Financial Econometrics

July 3rd 2018

Exercise 1 (3/10) Consider a stock A and the market portfolio M. You have observed a sample of 62 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)	0.7	0.5	X	X
rm	1.5	X	7.5	X

You are given the table of critical values for the t distribution. You are required to:

1. fill in the missing values (X)
2. comment on the significance of the regressors.

Exercise 2 (3/10) With respect to the model in Exercise 1, comment on the results in the light of the CAPM theory, with particular respect to:

1. the proposition: “A is a defensive stock”;
2. the intercept, seen as "Jensen’s α".

Exercise 3 (4/10) Consider the linear model

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

1. Describe how the y vector and the X matrix are formed.
2. Write down the Ordinary Least Squares estimator $\hat{\beta}_{OLS}$ in matrix form.
3. Write down the formula for the estimator of the variance $Var(\hat{\beta}_{OLS})$.
4. Show that $\hat{\beta}_{OLS}$ is unbiased, highlighting which properties does this result depend upon.