

Homework

Econometrics

November 13, 2001

General Instructions

Complete the following exercises. For problem 6, you'll have to use GAUSS. For the others you can use SAS or GAUSS or a combination of the two.

Problem 6

Data on U.S. consumption and GNP for the years 1950-1985 appear in Table A7.2 of Greene and in the file on my website. Consider the following model:

$$C_t = \alpha + \beta Y_t + \gamma C_{t-1} + e_t \quad (1)$$

In this model the short-run MPC is β and the long-run MPC is $\delta = \beta/(1-\gamma)$.

Estimate the model in equation (1) using least squares and compute standard errors, t-ratios, and p-values using White's heteroscedasticity covariance matrix. How do these compare with the usual least squares estimates, standard errors, and t-values?.

Now, conduct the overall-F test using a Wald statistic that employs White's consistent covariance matrix.

Note: You'll have to use GAUSS to do this problem.

Problem 7

1. Test for the presence of heteroscedasticity in model (1) using White's test.

2. Test for its presence again using the Breusch-Pagan test assuming that heteroscedasticity is a function of $z_{t2} = C_t/GNP_t$ and a constant. First perform the test under the assumption of normality, then repeat the test under the assumption that the errors are not normally distributed.

Problem 8

1. Use PROC AUTOREG to determine whether the model in equation (1) is autocorrelated of order 1.
2. Estimate the parameters of the model under the assumption that the errors are in fact autocorrelated.
3. Compare these estimates, std errors, and t-values to those obtained using OLS. Any surprises?