

Homework

Econ 7631

November 12, 2002

Using the Grunfeld data, estimate the determinants of investment demand. The data for General Motors, Chrysler, General Electric, Westinghouse, and U.S. Steel (which are numbered 1 through 5, respectively in the data set.) You'll find the data in the file *grun.dat* at my website. The data consist of 20 yearly observations on:

- I_t gross investment
- F_t market value of the firm at the end of the previous year
- C_t value of the stock of plant and equipment at the end of the previous year

All figures are in millions of dollars. The model is

$$I_{it} = \beta_{1i} + \beta_{2i}F_{it} + \beta_{3i}C_{it} + e_{it} \quad (1)$$

where i indexes the firm and t the year. Different restrictions on the parameters and different assumptions about the equations errors and covariance yield different forms of the model and suggest the use of different estimators.

1. Under what assumptions would you use the seemingly unrelated regression estimator? Be specific. Estimate the model using SUR.
2. Using the unrestricted model, test the hypothesis that there is no contemporaneous correlation among the errors. Based on the outcome of this test, would you expect there to be any efficiency gains from using SUR estimation (as opposed to equation by equation OLS)?
3. Assuming $\beta_{2i} = \beta_{2j}$ and $\beta_{3i} = \beta_{3j}$ for all i and j , re-estimate the model using OLS and then SUR. Test the hypothesis restrictions at the 5% level.