Econometrics I, quiz 12

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1. This is a 30-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. :-)

- **Q1** : Suppose your dataset is $Y_1 = 1, Y_2 = 2, Y_3 = 3$ and $X_1 = 1, X_2 = 1, X_3 = 1$. Suppose the model you want to fit is as follows:

  - The (Y, X) pairs are independent.
  - The data is conditionally normal: $(Y_i|X_i) \sim N(\beta X_i, \sigma^2)$
  - X_i are exogenous.

  1. Derive $\hat{\beta}$ and $\hat{\sigma}^2$ using matrix notation **(4 points)**

- **Q2** : Write down the Y, X, and compute $X'Y$, $X'X$, $(X'X)^{-1}$ and $\hat{\beta}$ for the model given by the equation: **(6 points)**

    - $Y_i \sim N(\beta_1 + \beta_2 X_i, \sigma^2)$, where $\bar{X} = 0$.