-------------------------------------------------------------------------------

name: <unnamed>

log: /Users/admin/Documents/Econ\_613/Assignment Output/Assignment5\_Jeff

> Hill.smcl

log type: smcl

opened on: 16 Apr 2019, 17:22:20

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Assignment 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. set obs 10000

number of observations (\_N) was 0, now 10,000

. \* generate our data

. gen x1 = runiform(1,3)

. gen x2 = rgamma(3,2)

. gen x3 = rbinomial(1,.3)

. gen eps = rnormal(2,1)

. gen y = 0.5 + 1.2\*x1 - 0.9\*x2 + 0.1\*x3 + eps

. egen y\_mean = mean(y)

. gen y\_dum = 0

. replace y\_dum = 1 if y>y\_mean

(5,651 real changes made)

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

.

. corr y x1

(obs=10,000)

| y x1

-------------+------------------

y | 1.0000

x1 | 0.1948 1.0000

. \* the correlation is .1948, which is not close to 1.2. It should not be, as t

> his

. \* is correlation, bound between -1 and 1

.

. reg y x1 x2 x3

Source | SS df MS Number of obs = 10,000

-------------+---------------------------------- F(3, 9996) = 33603.78

Model | 101924.318 3 33974.7726 Prob > F = 0.0000

Residual | 10106.3586 9,996 1.01104027 R-squared = 0.9098

-------------+---------------------------------- Adj R-squared = 0.9098

Total | 112030.676 9,999 11.2041881 Root MSE = 1.0055

------------------------------------------------------------------------------

y | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 1.188889 .017379 68.41 0.000 1.154823 1.222955

x2 | -.9000309 .0028958 -310.81 0.000 -.9057071 -.8943546

x3 | .1127947 .0219248 5.14 0.000 .0698176 .1557718

\_cons | 2.539723 .0403375 62.96 0.000 2.460653 2.618792

------------------------------------------------------------------------------

. eststo ols

. \* the standard OLS standard errors are contained within the regression output

> .

.

. \* bootstrap se's

. \* 49 replications

. bootstrap, reps(49) : reg y x1 x2 x3

(running regress on estimation sample)

Bootstrap replications (49)

----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5

.................................................

Linear regression Number of obs = 10,000

Replications = 49

Wald chi2(3) = 71560.44

Prob > chi2 = 0.0000

R-squared = 0.9098

Adj R-squared = 0.9098

Root MSE = 1.0055

------------------------------------------------------------------------------

| Observed Bootstrap Normal-based

y | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 1.188889 .0188098 63.21 0.000 1.152022 1.225756

x2 | -.9000309 .003546 -253.81 0.000 -.906981 -.8930808

x3 | .1127947 .0236669 4.77 0.000 .0664085 .1591809

\_cons | 2.539723 .0469117 54.14 0.000 2.447778 2.631668

------------------------------------------------------------------------------

. eststo boot49

. \* 499 replications

. bootstrap, reps(499) : reg y x1 x2 x3

(running regress on estimation sample)

Bootstrap replications (499)

----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5

.................................................. 50

.................................................. 100

.................................................. 150

.................................................. 200

.................................................. 250

.................................................. 300

.................................................. 350

.................................................. 400

.................................................. 450

.................................................

Linear regression Number of obs = 10,000

Replications = 499

Wald chi2(3) = 97184.62

Prob > chi2 = 0.0000

R-squared = 0.9098

Adj R-squared = 0.9098

Root MSE = 1.0055

------------------------------------------------------------------------------

| Observed Bootstrap Normal-based

y | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 1.188889 .0176493 67.36 0.000 1.154297 1.223481

x2 | -.9000309 .0029112 -309.17 0.000 -.9057366 -.8943251

x3 | .1127947 .0213229 5.29 0.000 .0710026 .1545868

\_cons | 2.539723 .0396009 64.13 0.000 2.462106 2.617339

------------------------------------------------------------------------------

. eststo boot499

.

. \* create a table

. esttab ols boot49 boot499, se(3) title(Assignment 2: OLS, Bootstrap 49 and 49

> 9) ///

> nonumbers mtitles("OLS" "Bootstrap 49" "Bootstrap499")

Assignment 2: OLS, Bootstrap 49 and 499

------------------------------------------------------------

OLS Bootstrap 49 Bootstrap499

------------------------------------------------------------

x1 1.189\*\*\* 1.189\*\*\* 1.189\*\*\*

(0.017) (0.019) (0.018)

x2 -0.900\*\*\* -0.900\*\*\* -0.900\*\*\*

(0.003) (0.004) (0.003)

x3 0.113\*\*\* 0.113\*\*\* 0.113\*\*\*

(0.022) (0.024) (0.021)

\_cons 2.540\*\*\* 2.540\*\*\* 2.540\*\*\*

(0.040) (0.047) (0.040)

------------------------------------------------------------

N 10000 10000 10000

------------------------------------------------------------

Standard errors in parentheses

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

.

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 3 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \* probit

. probit y\_dum x1 x2 x3

Iteration 0: log likelihood = -6846.4705

Iteration 1: log likelihood = -2287.0021

Iteration 2: log likelihood = -2190.1519

Iteration 3: log likelihood = -2189.2308

Iteration 4: log likelihood = -2189.23

Iteration 5: log likelihood = -2189.23

Probit regression Number of obs = 10,000

LR chi2(3) = 9314.48

Prob > chi2 = 0.0000

Log likelihood = -2189.23 Pseudo R2 = 0.6802

------------------------------------------------------------------------------

y\_dum | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 1.157038 .0431452 26.82 0.000 1.072475 1.241601

x2 | -.8879083 .0182113 -48.76 0.000 -.9236018 -.8522148

x3 | .1339125 .0468917 2.86 0.004 .0420064 .2258186

\_cons | 2.96397 .0982283 30.17 0.000 2.771446 3.156494

------------------------------------------------------------------------------

Note: 505 failures and 5 successes completely determined.

. eststo probit2

.

