

Econometrics I, quiz 6

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1. This is a 10-minute quiz
 2. At **NO** point in the exam can you discuss the questions/answers with any of your colleagues.
 3. When a multiple choice is present, circle the number indicating your choice of the answer.
 4. Good luck. :-)
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- **Q1:** Bernoulli distribution

1. What is the log(likelihood) for one draw x_i from the Bernoulli distribution? (**2 pts**)

2. What is the Cramer-Rao bound for the Bernoulli distribution parameters? (**2 pts**)

- **Q2:** An even-numbered sample of independent Bernoulli-distributed observations contains two equally-sized subsamples, S_{S_1} and S_{S_2} . Where S_{S_1} is $Y_1, \dots, Y_{N/2}$ and S_{S_2} is $Y_{(N/2)+1}, \dots, Y_N$.

S_{S_1} has success parameter $\theta_1 = 0.25$, S_{S_2} has parameter $\theta_2 = 0.75$.

1. Use the LLN to show that $\hat{\theta}_1 = (\frac{2}{N}) \sum_{i=1}^{N/2} Y_i \rightarrow 0.25$ and $\hat{\theta}_2 = (\frac{2}{N}) \sum_{i=N/2+1}^N Y_i \rightarrow 0.75$. **(3 pts)**

2. Combine the above to calculate the value of $\bar{Y} = (\frac{1}{N}) \sum_{i=1}^N Y_i$ **(2 pts)**

3. Why can you not use LLN directly to calculate \bar{Y} ? **(1 pt)**