Econometrics Lab 7

Time Series Models, Estimation and Forecast

1. Model Selection, Estimation, and Diagnostics. In this exercise we use the dataset series.csv, which contains three time series variables: *sa*, *sb*,*sc*.

(1) Obtain the correlograms (ACF and PACF) of *sa*, *sb*, and *sc*. What model do you think would be good for these series?

(EViews tip: Use menu "View" → "Correlogram".)

(2) Estimate an appropriate model for each series. Choose the right order using BIC (also called Schwarz criterion in Eviews).

(EViews tip: Use menu "Object" → "New Object"; In the Equation Specification, type in "x c ar(1) ar(2) ma(1) ma(2)", where c denotes the constant term. This estimates an ARMA(2,2) model for x.)

(3) Perform model diagnostics. In particular, you should check that the residuals are not serially correlated.

2. Forecast Inflation Rate of China. In this exercise we use the dataset cpippi.txt, which contains month-to-month gains on CPI (ie, inflation rate) and month-to-month gains on PPI of China from 1997 Jan to 2012 Nov.

(1) Draw the time series plot of the inflation rate. We can see that the inflation rate is highly persistent, so we transform the data using first difference. (EViews tip: genr y=pi-pi(-1)). Draw the time series plot of y after first difference. Does it look more stationary?

(2) Estimate an ARMA(1,1) model of the first difference of inflation rate y.

(3) Based on your model, forecast the year-to-year inflation rate of 2012 Dec. Calculate the variance of your prediction. And make a 95% interval forecast using the model.

(4) Make a two-step-ahead forecast and evaluate the variance of your forecast error.

(5) One may conjecture that changes in PPI "cause" changes in CPI. Test the conjecture.