. /\* the estimates for the probit model are all significant at the 99%

> significance level. Interpreting the coefficent on x2 (-.8879) says that an

> increase in x2 has a statisticaly significant negative impact on y\_dum. \*/

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 4 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \* logit

. logit y\_dum x1 x2 x3

Iteration 0: log likelihood = -6846.4705

Iteration 1: log likelihood = -2272.1006

Iteration 2: log likelihood = -2191.5764

Iteration 3: log likelihood = -2191.2609

Iteration 4: log likelihood = -2191.2609

Logistic regression Number of obs = 10,000

LR chi2(3) = 9310.42

Prob > chi2 = 0.0000

Log likelihood = -2191.2609 Pseudo R2 = 0.6799

------------------------------------------------------------------------------

y\_dum | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 2.095624 .0805145 26.03 0.000 1.937818 2.253429

x2 | -1.603389 .0366576 -43.74 0.000 -1.675236 -1.531541

x3 | .2339932 .0838922 2.79 0.005 .0695675 .3984189

\_cons | 5.345661 .1848377 28.92 0.000 4.983385 5.707936

------------------------------------------------------------------------------

Note: 76 failures and 0 successes completely determined.

. eststo logit2

.

. /\* the estimates for the logit model are all significant at the 99%

> significance level. Interpreting the coefficent on x2 (-1.604) says that an

> increase in x2 has a statisticaly significant negative impact on y\_dum. \*/

.

.

. \* linear model

. reg y\_dum x1 x2 x3

Source | SS df MS Number of obs = 10,000

-------------+---------------------------------- F(3, 9996) = 4216.60

Model | 1372.81081 3 457.603603 Prob > F = 0.0000

Residual | 1084.80909 9,996 .108524319 R-squared = 0.5586

-------------+---------------------------------- Adj R-squared = 0.5585

Total | 2457.6199 9,999 .245786569 Root MSE = .32943

------------------------------------------------------------------------------

y\_dum | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | .1419834 .0056938 24.94 0.000 .1308224 .1531444

x2 | -.1043109 .0009487 -109.95 0.000 -.1061706 -.1024512

x3 | .013915 .0071832 1.94 0.053 -.0001654 .0279955

\_cons | .8997243 .0132156 68.08 0.000 .873819 .9256297

------------------------------------------------------------------------------

. eststo lin2

.

. /\* the estimates for x1 and x2 in the linear model are significant at the 99%

>

> significance level. x3 is significant at the 90% level. Interpreting the

> coefficent on x2 (-.10431) says that an increase in x2 by 1 unit results y\_d

> um

> decreasing by -.1043. \*/

.

. \* table comparing estimates from the 3 regressions

. esttab probit2 logit2 lin2, se(3) title(Assignment 2: Probit, Logit, & Linear

> ) ///

> nonumbers mtitles("Probit" "Logit" "Linear Prob")

Assignment 2: Probit, Logit, & Linear

------------------------------------------------------------

Probit Logit Linear Prob

------------------------------------------------------------

main

x1 1.157\*\*\* 2.096\*\*\* 0.142\*\*\*

(0.043) (0.081) (0.006)

x2 -0.888\*\*\* -1.603\*\*\* -0.104\*\*\*

(0.018) (0.037) (0.001)

x3 0.134\*\* 0.234\*\* 0.0139

(0.047) (0.084) (0.007)

\_cons 2.964\*\*\* 5.346\*\*\* 0.900\*\*\*

(0.098) (0.185) (0.013)

------------------------------------------------------------

N 10000 10000 10000

------------------------------------------------------------

Standard errors in parentheses

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 5 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \* marginal effects for probit

. probit y\_dum x1 x2 x3

Iteration 0: log likelihood = -6846.4705

Iteration 1: log likelihood = -2287.0021

Iteration 2: log likelihood = -2190.1519

Iteration 3: log likelihood = -2189.2308

Iteration 4: log likelihood = -2189.23

Iteration 5: log likelihood = -2189.23

Probit regression Number of obs = 10,000

LR chi2(3) = 9314.48

Prob > chi2 = 0.0000

Log likelihood = -2189.23 Pseudo R2 = 0.6802

------------------------------------------------------------------------------

y\_dum | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 1.157038 .0431452 26.82 0.000 1.072475 1.241601

x2 | -.8879083 .0182113 -48.76 0.000 -.9236018 -.8522148

x3 | .1339125 .0468917 2.86 0.004 .0420064 .2258186

\_cons | 2.96397 .0982283 30.17 0.000 2.771446 3.156494

------------------------------------------------------------------------------

Note: 505 failures and 5 successes completely determined.

. margins, dydx(\*) post

Average marginal effects Number of obs = 10,000

Model VCE : OIM

Expression : Pr(y\_dum), predict()

dy/dx w.r.t. : x1 x2 x3

------------------------------------------------------------------------------

| Delta-method

| dy/dx Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | .1410424 .0044402 31.77 0.000 .1323399 .149745

x2 | -.1082356 .0004362 -248.16 0.000 -.1090905 -.1073808

x3 | .0163239 .0057062 2.86 0.004 .00514 .0275078

------------------------------------------------------------------------------

. eststo probit\_me\_delta2

.

.

.

. \* marginal effects for logit

. logit y\_dum x1 x2 x3

Iteration 0: log likelihood = -6846.4705

Iteration 1: log likelihood = -2272.1006

Iteration 2: log likelihood = -2191.5764

Iteration 3: log likelihood = -2191.2609

Iteration 4: log likelihood = -2191.2609

Logistic regression Number of obs = 10,000

LR chi2(3) = 9310.42

Prob > chi2 = 0.0000

Log likelihood = -2191.2609 Pseudo R2 = 0.6799

------------------------------------------------------------------------------

y\_dum | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 2.095624 .0805145 26.03 0.000 1.937818 2.253429

x2 | -1.603389 .0366576 -43.74 0.000 -1.675236 -1.531541

x3 | .2339932 .0838922 2.79 0.005 .0695675 .3984189

\_cons | 5.345661 .1848377 28.92 0.000 4.983385 5.707936

------------------------------------------------------------------------------

Note: 76 failures and 0 successes completely determined.

