Financial Econometrics

June 13th 2017

Exercise 1 (3/10) Consider y the sovereign spread of a country A vs. some "risk-free" country (e.g., the excess returns of Govt. bonds of Country A vs. the German *Bund*).

You are interested in modelling the spread y versus the *sovereign rating* of Country A by, say, Moody's (x_1) and three macroeconomic factors x_2, x_3 and x_4 (e.g., *growth*, *external balance* and *external debt*). You have observed a sample of quarterly data over 20 years and estimated a model of the rating following Cantor and Packer (1996):

$$y_t = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + \beta_3 x_{3t} + \beta_4 x_{4t} + \varepsilon_t$$

obtaining estimates $\hat{\beta}$ for the unknown parameters.

1. How would you test whether the macroeconomic factors x_{2-4} add anything to the sovereign rating x_1 in explaining the sovereign spread?

Exercise 2 (3/10) Consider the model from Exercise 1. You are worried about serial correlation in the errors.

1. Discuss why you should be: i.e., which would be the consequences of serial correlation on the properties of the OLS estimator.

2. Describe a serial correlation test of your choice, with particular respect to:

   - the null hypothesis H_0 and the alternative H_A
   - the construction of the test
   - the final decision rule

Exercise 3 (4/10) Consider the linear model

$$y = \beta X + \varepsilon$$

1. Derive the standard errors for the Ordinary Least Squares estimator $\hat{\beta}_{OLS}$, highlighting the hypotheses each step depends upon