Exercise Sheet 5

R.G. Pierse

The *EViews* file *bex3.wf1* contains data extracted from the CSO databank. The file contains quarterly unadjusted data for the UK from 1955:1 to 1990:2 on the following variables:

NC	Nominal expenditure on clothing and footware
RC	Real expenditure on clothing and footware
NF	Nominal expenditure on food
RF	Real expenditure on food
NL	Nominal expenditure on alcohol, drink and tobacco
RL	Real expenditure on alcohol, drink and tobacco
ND	Nominal expenditure on durables
RD	Real expenditure on durables
NY	Nominal personal disposable income
RY	Real disposable income

1. You should read the data and form the following price indices:

PC	a price index for clothing and footware
PF	a price index for food
PA	a price index for alcoholic drinks and tobacco
PD	a price index for durable goods
P	an overall price index defined by $P{=}NY/RY$.

   You should also form *real* price indices *RPC*, *RPF*, *RPL* and *RPD*.

2. We wish to estimate a demand function for clothing and footware. One possible model that we might consider is

$$\begin{aligned}\log RC_t = \quad & \beta_1 + \beta_2 \log PC_t + \beta_3 \log PF_t + \beta_4 \log PL_t \\ & + \beta_5 \log PD_t + \beta_6 \log Y_t + \beta_7 \log P_t \\ & + \beta_8 d1_t + \beta_9 d2_t + \beta_{10} d3_t + \varepsilon_t\end{aligned} \tag{M1}$$

where di_t, $i = 1, 2, 3$ are quarterly dummy variables which you should create.

Another possible model (which is homogeneous of degree 0 in price and income) is given by:

$$\begin{aligned} \log RC_t = \quad & \alpha_1 + \alpha_2 \log RPC_t + \alpha_3 \log RPF_t + \alpha_4 \log RPL_t \\ & + \alpha_5 \log RPD_t + \alpha_6 \log RY_t \\ & + \alpha_7 d1_t + \alpha_8 d2_t + \alpha_9 d3_t + \varepsilon_t \end{aligned} \qquad \text{(M2)}$$

(a) Show that if we impose the restriction

$$\beta_7 = -\beta_2 - \beta_3 - \beta_4 - \beta_5 - \beta_6$$

on equation (M1) we get a model of the form of (M2).

(b) Test this restriction. If the result of this test supports the restriction use model (M2) in all subsequent analysis, otherwise use model (M1).

3. (a) Estimate your preferred equation. What is the interpretation of the estimated coefficients on the seasonal dummy variables?

   (b) Test your equation for first and fourth order autocorrelation. Why would you test for fourth order autocorrelation in this case?

   (c) (i) Find estimates of the own price and income elasticities of demand for clothing and footware.

   (ii) Test for unit price elasticity.

   (iii) Test the hypothesis that the income elasticity of demand is unity against the alternative that clothing and footware is a luxury good.

4. Use a dummy variable to take account of the introduction of *Value Added Tax* (*VAT*). *VAT* was introduced in 1973:2 but was announced in 1973:1.