

Econometrics II - Assignment 2

Uncensored sloths

13 Jan 2022

Question 1

- (i) Why does the process of taking each observation relative to its individual-level mean have the effect of “controlling for individual effects”?
- (ii) Two-way fixed effects with terms for both individual and time are often referred to as “controlling for individual and time effects”. Why might a researcher want to do this rather than just taking individual fixed effects and adding a linear/polynomial/etc. term for time?
- (iii) Why random effects is likely to do a better job of estimating the individual effects than fixed effects, if its assumptions hold?

Question 2

```
# Load data
data <- read.csv("assignment2.csv")
llearnings <- ln(data$earnings)
data <- cbind(data, llearnings)
```

- (i) First use pooled OLS to check the impact of including and excluding asvabc on the estimate of β_1 . Present and explain the result.

```
pooled1 <- plm(llearnings ~ school + age + agesq + time + ethblack + urban + regne + regnc + regw + regg, data, model = "pooled")
pooled2 <- plm(llearnings ~ school + age + agesq + time + ethblack + urban + regne + regnc + regw + regg, data, model = "pooled")
stargazer(pooled1, pooled2)
```

```
% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Do, Jan 13, 2022 - 10:13:18
```

- (ii) Perform a pooled OLS analysis to obtain insight in the heterogeneity of returns to schooling by ethnicity. Present the results and comment on the outcomes. What are the conclusions based on this?

```
pooled3 <- plm(llearnings ~ school + age + agesq + time + urban + regne + regnc + regw + regg + asvabc, data, model = "pooled")
stargazer(pooled2, pooled3)
```

```
% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Do, Jan 13, 2022 - 10:13:22
```

Table 1:

	<i>Dependent variable:</i>	
	lnearnings	
	(1)	(2)
school	0.070*** (0.001)	0.046*** (0.001)
age	0.093*** (0.005)	0.090*** (0.005)
agesq	−0.001*** (0.0001)	−0.001*** (0.0001)
time1	−0.027 (0.017)	−0.025 (0.017)
time2	−0.059*** (0.016)	−0.047*** (0.016)
time3	−0.094*** (0.016)	−0.074*** (0.016)
time4	−0.117*** (0.016)	−0.088*** (0.016)
time5	−0.113*** (0.016)	−0.076*** (0.016)
time6	−0.102*** (0.016)	−0.058*** (0.016)
time7	−0.065*** (0.017)	−0.012 (0.016)
time8	−0.032* (0.017)	0.027 (0.017)
time9	−0.067*** (0.018)	0.0002 (0.017)
time10	−0.072*** (0.018)	0.004 (0.018)
time11	−0.096*** (0.018)	−0.014 (0.018)
time12	−0.105*** (0.019)	−0.015 (0.019)
time13	−0.102*** (0.019)	−0.007 (0.019)
time14	−0.097*** (0.021)	0.007 (0.021)
time16	−0.093*** (0.021)	0.025 (0.021)

Table 2:

	<i>Dependent variable:</i>	
	lnearnings	
	(1)	(2)
school	0.046*** (0.001)	0.044*** (0.001)
age	0.090*** (0.005)	0.088*** (0.005)
agesq	−0.001*** (0.0001)	−0.001*** (0.0001)
time1	−0.025 (0.017)	−0.024 (0.017)
time2	−0.047*** (0.016)	−0.045*** (0.016)
time3	−0.074*** (0.016)	−0.072*** (0.016)
time4	−0.088*** (0.016)	−0.085*** (0.016)
time5	−0.076*** (0.016)	−0.073*** (0.016)
time6	−0.058*** (0.016)	−0.054*** (0.016)
time7	−0.012 (0.016)	−0.007 (0.016)
time8	0.027 (0.017)	0.035** (0.017)
time9	0.0002 (0.017)	0.009 (0.017)
time10	0.004 (0.018)	0.014 (0.018)
time11	−0.014 (0.018)	−0.003 (0.018)
time12	−0.015 (0.019)	−0.002 (0.019)
time13	−0.007 (0.019)	0.006 (0.019)
time14	0.007 (0.021)	0.020 (0.021)
time16	0.025 (0.021)	0.042** (0.021)