. margins, dydx(\*) post

Average marginal effects Number of obs = 10,000

Model VCE : OIM

Expression : Pr(y\_dum), predict()

dy/dx w.r.t. : x1 x2 x3

------------------------------------------------------------------------------

| Delta-method

| dy/dx Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | .1417856 .0044284 32.02 0.000 .1331061 .1504651

x2 | -.108482 .0004501 -241.02 0.000 -.1093642 -.1075998

x3 | .0158315 .0056654 2.79 0.005 .0047275 .0269355

------------------------------------------------------------------------------

. eststo logit\_me\_delta2

.

. /\* the delta method standard errors are calculated and reported in the margin

> al

> effect tables above. now all that is left is to calculate them via bootstrap.

> \*/

.

. bootstrap, reps(499) : probit y\_dum x1 x2 x3

(running probit on estimation sample)

Bootstrap replications (499)

----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5

.................................................. 50

.................................................. 100

.................................................. 150

.................................................. 200

.................................................. 250

.................................................. 300

.................................................. 350

.................................................. 400

.................................................. 450

.................................................

Probit regression Number of obs = 10,000

Replications = 499

Wald chi2(3) = 2108.38

Prob > chi2 = 0.0000

Log likelihood = -2189.23 Pseudo R2 = 0.6802

------------------------------------------------------------------------------

| Observed Bootstrap Normal-based

y\_dum | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 1.157038 .0420731 27.50 0.000 1.074576 1.2395

x2 | -.8879083 .0193957 -45.78 0.000 -.9259231 -.8498935

x3 | .1339125 .045743 2.93 0.003 .0442578 .2235672

\_cons | 2.96397 .0994005 29.82 0.000 2.769148 3.158791

------------------------------------------------------------------------------

Note: 505 failures and 5 successes completely determined.

. margins, dydx(\*) post

Average marginal effects Number of obs = 10,000

Model VCE : Bootstrap

Expression : Pr(y\_dum), predict()

dy/dx w.r.t. : x1 x2 x3

------------------------------------------------------------------------------

| Delta-method

| dy/dx Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | .1410424 .0041681 33.84 0.000 .1328731 .1492118

x2 | -.1082356 .0004297 -251.86 0.000 -.1090779 -.1073933

x3 | .0163239 .0055841 2.92 0.003 .0053792 .0272685

------------------------------------------------------------------------------

. eststo probit\_me\_boot2

.

. bootstrap, reps(499) : logit y\_dum x1 x2 x3

(running logit on estimation sample)

Bootstrap replications (499)

----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5

.................................................. 50

.................................................. 100

.................................................. 150

.................................................. 200

.................................................. 250

.................................................. 300

.................................................. 350

.................................................. 400

.................................................. 450

.................................................

Logistic regression Number of obs = 10,000

Replications = 499

Wald chi2(3) = 2017.25

Prob > chi2 = 0.0000

Log likelihood = -2191.2609 Pseudo R2 = 0.6799

------------------------------------------------------------------------------

| Observed Bootstrap Normal-based

y\_dum | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | 2.095624 .0806936 25.97 0.000 1.937467 2.25378

x2 | -1.603389 .035869 -44.70 0.000 -1.673691 -1.533087

x3 | .2339932 .0834413 2.80 0.005 .0704512 .3975352

\_cons | 5.345661 .1831039 29.19 0.000 4.986783 5.704538

------------------------------------------------------------------------------

Note: 76 failures and 0 successes completely determined.

. margins, dydx(\*) post

Average marginal effects Number of obs = 10,000

Model VCE : Bootstrap

Expression : Pr(y\_dum), predict()

dy/dx w.r.t. : x1 x2 x3

------------------------------------------------------------------------------

| Delta-method

| dy/dx Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

x1 | .1417856 .0045143 31.41 0.000 .1329377 .1506335

x2 | -.108482 .0004495 -241.35 0.000 -.109363 -.107601

x3 | .0158315 .0056132 2.82 0.005 .0048297 .0268333

------------------------------------------------------------------------------

. eststo logit\_me\_boot2

.

. esttab probit\_me\_delta2 logit\_me\_delta2 probit\_me\_boot2 logit\_me\_boot2, se(6)

> ///

> title(Assignment 2: Probit, Logit, & Linear) nonumbers ///

> mtitles("Probit Delta" "Logit Delta" "Probit Boot" "Logit Boot")

Assignment 2: Probit, Logit, & Linear

----------------------------------------------------------------------------

Probit Delta Logit Delta Probit Boot Logit Boot

----------------------------------------------------------------------------

x1 0.141\*\*\* 0.142\*\*\* 0.141\*\*\* 0.142\*\*\*

(0.004440) (0.004428) (0.004168) (0.004514)

x2 -0.108\*\*\* -0.108\*\*\* -0.108\*\*\* -0.108\*\*\*

(0.000436) (0.000450) (0.000430) (0.000449)

x3 0.0163\*\* 0.0158\*\* 0.0163\*\* 0.0158\*\*

(0.005706) (0.005665) (0.005584) (0.005613)

----------------------------------------------------------------------------

N 10000 10000 10000 10000

----------------------------------------------------------------------------

Standard errors in parentheses

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

. clear

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Assignment 3 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. cd "/Users/admin/Documents/Econ\_613/Data/Assignment 3"

/Users/admin/Documents/Econ\_613/Data/Assignment 3

. insheet using "product.csv",clear

(13 vars, 4,470 obs)

. cd "/Users/admin/Documents/Econ\_613/Assignment Output"

/Users/admin/Documents/Econ\_613/Assignment Output

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. sum

Variable | Obs Mean Std. Dev. Min Max

-------------+---------------------------------------------------------

v1 | 4,470 2235.5 1290.522 1 4470

hhid | 4,470 2125756 14263.33 2100016 2157248

choice | 4,470 3.242953 2.587219 1 10

ppk\_stk | 4,470 .5184362 .1505174 .19 .67

pbb\_stk | 4,470 .5432103 .1203319 .19 1.01

-------------+---------------------------------------------------------

pfl\_stk | 4,470 1.01502 .0428952 .95 1.16

phse\_stk | 4,470 .4371476 .1188312 .19 .64

pgen\_stk | 4,470 .3452819 .0351661 .25 .55

pimp\_stk | 4,470 .7807785 .1146461 .33 2.3

pss\_tub | 4,470 .8250895 .0612116 .5 .98

-------------+---------------------------------------------------------

ppk\_tub | 4,470 1.077409 .0297261 .98 1.24

pfl\_tub | 4,470 1.189376 .0140545 .69 1.47

phse\_tub | 4,470 .5686734 .072455 .33 1.27

. \* the product means and standard deviations are listed in the sum table which

. \* describes the data.

