

Homework

Econometrics

October 29, 2003

Problem 6

Gaver and Geisel (1974) propose two forms of a consumption function:

$$H_0: C_t = \alpha + \beta Y_t + \gamma C_{t-1} + e_t \quad (1)$$

and

$$H_a: C_t = \alpha + \beta Y_t + \gamma Y_{t-1} + e_t \quad (2)$$

The first model states that consumption responds to changes in income over many periods (infinite distributed lag model) and the second states that it responds to changes in income over only two periods.

1. Using the data on real disposable personal income and real consumption from Table F5.1 of (Greene 2003), determine which of the above hypotheses are supported by the data using the J test and the Cox test. (Set the level of the test at 5%).
2. Compute the AIC and SC statistics for each model.

Problem 7

Consider the nonlinear consumption function:

$$C_t = \alpha + \beta Y_t^\gamma + e_t \quad (3)$$

1. Using the quarterly data on real consumption and real disposable personal income (realdpi) in Table F5.1, obtain the nonlinear least squares estimates of α , β , and γ using Proc Model. Report estimates, standard errors and t-ratios.

2. The marginal propensity to consume is $dC/dY = \beta\gamma Y^{\gamma-1}$. Test the null hypothesis that this is 1 against the alternative that it is less than one. Note: the test requires you to evaluate the MPC at a specific value of real disposable personal income. Use the last observation in the data set for for this purpose, e.g., $Y=6634.9$.
3. Repeat (1) and (2) above using IML.

References

- Gaver, K. and M. Geisel**, "Discriminating Among Alternative Models: Bayesian and Non-Bayesian Methods," *Frontiers in Econometrics*, 1974.
- Greene, William H.**, *Econometric Analysis*, 5th ed., Prentice-Hall, 2003.