Financial Econometrics

January 8th 2018

Exercise 1 (3/10) Consider a stock A and the market portfolio M. You have observed a sample of 58 data points and estimated a CAPM model of the excess returns r_A:

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

resulting in the estimates of $\hat{\alpha}$, $\hat{\beta}$ reported in the table below:

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	0.4	0.6	X	X
rm	1.5	X	7.5	X

You are given the table of critical values for the t distribution and requested to:

1. fill in the missing values (X)
2. comment on the results in the light of the CAPM theory, with particular respect to the proposition: "A is a defensive stock".

Exercise 2 (3/10) With respect to the model in Exercise 1

1. Suppose that after 37 periods an important event happened (for example: a severe stockmarket crash). Discuss how you would proceed to test for stability in the above model.

Exercise 3 (4/10) Consider the linear model

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

1. Write down the Ordinary Least Squares estimator $\hat{\beta}_{OLS}$ in matrix form
2. Derive the estimator for the variance $Var(\hat{\beta}_{OLS})$, highlighting which properties does this result depend upon