# Financial Econometrics

November 16th 2016

**Exercise 1 (4/10)** Consider a stock A and the market portfolio M. You have observed a sample of 47 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 |

With respect to the model in Exercise 1 (you are given the table of critical values for the $t$ distribution):

1. fill in the missing values (X)
2. Construct the 95% confidence interval for $\alpha$ and $\beta$.
3. 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)**

1. What is your best point forecast for the return on stock A next year if the market grows by 5 (*percent*) and the risk-free rate is 2 (percent)?

**Exercise 3 (3/10)** Consider the linear model

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

1. Write down the Ordinary Least Squares estimator $\hat{\beta}_{OLS}$ in matrix form
2. Show that $\hat{\beta}_{OLS}$ is unbiased, highlighting which properties does this result depend upon