Economic Forecasting
Exercise Sheet 5

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1. (a) Open the *EViews* file **canemp.wf1**, which contains quarterly data on Canadian employment from 1961q1 to 1994q4 and extend the data period from 1961q1 to 1999q4.

   Hint: *EViews* allows you to extend the data period using the *Structure/ Resize Current page* option on the *Proc* tab in the workfile window. In the *Workfile Structure* window, change the end date to **1999Q4** and click *OK*. A warning that you are adding 20 observations will appear.

   (b) Estimate an *AR(2)* model for **CANEMP** over the period 1961q1 to 1994q4 and forecast this model over the period 1995q1 to 1999q4.

   Hint: Estimate using **C**, **CANEMP(-1)** and **CANEMP(-2)** as explanatory variables. Make sure that the sample is set to 1961q1 to 1999q4. Then click the *Forecast* tab. Set the forecast sample to 1995q1 to 1999q4 and specify the forecast and S.E. names as **AR2F** and **AR2SE** respectively.

   (c) Estimate an *MA(8)* model for CANEMP over the period 1961q1 to 1994q4 and forecast this model over the period 1995q1 to 1999q4, saving the forecast and its standard error as **MA8F** and **MA8SE** respectively. Compare the forecast path from this model with that from the *AR(2)* model.

   (d) Estimate an *ARMA(1,1)* model for CANEMP over the period 1961q1 to 1994q4 and forecast this model over the period 1995q1 to 1999q4, saving the forecast and its standard error as **ARMA11F** and **ARMA11SE** respectively and compare this forecast with the previous two.

   (e) For each of the three models, compute the one-step ahead forecast for 1995q1 and the two-step ahead forecast for 1995q2 using the analytical formulae given in the lecture notes. Compare the results with the forecast values generated by *EViews*.

   Hint: For the *MA(8)* and an *ARMA(1,1)* models, you will need to save the most recent residual estimates. These can be saved from the *Make*

residual series menu on the *Proc* tab in the estimation window. Select *Ordinary* type residuals and choose a name.

(f) For each of the three models, compute the one-step ahead forecast standard error for 1995q1 and the two-step ahead forecast standard error for 1995q2 using the analytical formulae given in the lecture notes. Compare the results with the forecast standard errors generated by *EViews*.
Hint: For an estimator of σ_ϵ^2, use the square of the the *S.E. of regression* reported as part of the estimation output.