Temple University
Department of Economics

Econometrics

Almon Lags: Capital Expenditures and Appropriations

On the web page there is a file called ALMON.DAT. There are 88 quarterly observations on capital appropriations and expenditures for U.S. manufacturing. The first column is an index for the period. The second column is capital expenditures (KEXPEND). The last column is appropriations decisions (APPROP). Once an investment project is decided upon, funds for it are appropriated, or approved for expenditure. Actual expenditures are realized in subsequent quarters as the project is brought to completion.

1. Estimate by OLS the parameters of a model using expenditures as the dependent variable. On the right hand side include an intercept, current appropriations, and eight lags of appropriations.
   a. Do the sizes of the coefficients agree with your anticipations?
   b. Are the lag weights, as a set, statistically different from zero?
   c. Are each of the lag weights statistically different from zero?
   d. What pathological disease of econometrics could produce the set of results you observe in your answers to parts a, b, and c?

2. Produce a correlation matrix for the variables $APPROP_t$, $APPROP_{t-1}$, ... , $APPROP_{t-8}$. What do you conclude about your estimates in question 1?

3. Suppose that appropriations have their greatest effect on expenditures after several quarters, but then have diminishing effects and eventually disappear after eight quarters. Further suppose that a second degree polynomial can be used to approximate the shape of these lag weights.
   a. Estimate an Almon lag model with eight lags and a second degree polynomial.
   b. Estimate a model with eight lags and a third degree polynomial.
   c. Plot the three sets of eight lag weights (unrestricted OHS, 2nd degree, and 3rd degree). Which set is more appealing?
   d. By what statistical criteria w ould you choose one over the other? Do it.