.

. tab choice

choice | Freq. Percent Cum.

------------+-----------------------------------

1 | 1,766 39.51 39.51

2 | 699 15.64 55.15

3 | 243 5.44 60.58

4 | 593 13.27 73.85

5 | 315 7.05 80.89

6 | 74 1.66 82.55

7 | 319 7.14 89.69

8 | 203 4.54 94.23

9 | 225 5.03 99.26

10 | 33 0.74 100.00

------------+-----------------------------------

Total | 4,470 100.00

. \* tab choice breaks down the market share of each product in percentages

.

. gen brand = choice

. replace brand = 1 if brand == 8

(203 real changes made)

. replace brand = 3 if brand == 9

(225 real changes made)

. replace brand = 4 if brand == 10

(33 real changes made)

. tab brand

brand | Freq. Percent Cum.

------------+-----------------------------------

1 | 1,969 44.05 44.05

2 | 699 15.64 59.69

3 | 468 10.47 70.16

4 | 626 14.00 84.16

5 | 315 7.05 91.21

6 | 74 1.66 92.86

7 | 319 7.14 100.00

------------+-----------------------------------

Total | 4,470 100.00

. \* brand now groups sticks and tubs made by the same company together, and tab

. \* displays the market share.

.

. \* import data that was merged outside stata, since we need to use data for de

> mos

. \* and product

. cd "/Users/admin/Documents/Econ\_613/Data/Assignment 3"

/Users/admin/Documents/Econ\_613/Data/Assignment 3

. insheet using "margarine data.csv",clear

(40 vars, 4,470 obs)

. cd "/Users/admin/Documents/Econ\_613/Assignment Output"

/Users/admin/Documents/Econ\_613/Assignment Output

.

. \* two way tabluate breaks down choice by income group

. tab choice income, row nofreq

| Income

choice | 2.5 7.5 12.5 17.5 22.5 27.5

> 32.5 | Total

-----------+-------------------------------------------------------------------

> ----------+----------

1 | 1.08 6.63 11.10 18.01 16.53 11.04

> 11.83 | 100.00

2 | 0.57 7.73 15.16 14.31 17.60 13.45

> 12.02 | 100.00

3 | 0.00 5.35 16.87 11.11 13.99 3.70

> 11.52 | 100.00

4 | 0.34 5.73 7.42 18.72 25.97 11.30

> 10.79 | 100.00

5 | 1.90 6.03 7.30 6.67 39.05 5.71

> 17.14 | 100.00

6 | 0.00 2.70 12.16 6.76 2.70 8.11

> 5.41 | 100.00

7 | 5.02 8.46 12.54 16.93 12.85 7.52

> 15.36 | 100.00

8 | 0.49 2.96 3.94 9.36 17.73 12.32

> 9.36 | 100.00

9 | 0.89 9.78 11.11 8.89 13.33 15.11

> 14.67 | 100.00

10 | 0.00 3.03 9.09 6.06 24.24 12.12

> 15.15 | 100.00

-----------+-------------------------------------------------------------------

> ----------+----------

Total | 1.12 6.60 11.07 15.15 18.86 10.65

> 12.28 | 100.00

| Income

choice | 37.5 42.5 47.5 55 67.5 87.5

> 130 | Total

-----------+-------------------------------------------------------------------

> ----------+----------

1 | 7.47 7.08 4.70 2.66 1.08 0.51

> 0.28 | 100.00

2 | 4.86 4.72 3.15 4.29 0.57 1.43

> 0.14 | 100.00

3 | 7.00 13.58 9.47 4.53 0.41 1.23

> 1.23 | 100.00

4 | 4.89 3.88 2.70 5.40 1.35 0.17

> 1.35 | 100.00

5 | 7.30 1.90 2.22 2.22 1.90 0.00

> 0.63 | 100.00

6 | 1.35 27.03 22.97 4.05 2.70 1.35

> 2.70 | 100.00

7 | 4.70 8.46 1.88 3.76 2.19 0.31

> 0.00 | 100.00

8 | 6.90 10.34 4.43 20.69 1.48 0.00

> 0.00 | 100.00

9 | 4.00 6.22 0.89 7.56 0.00 5.33

> 2.22 | 100.00

10 | 15.15 3.03 9.09 0.00 3.03 0.00

> 0.00 | 100.00

-----------+-------------------------------------------------------------------

> ----------+----------

Total | 6.24 6.78 4.21 4.50 1.14 0.83

> 0.58 | 100.00

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \* need to reshape the data

.

. reshape long sel p, i(id) j(selection 1 2 3 4 5 6 7 8 9 10)

Data wide -> long

-----------------------------------------------------------------------------

Number of obs. 4470 -> 44700

Number of variables 40 -> 23

j variable (10 values) -> selection

xij variables:

sel1 sel2 ... sel10 -> sel

p1 p2 ... p10 -> p

-----------------------------------------------------------------------------

. \* asmixlogit is easier to use than clogit, and yields the same results.

