

Econ 6818: Assignment 3

Suggest a topic or topics for your course project. Provide as much detail as possible. See the syllabus for more details on the course project.

A cautionary tale:

Let's assume that you want to run a regression to estimate the effect of variable x_1 on variable y . You obtain either a cross-sectional or a times-series data set on x_1 and y ; that is, you observe n, y_i, x_{1i} pairs. You then estimate α and β in

$$y_i = \alpha + \beta x_{1i} + \varepsilon_i$$

where $\varepsilon \sim N(0, \sigma^2)$

You use your estimate of β as an estimate of the influence of x_1 on y . What should I conclude?

For example you are interested in the relationship between weight, w , and the number of burritos, b , consumed per week. Your sample consists of n individuals, for each you know their weight and the number of burritos they consume per week. You use OLS to estimate

$$w_i = \alpha + \beta_0 b_i + \varepsilon_i$$

where $\varepsilon \sim N(0, \sigma^2)$

What if the true relationship was

$$w_i = \alpha + \beta_0 b_i + \beta_1 g_i + \beta_2 h_i + \varepsilon_i$$

where g_i is the gender of individual i , and h_i is the height of individual i , where guys are taller and eat more burritos? One might greatly overestimate the influence of burrito consumption on weight.

What does this cautionary tale have to do with your project.

One cannot omit important explanatory variables even if one is not interested in their influence.