

ECOM30003/ECOM90003: Applied Microeconometric Modelling Tutorial 4

Reference: Chapter 13 Wooldridge

1. Why can we not use first differences when we have independent cross sections in two years (as opposed to panel data).
2. Suppose that we want to estimate the effect of several variables on annual saving and that we have a panel data set on individuals collected on January 31,1990 and January 31,1992. If we include a year dummy for 1992 and use first differencing, can we also include age in the original model? explain.
3. Use the data in MURDER_new.dta for this exercise.

- (a) Using the years 1990 and 1993, estimate the following equation by pooled OLS:

$$mrdрте_{it} = \delta_0 + \delta_1 d93_t + \beta_1 exec_{it} + \beta_2 unem_{it} + a_i + u_{it}, t = 1, 2$$

Do you estimate a deterrent effect of capital punishment?

- (b) Compute the FD estimates (use only the differences from 1990 to 1993; you should have 51 observations in FD regression). Now what do you conclude about a deterrent effect?
- (c) Run the same regression as you did in part (2) but obtain (heteroskedasticity) robust standard errors. Does your conclusion change regarding the deterrent effect of capital punishment?
- (d) Which *t-statistic* on $\Delta exec_i$ do you feel more comfortable relying on, the usual one or the heteroskedasticity-robust one? Why?