. asmixlogit sel p, case(id) alternatives(selection)

Fitting fixed parameter model:

Fitting full model:

Iteration 0: log likelihood = -7464.9321

Iteration 1: log likelihood = -7464.9321

Alternative-specific mixed logit Number of obs = 44,700

Case variable: id Number of cases = 4,470

Alternative variable: selection Alts per case: min = 10

avg = 10.0

max = 10

Integration points: 0 Wald chi2(1) = 1458.85

Log likelihood = -7464.9321 Prob > chi2 = 0.0000

------------------------------------------------------------------------------

sel | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

selection |

p | -6.656579 .1742793 -38.19 0.000 -6.99816 -6.314998

-------------+----------------------------------------------------------------

1 | (base alternative)

-------------+----------------------------------------------------------------

2 |

\_cons | -.9543068 .0500462 -19.07 0.000 -1.052396 -.856218

-------------+----------------------------------------------------------------

3 |

\_cons | 1.296968 .1086515 11.94 0.000 1.084015 1.509921

-------------+----------------------------------------------------------------

4 |

\_cons | -1.717332 .0541582 -31.71 0.000 -1.82348 -1.611184

-------------+----------------------------------------------------------------

5 |

\_cons | -2.904005 .0714605 -40.64 0.000 -3.044065 -2.763945

-------------+----------------------------------------------------------------

6 |

\_cons | -1.515311 .1262303 -12.00 0.000 -1.762718 -1.267904

-------------+----------------------------------------------------------------

7 |

\_cons | .2517684 .079164 3.18 0.001 .0966098 .406927

-------------+----------------------------------------------------------------

8 |

\_cons | 1.464868 .1180467 12.41 0.000 1.233501 1.696236

-------------+----------------------------------------------------------------

9 |

\_cons | 2.357505 .133774 17.62 0.000 2.095313 2.619697

-------------+----------------------------------------------------------------

10 |

\_cons | -3.896594 .177419 -21.96 0.000 -4.244328 -3.548859

------------------------------------------------------------------------------

. eststo clogit\_betas\_3

.

. \* need tables for each regression here since the betas aren't comparable.

. esttab clogit\_betas\_3, noomitted nostar unstack compress se(3) ///

> nonumbers title(Conditional Logit Estimates)

Conditional Logit Estimates

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> -------------------------------

sel

>

selection 2 3 4 5 6

> 7 8 9 10

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> -------------------------------

p -6.657

>

(0.174)

>

\_cons -0.954 1.297 -1.717 -2.904 -1.515 0.25

> 2 1.465 2.358 -3.897

(0.050) (0.109) (0.054) (0.071) (0.126) (0.079

> ) (0.118) (0.134) (0.177)

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N 44700

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Standard errors in parentheses

.

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 3 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

.

. mlogit choice income fs3\_4 fs5 college whtcollar retired

Iteration 0: log likelihood = -82858.567

Iteration 1: log likelihood = -80447.651

Iteration 2: log likelihood = -79403.061

Iteration 3: log likelihood = -79331.196

Iteration 4: log likelihood = -79328.245

Iteration 5: log likelihood = -79328.232

Iteration 6: log likelihood = -79328.232

Multinomial logistic regression Number of obs = 44,700

LR chi2(54) = 7060.67

Prob > chi2 = 0.0000

Log likelihood = -79328.232 Pseudo R2 = 0.0426

------------------------------------------------------------------------------

choice | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

1 | (base outcome)

