

Empirical Overview: Practice Problems

1. Consider the following regression result:

$$GDPGrowth_t = .02 - 0.01Fertility_t + 0.03EDUCATION_t + \mu_t \quad (1)$$

- a. Using this result, interpret the empirical relationship between education and GDP growth.
- b. Does this result prove that higher fertility causes lower economic growth?
- c. These regression coefficients were chosen to provide the “best fit” with the data. Explain what this term means.
- d. Usually, this type of regression minimizes the sum of squared errors: $\sum \mu_t^2$. Would it be sensible to instead minimize the sum of errors: $\sum \mu_t$?
- e. Would it be sensible to instead minimize the sum of absolute errors: $\sum |\mu_t|$?

2. True or False? All econometric models are misspecified.

3. In the 2008 Olympics, Usain Bolt broke the world record by running 100 meters in 9.69 seconds.¹ In 2012, he again won this race with a time of 9.63 seconds. Discuss the validity of the following predictions:

- a. In the 2016 Olympics, the winning time will be 9.57 seconds.
- b. In the 2412 Olympics, the winning time will be 3.63 seconds.

4. Recall from Econ 103 that the GDP accounting identity, $Y = C + I + G + NX$, simply classifies all types of aggregate output into the four categories on the right hand side. What do you think would happen if you were to run the following regression?

$$Y_t = C_t + I_t + G_t + NX_t + \mu_t \quad (2)$$

¹When no one was looking, I ran this distance in 8.51 seconds. Seriously.