A1 - Quantitive Methods in Marketing

The database *cerveja.dta* contains monthly information on the Brazilian beer market from January 2004 to December 2006. It is composed by the following variables:

*mes*: month of observation

*consumopc*: per capita consumption of beer (in liters)

*pcerv*: beer price (in R$/liter)

*pub*: advertising expenditures by beer firms (in R$ 1,000)

*renda*: household monthly income

*pemb*: producer price of beer tins

*dverao*: dummy variable indicating the summer period (1 from December to March, 0 otherwise)

Suppose we are interested in estimating a demand function with the following specification

ln(consumopct) = α0 + α1ln(pcervt) + α2ln(pubt) + α3ln(rendat) + α4dveraot + et

where ln(.) refers to the natural logarithm of the variable in parentheses.

We suspect that the variable *pcerv* may be endogenous. To investigate this hypothesis, we will use as an excluded instrument variable *ln(pemb)*.

1. Carry on na endogeneity test. Based on the results, which method is most adequate to estimate the demand function? Justify your answer.
2. Estimate the demand equation by using the method you selected in the previous question. Interpret the results of your regression.
3. Test the hypothesis that the price-elasticity of the demand is equal to -1. Should we reject it or not?

Now estimate the lingering effects model for beer sales:

consumopct = β0 + β1pub + β2consumopct-1 + ut

where ut follows a moving average of order 1.

1. Compute the proportion of the impact of a certain advertising campaign in the third period following its launching.
2. Suppose that the marketing department intends to launch a new campaign every time the previous campaign has attained 85% of its full impact on sales. The new campaign should be launched after how many months following the previous campaign?