-------------+----------------------------------------------------------------

2 |

income | -.0022888 .0010822 -2.11 0.034 -.0044099 -.0001677

fs3\_4 | .0787649 .0364435 2.16 0.031 .0073369 .1501929

fs5 | -.1311055 .0519 -2.53 0.012 -.2328277 -.0293833

college | .0447062 .0324443 1.38 0.168 -.0188835 .1082959

whtcollar | -.0232783 .0328107 -0.71 0.478 -.0875861 .0410296

retired | .2372414 .0426303 5.57 0.000 .1536876 .3207953

\_cons | -.943797 .042156 -22.39 0.000 -1.026421 -.8611728

-------------+----------------------------------------------------------------

3 |

income | .0215169 .0013064 16.47 0.000 .0189564 .0240774

fs3\_4 | -.889509 .0591852 -15.03 0.000 -1.00551 -.7735081

fs5 | -.8769693 .0889929 -9.85 0.000 -1.051392 -.7025464

college | .5656322 .0487204 11.61 0.000 .470142 .6611224

whtcollar | .6285805 .0580108 10.84 0.000 .5148814 .7422797

retired | 1.655095 .0625471 26.46 0.000 1.532505 1.777685

\_cons | -3.323105 .0721417 -46.06 0.000 -3.4645 -3.18171

-------------+----------------------------------------------------------------

4 |

income | .0037843 .001071 3.53 0.000 .0016852 .0058834

fs3\_4 | .0389746 .0394585 0.99 0.323 -.0383627 .116312

fs5 | .4541159 .0492317 9.22 0.000 .3576235 .5506082

college | -.2216919 .0353705 -6.27 0.000 -.2910167 -.152367

whtcollar | .0134183 .0345907 0.39 0.698 -.0543782 .0812147

retired | -.2190113 .0493722 -4.44 0.000 -.315779 -.1222436

\_cons | -1.191205 .0447291 -26.63 0.000 -1.278872 -1.103537

-------------+----------------------------------------------------------------

5 |

income | -.0082135 .0015477 -5.31 0.000 -.011247 -.00518

fs3\_4 | .718805 .0556938 12.91 0.000 .6096472 .8279628

fs5 | .9824093 .0674673 14.56 0.000 .8501758 1.114643

college | -.3976092 .0463384 -8.58 0.000 -.4884307 -.3067876

whtcollar | .6952009 .0469308 14.81 0.000 .6032181 .7871836

retired | .3060661 .0645171 4.74 0.000 .179615 .4325173

\_cons | -2.452505 .0654568 -37.47 0.000 -2.580798 -2.324212

-------------+----------------------------------------------------------------

6 |

income | .0308753 .0016019 19.27 0.000 .0277357 .0340149

fs3\_4 | -.5662443 .1118401 -5.06 0.000 -.785447 -.3470417

fs5 | .8549593 .1177947 7.26 0.000 .624086 1.085833

college | .1110987 .0896781 1.24 0.215 -.0646672 .2868645

whtcollar | .0611138 .0994183 0.61 0.539 -.1337426 .2559701

retired | 1.345394 .1128183 11.93 0.000 1.124274 1.566514

\_cons | -4.569767 .1200432 -38.07 0.000 -4.805047 -4.334486

-------------+----------------------------------------------------------------

7 |

income | -.0054505 .0014924 -3.65 0.000 -.0083757 -.0025254

fs3\_4 | -.499242 .0451327 -11.06 0.000 -.5877004 -.4107836

fs5 | -1.275572 .0820668 -15.54 0.000 -1.43642 -1.114723

college | .08527 .0435103 1.96 0.050 -8.66e-06 .1705487

whtcollar | -.0567072 .0440189 -1.29 0.198 -.1429826 .0295683

retired | -.7956551 .062611 -12.71 0.000 -.9183704 -.6729398

\_cons | -1.050592 .0524212 -20.04 0.000 -1.153336 -.9478485

-------------+----------------------------------------------------------------

8 |

income | .0289522 .0012955 22.35 0.000 .026413 .0314913

fs3\_4 | -.3025615 .0550384 -5.50 0.000 -.4104348 -.1946882

fs5 | -1.405028 .1101578 -12.75 0.000 -1.620934 -1.189123

college | -.4462931 .056892 -7.84 0.000 -.5577994 -.3347868

whtcollar | -.3362806 .0531422 -6.33 0.000 -.4404375 -.2321238

retired | -1.082124 .0870995 -12.42 0.000 -1.252836 -.9114122

\_cons | -2.258933 .0641996 -35.19 0.000 -2.384762 -2.133105

-------------+----------------------------------------------------------------

9 |

income | .0271856 .0012638 21.51 0.000 .0247086 .0296626

fs3\_4 | -1.204837 .0552579 -21.80 0.000 -1.31314 -1.096533

fs5 | -1.747421 .1078657 -16.20 0.000 -1.958834 -1.536008

college | -.3537253 .0539122 -6.56 0.000 -.4593912 -.2480594

whtcollar | .4312768 .0574858 7.50 0.000 .3186066 .543947

retired | .542517 .0627443 8.65 0.000 .4195404 .6654935

\_cons | -2.491972 .0654225 -38.09 0.000 -2.620198 -2.363747

-------------+----------------------------------------------------------------

10 |

income | -.0032369 .0039748 -0.81 0.415 -.0110273 .0045536

fs3\_4 | .8885887 .2160823 4.11 0.000 .4650752 1.312102

fs5 | 2.584383 .2122345 12.18 0.000 2.168411 3.000355

college | -.1082509 .1262599 -0.86 0.391 -.3557159 .139214

whtcollar | 2.369112 .2417049 9.80 0.000 1.895379 2.842845

retired | 1.074672 .1866394 5.76 0.000 .7088652 1.440478

\_cons | -7.131792 .2906565 -24.54 0.000 -7.701468 -6.562116

------------------------------------------------------------------------------

. eststo mlogit\_betas\_3

.

. \* again need a separate table

. esttab mlogit\_betas\_3, noomitted nostar unstack compress se(3) ///

> nonumbers title(Multinomial Logit Estimates)

Multinomial Logit Estimates

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> ---------------------

choice

>

2 3 4 5 6 7

> 8 9 10

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> ---------------------

income -0.00229 0.0215 0.00378 -0.00821 0.0309 -0.00545 0.029

> 0 0.0272 -0.00324

(0.001) (0.001) (0.001) (0.002) (0.002) (0.001) (0.001

> ) (0.001) (0.004)

fs3\_4 0.0788 -0.890 0.0390 0.719 -0.566 -0.499 -0.30

> 3 -1.205 0.889

(0.036) (0.059) (0.039) (0.056) (0.112) (0.045) (0.055

> ) (0.055) (0.216)

fs5 -0.131 -0.877 0.454 0.982 0.855 -1.276 -1.40

> 5 -1.747 2.584

(0.052) (0.089) (0.049) (0.067) (0.118) (0.082) (0.110

> ) (0.108) (0.212)

college 0.0447 0.566 -0.222 -0.398 0.111 0.0853 -0.44

> 6 -0.354 -0.108

(0.032) (0.049) (0.035) (0.046) (0.090) (0.044) (0.057

> ) (0.054) (0.126)

whtcollar -0.0233 0.629 0.0134 0.695 0.0611 -0.0567 -0.33

> 6 0.431 2.369

(0.033) (0.058) (0.035) (0.047) (0.099) (0.044) (0.053

> ) (0.057) (0.242)

retired 0.237 1.655 -0.219 0.306 1.345 -0.796 -1.08

> 2 0.543 1.075

(0.043) (0.063) (0.049) (0.065) (0.113) (0.063) (0.087

> ) (0.063) (0.187)

\_cons -0.944 -3.323 -1.191 -2.453 -4.570 -1.051 -2.25

> 9 -2.492 -7.132

(0.042) (0.072) (0.045) (0.065) (0.120) (0.052) (0.064

> ) (0.065) (0.291)

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N 44700

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Standard errors in parentheses

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 4 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \* quietly because no need to repeat the results twice, we just want the margi

> nal

. \* effects.

. quietly clogit sel p, group(id)

. margins, dydx(\*) post

Average marginal effects Number of obs = 44,700

Model VCE : OIM

Expression : Pr(sel|fixed effect is 0), predict(pu0)

dy/dx w.r.t. : p

------------------------------------------------------------------------------

| Delta-method

| dy/dx Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

p | -.3164552 .0001988 -1592.02 0.000 -.3168448 -.3160656

------------------------------------------------------------------------------

. eststo clogit\_me\_3

.

. esttab clogit\_me\_3, noomitted nostar unstack compress se(3) ///

> nonumbers title(Conditional Logit Marginal Effects)

Conditional Logit Marginal Effects

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p -0.316

(0.000)

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N 44700

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Standard errors in parentheses

.

