Exercise: Classical Assumptions

- Consider the following regression:

$$Consumption_i = \frac{\beta_1}{\beta_2} Income_i + \mu_i$$

Is this linear in parameters? Do we meet the OLS assumptions?

- Consider the following regression:

$$Consumption_i = \beta_1 + \beta_2(Income_i)\mu_i$$

Is this linear in parameters? Do we meet the OLS assumptions?

- Consider the following regression:

$$Grades_i = \beta_1 + \beta_2(HoursSpentStudying_i) + \mu_i$$

You run this analysis using retrospective administrative data. Are you likely to meet the assumption that E(u|X) = 0? Why or why not?

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You run this analysis using data collected from a randomized control trial, where you make some students spend more time studying by delaying their test by 2 hours. Are you likely to meet the assumption that E(u|X) = 0? Why or why not?

- Consider the following regression:

$$GDP_t = \beta_1 + \beta_2(TotalLaborActivity_t) + \mu_t$$

where t is time (month or the year), and Total Labor Activity represents the total hours put in by the country's workforce. Which OLS assumption(s) are likely violated in this example?

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