coke (1986 dollars per ten cases)
- P_P = price of Pepsi (1986 dollars per ten cases)
- A_C = quarterly advertising expenditure by Coke (millions of 1986 dollars)
- A_P = quarterly advertising expenditure by Pepsi (millions of 1986 dollars)
- I = average per capital disposable income (thousands of 1986 dollars)
- S = “dummy variable” = 1 for summer and spring quarters, 0 for fall and winter

The average values of the independent variables in the data were as follows:

$$P_C = 12.96, \quad P_P = 8.16, \quad A_C = 34.69, \quad A_P = 27.88, \quad I = 20.63$$

Consider the case of spring and summer seasons ($S = 1$).

Calculate the quantities Q_C , Q_P by substitution

Using all this information, calculate various elasticities of demand. Be careful when differentiating with respect to the advertising variables. Complete the following table:

Elasticity with respect to	Elasticity of Demand for	
	Coke	Pepsi
Own price		
Other's price		
Income		
Own Advertising		
Other's Advertising		

Think whether the resulting numbers are intuitively reasonable.

Preferences Yielding Constant Budget Shares for the Different Goods

In class on Tuesday September 27 we will consider the special case of consumer preferences for which the optimal choice is to spend 50% of your income on each of the two goods. In the precept we will generalize that, to a class preferences for which the expenditure proportions are constants but not 50%. So this is not an assignment, but just information about what will be done. If you would like to read in advance, this will be like the example on pp. 148-9 of Pindyck-Rubinfeld.