Economic Forecasting
Exercise Sheet 4

Richard G. Pierse

1. (a) Open the *EViews* file **canemp.wf1**, which contains quarterly data on Canadian employment from 1961q1 to 1994q4.

   (b) Perform an *Augmented Dickey-Fuller* (*ADF*) test of the null hypothesis that CANEMP is *integrated of order 1* (*I(1)*) against the alternative that it is *I(0)* and therefore stationary. Should an intercept and/or a deterministic time trend be included when computing the test?

   (c) Estimate the correlogram for CANEMP. Is there any indication that an autoregressive or a moving average representation is preferred?

   (d) Estimate an autoregressive model of order 8 for CANEMP. Then test down sequentially to find the best autoregressive model, using the significance of the highest order coefficient to determine whether the order can be reduced.

   Hint: The *AR(8)* model can be estimated in *EViews* by including terms **AR(1)** up to **AR(8)** as explanatory variables. Remember also to include the intercept **C**.

   (e) Estimate a moving average model of order 10 for CANEMP. Then test down sequentially to find the best moving average model, using the significance of the highest order coefficient to determine whether the order can be reduced. Compare your best *MA* model with your best *AR* model.

   Hint: The *MA(10)* model can be estimated in *EViews* by including terms **MA(1)** up to **MA(10)** as explanatory variables. Remember also to include the intercept **C**.

   (f) Estimate the three mixed *ARMA* models: *ARMA(1,1)*, *ARMA(2,1)* and *ARMA(3,1)*. Comment on the results, comparing with the pure *AR* and pure *MA* models already estimated. Is there any particular issue with the *ARMA(3,1)* model?

   Hint: Mixed *ARMA* models can be estimated by combining **AR()** and **MA()** terms.