***EViews* Exercises for Chapter 16**

**EXAMPLE 16.1: Forecasting obesity trends in England**

Open the workfile obesity.wf1 and generate the log-ratios and trend as

genr y1 = log(x1/x3)

genr y2 = log(x2/x3)

genr t = @trend + 1

The log-ratio models are estimated as

ls y1 c t t^2 t^3

ls y2 c t t^2 t^3

may be obtained by saving the residuals from each regression, resid01, resid02, as a group and then clicking ***View/Covariance Analysis…*** and OK-ing. Forecasts may be obtained from the two regressions in the usual way. If these are saved as y1\_f and y2\_f, then forecasts of the proportions are obtained with

genr x1\_f = 100\*exp(y1\_f)/(1 + exp(y1\_f) + exp(y2\_f))

genr x2\_f = 100\*exp(y2\_f)/(1 + exp(y1\_f) + exp(y2\_f))

genr x3\_f = 100 – x1\_f – x2\_f

**EXAMPLE 16.2: Modelling expenditure shares in the U.K.**

Open the workfile tfe\_shares.wf1 and generate the log-ratios and trend:

genr y1 = log(cons\_share/other\_share)

genr y2 = log(inv\_share/other\_share)

genr y3 = log(govt\_share/other\_share)

genr t = @trend

The levels VAR(4) may be estimated directly as usual. To estimate the VAR(3) in differences, click ***Quick/Estimate VAR…***, enter d(y1) d(y2) d(y3) in the ‘Endogenous variables’ box, ‘1 3’ in the ‘Lags intervals for endogenous’ box and delete c from the ‘Exogenous variables’ box. Forecasts may then be obtained in the usual way.

After unrestricted estimation, the restricted model may be obtained by clicking ***Estimate*** and then clicking ‘VAR Restrictions’. The restriction matrices can then be edited to obtain, for L1,

for L2,

and for L3,

OK-ing will then produce the restricted model estimates.

**EXAMPLE 16.3: IN-AR models for hurricane and storm counts**

Open the workfile hurricane.wf1. The sample autocorrelations and partial autocorrelations for the series hurricanes and storms may be obtained from their respective ***Correlogram*** view. The serial dependence test statistics may be obtained by running the program count\_dependence\_tests.prg ‘customised’ to the appropriate series, e.g.,

genr x = storms

scalar r1 = 0.384

scalar r2 = 0.300

scalar phi2 = 0.179

scalar score = @sqrt(@obs(x))\*r1

genr y = x -@mean(x)

scalar s = @sumsq(y)

genr y2 = x(-2) - @mean(x)

genr y1 = y\*y2

scalar s1 = @sumsq(y1)

scalar qacf = (r2^2)\*(s^2)/s1

scalar qpacf = (phi2^2)\*(s^2)/s1

The IN-AR model estimates are obtained by running count\_inar\_estimation.prg:

genr x = storms

scalar r1 = 0.384

scalar r2 = 0.300

scalar a = (@obs(x)\*r1 + 1)/(@obs(x) - 3)

scalar l1 = (1 - a)\*@mean(x)

scalar a1 = r1\*(1 - r2)/(1 - r1^2)

scalar a2 = (r2 - r1^2)/(1 - r1^2)

scalar l2 = (1 - a1 -a2)\*@mean(x)

genr w1 = x - a\*x(-1) - l1

genr w2 = x - a1\*x(-1) - a2\*x(-2) - l2

**EXAMPLE 16.4: Forecasting storm counts**

In the hurrical.wf1 workfile, click ***New Page/Specify by Frequency/Range…***, change ‘Workfile Structure Type’ to ‘Unstructured/Undated’ and select 30 for ‘Observations’. The probability distributions may then be calculated using in\_ar\_prob\_dist\_prg:

scalar a = 0.397

scalar lam = 5.78

scalar xt = 17

scalar x\_max = 25

scalar x\_max\_1 = x\_max + 1

for !4 = 1 to 2

scalar h = !4

for !2 = 0 to x\_max

scalar z = !2

scalar c\_{z} = 0

for !1 = 0 to z

scalar b\_{z}\_{!1} = (a^(!1\*h))\*((1-(a^h))^(xt-!1)\*

(lam^(z!1))/(@fact(!1)\*@fact(z-!1)\*@fact(abs(xt-!1)))

scalar c\_{z} = c\_{z} + b\_{z}\_{!1}

d b\_{z}\_{!1}

next

scalar p\_{h}\_{z} = @fact(xt)\*exp(-lam\*(1-(a^h))/(1-a)))\*c\_{z}

d c\_{z}

next

smpl 1 {x\_max\_1}

genr p\_{h} = 0

for !5 = 1 to x\_max\_1

scalar w = !5 - 1

smpl !5 !5

genr p\_{h} = p\_{h}\_{w}

next

next

**EXAMPLE 16.5: A non-negative AR(1) model for storm counts**

The estimate of the AR parameter may easily be obtained with the command show storms/storms(-1) and then clicking ***View/Descriptive Statistics & Tests/Histogram and Stats*** to read off the minimum value. The estimate of the location parameter may then be obtained similarly for the series storms – 0.167\*storms(-1).