SCOTT LEVY
ECO 772
PROBLEM SET 4

C17.7

I)   The coefficient for educ is 0.09988 and the standard error is 0.0151

II)   The coefficient for educ in the Heckit model is 0.11871 and the standard error is 0.03405, both higher than in part I.

III) The R-squared is 1.0, which shows that there is a very large amount of multicollinearity in the 2nd regression. That explains why the result for part II were higher than part I.

C13.7

I)   The coefficient on season is -0.027 which would imply that GPAs are lowered by that amount during athletic seasons. But as the P-value is 0.578, it is not statistically significant.

II)   If ability and season are correlated, then this would indicate a bias in the overall model were ability to be included.

III) The variables that drop out are sat, hsperc, female, black and white.

IV)   Yes, the age of a student could be an important factor, as well as how many classes they are taking in a given semester, and the number of sports they are playing in could also be a factor. None of these are in the current model.

C13.10

I)   There are 157 total firms in the data. If all firms had data on all variables, there would be 471 total observations.

II)   The coefficient on grant is 31.905, implying that if a grant was received, it resulted in 31.9 more employee training hours.

III) It is not surprising that grant_1 is insignificant. Since this indicates a grant received in a prior year, we would not expect it to impact the results for the next year.

IV)   On average, larger firms train their employees slightly less, as the coefficient on employ is -0.061. The difference is minimal.

C14.2

I)   There is not much difference between the fixed effects model as opposed to the differencing model in Example 13.9. The coefficients and statistical significances are slightly different but only to a very small extent.

II)   Adding the nine log wage variables to the model lowered the coefficients on all of the other criminal justice variables.

III) Yes, the various wage variables have all the expected signs, and they are jointly significant.

C14.4

I) Not sure how to answer this one.
II) The coefficient on ez is -0.471, and it is statistically significant.
III) After adding the dummy year variables, the coefficient on ez increases fairly significantly, to -0.0448.

STATA CODE

C17.7

```
clear
clear all
set more off

cd "/Users/scott/Desktop/UNLV/ECO 772/PS4/"
use MROZ.dta, clear
log using ps4_17_7.log, replace

**Problem C17.7**

** question (i) **
reg lwage educ exper expersq nwifeinc age kidslt6 kidsge6

** question (ii) **
heckman lwage educ exper expersq nwifeinc age kidslt6 kidsge6, select(educ exper expersq
nwifeinc age kidslt6 kidsge6) twostep

** question (iii) **
probit inlf educ exper expersq nwifeinc age kidslt6 kidsge6
predict yhat, xb
gen imr = normalden(yhat)/normal(yhat)
label variable imr "inverse Mills ratio"

reg yhat educ exper expersq nwifeinc age kidslt6 kidsge6 imr

log cl
```

C13.7

```
clear
clear all
set more off

cd "/Users/scott/Desktop/UNLV/ECO 772/PS4/"

log using ps4_13_7.log, replace

use GPA3.dta, clear

**Problem C13.7**


** question (i) **

reg trmgpa spring sat hsperc female black white frstsem tothrs crsgpa season

** question (ii) **


** question (iii) **

reg trmgpa spring frstsem tothrs crsgpa season

** question (iv) **

log cl
```

C13.10

```
clear
clear all
set more off

cd "/Users/scott/Desktop/UNLV/ECO 772/PS4/"

log using ps4_13_10.log, replace

use JTRAIN.dta, clear

**Problem C13.10**
```

** question (i) **

```
reg hrsemp d89 grant grant_1 lemploy
count if d88==1
count if d89==1
count if fcode
```

** question (ii) **

** question (iii) **

** question (iv) **

```
reg hrsemp d89 grant grant_1 employ

log cl
```

C14.2

```
clear
clear all
set more off

cd "/Users/scott/Desktop/UNLV/ECO 772/PS4/"

log using ps4_14_2.log, replace

use CRIME4.dta, clear
```

Problem C14.2

** question (i) **

```
reg lcrmrte d82 d83 d84 d85 d86 d87 lprbarr lprbconv lprbpris lavgsen lpolpc
```

** question (ii) **

```
reg lcrmrte d82 d83 d84 d85 d86 d87 lprbarr lprbconv lprbpris lavgsen lpolpc lwcon lwfed lwfir
lwloc lwmfg lwser lwsta lwtrd lwtuc
```

** question (iii) **

** question (iv) **

log cl

C14.4

clear
clear all
set more off

cd "/Users/scott/Desktop/UNLV/ECO 772/PS4/"

log using ps4_14_4.log, replace

use EZUNEM.dta, clear

Problem C14.4

** question (i) **

** question (ii) **

reg luclms cez ez

** question (iii) **

reg luclms cez ez d81 d82 d83 d84 d85 d86 d87 d88

log cl