Computer Homework 9

This homework considers estimation of a linear regression model when the disturbances follow an AR(1) process. Use the data in the *Stata* project file cons.dta. Consider the following model:

$$\text{Model A:} \qquad c_t = \alpha + \beta y_t + \epsilon_t \qquad \text{where } \epsilon_t = \rho \epsilon_{t-1} + u_t$$

for t=1, .. ,T. Remember, *Stata* will recognize **L.X** as denoting lagged values of X, and will generate the necessary regressors internally.

1. Obtain OLS estimates of model A. Use the post-regress *Stata* command line **dwstat** to obtain the Durbin-Watson test for positive first-order autocorrelation.

2. Use Durbin's method to get an initial estimate of ρ.

3. Generate the transformed variables necessary for GLS estimation.

4. Apply OLS to the transformed model to obtain feasible GLS estimates of α and β.

5. Feasible GLS estimates may be obtained directly using the *Stata* command line

   prais c y

   Use this procedure and compare the results to your estimates from part 5.