Introductory Econometrics

An example of descriptive, causal and forecasting interpretation

Jan Zouhar
Dept. of Econometrics, Uni. of Economics, Prague, zouharj@vse.cz

Suppose you have data on people's exercise habits (*exercise*, measured in average minutes per day) and their age at death (*age*, measured in years). Suppose now that you run a regression of age at death on exercise and find that

$$\widehat{age} = 65 + 0.1\, exercise.$$

Descriptive interpretation. Conditional expectations. Suppose I randomly grabbed two people from the population and it turned out that one exercised 1 minute per day more than the other. I would expect the person that exercised more to live one tenth of a year longer. Note that in the descriptive case, we don't really care about the direction of influence. We could as well have studied the conditional expectation of *exercise* given a certain value of *age* (if I learn that a person lived for a hundred years, I'll think that he/she must have taken regular exercises).

Causal interpretation. The effect of *exercise* on *age* ceteris paribus (or, for a given individual, e.g. myself). If I exercise an extra minute per day, my life expectancy will go up by a tenth of a year. This type of thinking is necessary if you want to use econometrics for real-life decisions. However, in order to be able to interpret the estimated model in this way, we have to argue that *exercise* is uncorrelated with u. (And in my opinion, this is not true here; try and explain why.)

Forecasting interpretation. Predictions, given certain values in the explanatory variables. if I know that Joe goes jogging for 30 minutes each day, I expect him to live for about 68 years.