. quietly mlogit choice income fs3\_4 fs5 college whtcollar retired

. mfx

Marginal effects after mlogit

y = Pr(choice==1) (predict)

= .4225161

------------------------------------------------------------------------------

variable | dy/dx Std. Err. z P>|z| [ 95% C.I. ] X

---------+--------------------------------------------------------------------

income | -.0011512 .00017 -6.62 0.000 -.001492 -.000811 27.6639

fs3\_4\*| .0294656 .00605 4.87 0.000 .017602 .041329 .489038

fs5\*| -.011298 .00862 -1.31 0.190 -.028202 .005606 .135123

college\*| .0192106 .00548 3.51 0.000 .008469 .029953 .316331

whtcol~r\*| -.0314548 .00553 -5.69 0.000 -.042291 -.020618 .581208

retired\*| -.049328 .00717 -6.88 0.000 -.063378 -.035278 .216107

------------------------------------------------------------------------------

(\*) dy/dx is for discrete change of dummy variable from 0 to 1

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 5 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. asclogit sel p , case(id) alternatives(selection) ///

> casevars(income fs3\_4 fs5 college whtcollar retired)

Iteration 0: log likelihood = -7209.3906

Iteration 1: log likelihood = -7111.0586

Iteration 2: log likelihood = -7110.3753

Iteration 3: log likelihood = -7110.3752

Alternative-specific conditional logit Number of obs = 44,700

Case variable: id Number of cases = 4470

Alternative variable: selection Alts per case: min = 10

avg = 10.0

max = 10

Wald chi2(55) = 2022.56

Log likelihood = -7110.3752 Prob > chi2 = 0.0000

------------------------------------------------------------------------------

sel | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

selection |

p | -6.727505 .1769229 -38.03 0.000 -7.074268 -6.380743

-------------+----------------------------------------------------------------

1 | (base alternative)

