Financial Econometrics

May 27th 2016

Exercise 1 (3/10) Consider a fund F and the market portfolio M. You have observed a sample of returns over 100 periods and estimated a CAPM-style model of the excess returns of the fund r_F:

$$r_F = \alpha + \beta r_M + \varepsilon$$

Suppose that your model be statistically admissible in that it passed the "usual" tests. Let the resulting parameters be $\hat{\alpha} = -0.3$, $\hat{\beta} = 1.2$ with standard errors, respectively, 0.10 and 0.25. The number of observations is 100.

- What can you say about the ability of the fund manager? (hint: look at the model intercept as *Jensen's* α)

Exercise 2 (3/10) Consider a stock A, the market portfolio M and an inflation index π. You have estimated an APT-style model of the excess returns r_A:

$$r_A = \gamma_0 + \gamma_1 r_M + \gamma_2 \pi + \varepsilon$$

resulting in $\hat{\gamma_0} = -0.2$, $\hat{\gamma_1} = 1.5$ and $\hat{\gamma_2} = -0.5$ with standard errors, respectively, 0.1, 0.5 and 0.2.

- What is your best point forecast for r_A next year if the market grows by 6 (*percent*), inflation is 2 (percent) and the risk-free rate is 4 (percent)?

Exercise 3 (4/10) Consider the linear model

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

where the regressors $x_1, \dots x_K$ are nonstochastic and the classical properties hold, so that $\hat{\beta}_{OLS}$ is BLUE.

- Derive the covariance matrix of $\hat{\beta}_{OLS}$, highlighting which properties of ε underlie each step of the proof
- State how the standard errors $SE(\hat{\beta}_{OLS})$ have to be calculated.