iv) **Conduct a test to check the hypothesis that there is no relationship between the index return and the return on BAYER shares. Use $\alpha = 0.05$.**

$$H_0 : \beta_{BAYER} = 0.$$

$$T = \frac{\hat{\beta}_{BAYER} - 0}{\sqrt{\widehat{\sigma^2}_{\epsilon_{BAYER}} (X'X)_{22}^{-1}}} = 6.763.$$

Critical value:

$$t_{1-\alpha/2}(59) \approx 1.96.$$

Test decision:

$$T > t_{1-\alpha/2}(59) \Rightarrow H_0 \text{ is rejected,}$$

i.e., the relationship between r_{Bayer} and r_{DAX} is significant at the level of $\alpha = 0.05$.