Your paper topics need to be cleared by me, one week from Wednesday. 21 October.

$$E_t\left(\frac{r_{t+1}-\mu_t}{\sigma_t}\right) = \frac{1}{\sigma_t}\left(E\left(r_{t+1}\right)-\mu_t\right) = 0$$
$$E_t\left(\frac{r_{t+1}-\mu_t}{\sigma_t}\right)^2 = \frac{1}{\sigma_t^2}E_t\left(r_{t+1}-\mu_t\right)^2 = \frac{\sigma_t^2}{\sigma_t^2} = 1$$

Estimate this model

$$r_{t+1} = \underbrace{a+b\sigma_t}_{E_t(r_{t+1})=\mu_t} + \epsilon_{t+1}$$
$$E_t\left(\epsilon_{t+1}\right)^2 = \sigma_t^2 = \alpha_0 + \alpha_1\epsilon_{t-1}^2 + \beta\sigma_{t-1}^2$$

VaR for the next 2 days. $z^* = -1.29$

$$r_{t+1}^* = \mu_t + \sigma_t z^*$$
$$\mu_{t+1} = E_t\left(r_{t+2}\right)$$
$$\sigma_{t+1}^2 = Var_t\left(r_{t+2}\right)$$
$$r_{t+2}^* = \mu_{t+1} + \sigma_{t+1}z^*$$
$$r_{t+1}^* + r_{t+2}^* = \mu_t + \mu_{t+1} + \left(\sigma_t + \sigma_{t+1}\right)z^*$$

Implicitly assuming that r_{t+1} and r_{t+2} are independent, because I'm ignoring the covariance between them. The correct way to do this is to re-estimate the model using 2 period returns.

How would you estimate a 2-period return model?