-------------+----------------------------------------------------------------

2 |

income | -.0031802 .0037716 -0.84 0.399 -.0105723 .0042119

fs3\_4 | .0731491 .1279555 0.57 0.568 -.1776391 .3239373

fs5 | -.2352675 .1818468 -1.29 0.196 -.5916807 .1211457

college | .0497422 .113986 0.44 0.663 -.1736662 .2731507

whtcollar | -.0394665 .1156033 -0.34 0.733 -.2660449 .1871119

retired | .2625538 .1520035 1.73 0.084 -.0353677 .5604753

\_cons | -.929614 .1485089 -6.26 0.000 -1.220686 -.6385418

-------------+----------------------------------------------------------------

3 |

income | .0217094 .0042576 5.10 0.000 .0133648 .030054

fs3\_4 | -.9008914 .1903256 -4.73 0.000 -1.273923 -.52786

fs5 | -.8852396 .2864282 -3.09 0.002 -1.446629 -.3238506

college | .5795113 .158871 3.65 0.000 .2681299 .8908927

whtcollar | .6047619 .1865997 3.24 0.001 .2390331 .9704907

retired | 1.774491 .2018475 8.79 0.000 1.378877 2.170105

\_cons | -.018311 .2452193 -0.07 0.940 -.4989319 .46231

-------------+----------------------------------------------------------------

4 |

income | .0038602 .003531 1.09 0.274 -.0030604 .0107808

fs3\_4 | .0767795 .1320042 0.58 0.561 -.1819439 .3355029

fs5 | .4187164 .1666443 2.51 0.012 .0920997 .7453332

college | -.2531909 .1184884 -2.14 0.033 -.4854238 -.0209579

whtcollar | .0455049 .1156703 0.39 0.694 -.1812047 .2722146

retired | -.1570552 .1644688 -0.95 0.340 -.4794081 .1652977

\_cons | -1.860976 .1506071 -12.36 0.000 -2.15616 -1.565791

-------------+----------------------------------------------------------------

5 |

income | -.0072133 .0049865 -1.45 0.148 -.0169866 .00256

fs3\_4 | .6627288 .1792775 3.70 0.000 .3113514 1.014106

fs5 | .9184167 .2185429 4.20 0.000 .4900805 1.346753

college | -.3604242 .1498394 -2.41 0.016 -.654104 -.0667444

whtcollar | .6898882 .1517937 4.54 0.000 .3923779 .9873984

retired | .4102554 .2088182 1.96 0.049 .0009792 .8195316

\_cons | -3.663883 .2136511 -17.15 0.000 -4.082632 -3.245135

-------------+----------------------------------------------------------------

6 |

income | .0303074 .0051936 5.84 0.000 .0201282 .0404867

fs3\_4 | -.5696844 .3538737 -1.61 0.107 -1.263264 .1238954

fs5 | .8469134 .3767975 2.25 0.025 .1084038 1.585423

college | .0944586 .2866384 0.33 0.742 -.4673424 .6562597

whtcollar | .1254908 .315912 0.40 0.691 -.4936853 .7446669

retired | 1.481564 .3555818 4.17 0.000 .7846367 2.178492

\_cons | -2.937473 .3794526 -7.74 0.000 -3.681186 -2.193759

-------------+----------------------------------------------------------------

7 |

income | -.0073341 .0049069 -1.49 0.135 -.0169515 .0022832

fs3\_4 | -.5224592 .1497186 -3.49 0.000 -.8159024 -.2290161

fs5 | -1.371098 .2677438 -5.12 0.000 -1.895867 -.8463301

college | .0791835 .1438936 0.55 0.582 -.2028428 .3612097

whtcollar | -.0807929 .145883 -0.55 0.580 -.3667184 .2051326

retired | -.7739959 .207446 -3.73 0.000 -1.180582 -.3674093

\_cons | 1.017887 .1818105 5.60 0.000 .6615449 1.374229

-------------+----------------------------------------------------------------

8 |

income | .0289606 .0043108 6.72 0.000 .0205115 .0374096

fs3\_4 | -.3329097 .1786041 -1.86 0.062 -.6829674 .0171479

fs5 | -1.430573 .3511689 -4.07 0.000 -2.118851 -.7422944

college | -.3869988 .1831041 -2.11 0.035 -.7458764 -.0281213

whtcollar | -.4358122 .173086 -2.52 0.012 -.7750545 -.0965699

retired | -.8953734 .2790262 -3.21 0.001 -1.442255 -.348492

\_cons | 1.42636 .2282158 6.25 0.000 .9790651 1.873655

-------------+----------------------------------------------------------------

9 |

income | .026776 .0041764 6.41 0.000 .0185903 .0349617

fs3\_4 | -1.247258 .1788146 -6.98 0.000 -1.597728 -.8967877

fs5 | -1.752459 .3437858 -5.10 0.000 -2.426267 -1.078651

college | -.3315221 .1742426 -1.90 0.057 -.6730312 .0099871

whtcollar | .365318 .1855402 1.97 0.049 .0016658 .7289702

retired | .6922821 .203554 3.40 0.001 .2933236 1.091241

\_cons | 2.010108 .2406306 8.35 0.000 1.538481 2.481736

-------------+----------------------------------------------------------------

10 |

income | -.0026379 .0127081 -0.21 0.836 -.0275453 .0222695

fs3\_4 | .700144 .6743085 1.04 0.299 -.6214764 2.021764

fs5 | 2.477214 .6664282 3.72 0.000 1.171039 3.783389

college | .0426424 .4003562 0.11 0.915 -.7420414 .8273262

whtcollar | 2.171549 .7630716 2.85 0.004 .6759567 3.667142

retired | 1.043842 .5954876 1.75 0.080 -.1232923 2.210976

\_cons | -6.883823 .9243189 -7.45 0.000 -8.695454 -5.072191

------------------------------------------------------------------------------

. eststo mixed\_logit\_betas\_3

. esttab mixed\_logit\_betas\_3, noomitted nostar unstack compress se(3) ///

> nonumbers title(Mixed Logit Regression)

Mixed Logit Regression

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> -------------------------------

sel

>

selection 2 3 4 5 6

> 7 8 9 10

-------------------------------------------------------------------------------

> -------------------------------

p -6.728

>

(0.177)

>

income -0.00318 0.0217 0.00386 -0.00721 0.0303 -0.0073

> 3 0.0290 0.0268 -0.00264

(0.004) (0.004) (0.004) (0.005) (0.005) (0.005

> ) (0.004) (0.004) (0.013)

fs3\_4 0.0731 -0.901 0.0768 0.663 -0.570 -0.52

> 2 -0.333 -1.247 0.700

(0.128) (0.190) (0.132) (0.179) (0.354) (0.150

> ) (0.179) (0.179) (0.674)

fs5 -0.235 -0.885 0.419 0.918 0.847 -1.37

> 1 -1.431 -1.752 2.477

(0.182) (0.286) (0.167) (0.219) (0.377) (0.268

> ) (0.351) (0.344) (0.666)

college 0.0497 0.580 -0.253 -0.360 0.0945 0.079

> 2 -0.387 -0.332 0.0426

(0.114) (0.159) (0.118) (0.150) (0.287) (0.144

> ) (0.183) (0.174) (0.400)

whtcollar -0.0395 0.605 0.0455 0.690 0.125 -0.080

> 8 -0.436 0.365 2.172

(0.116) (0.187) (0.116) (0.152) (0.316) (0.146

> ) (0.173) (0.186) (0.763)

retired 0.263 1.774 -0.157 0.410 1.482 -0.77

> 4 -0.895 0.692 1.044

(0.152) (0.202) (0.164) (0.209) (0.356) (0.207

> ) (0.279) (0.204) (0.595)

\_cons -0.930 -0.0183 -1.861 -3.664 -2.937 1.01

> 8 1.426 2.010 -6.884

(0.149) (0.245) (0.151) (0.214) (0.379) (0.182

> ) (0.228) (0.241) (0.924)

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Standard errors in parentheses

.

. \* drop choice 4 and rerun the regression

. drop if choice == 4

(5,930 observations deleted)

. drop if selection == 4

(3,877 observations deleted)

.

. asclogit sel p , case(id) alternatives(selection) ///

> casevars(income fs3\_4 fs5 college whtcollar retired)

Iteration 0: log likelihood = -5665.1624

Iteration 1: log likelihood = -5555.3825

Iteration 2: log likelihood = -5554.3793

Iteration 3: log likelihood = -5554.3788

Alternative-specific conditional logit Number of obs = 34,893

Case variable: id Number of cases = 3877

Alternative variable: selection Alts per case: min = 9

avg = 9.0

max = 9

Wald chi2(49) = 1640.06

Log likelihood = -5554.3788 Prob > chi2 = 0.0000

------------------------------------------------------------------------------

sel | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

selection |

p | -6.429004 .1936378 -33.20 0.000 -6.808527 -6.049481

-------------+----------------------------------------------------------------

1 | (base alternative)

-------------+----------------------------------------------------------------

2 |

income | -.0026979 .0038375 -0.70 0.482 -.0102193 .0048235

fs3\_4 | .0739866 .1295422 0.57 0.568 -.1799115 .3278847

fs5 | -.2453173 .1842212 -1.33 0.183 -.6063842 .1157496

college | .0571756 .1142792 0.50 0.617 -.1668076 .2811588

whtcollar | -.0461271 .1177438 -0.39 0.695 -.2769006 .1846464

retired | .2907387 .1552155 1.87 0.061 -.0134781 .5949555

\_cons | -.9456119 .1523744 -6.21 0.000 -1.24426 -.6469636

-------------+----------------------------------------------------------------

3 |

income | .0244358 .0044244 5.52 0.000 .0157642 .0331074

fs3\_4 | -.9037337 .1917021 -4.71 0.000 -1.279463 -.5280045

fs5 | -.8733382 .2852786 -3.06 0.002 -1.432474 -.3142025

college | .5659491 .1594562 3.55 0.000 .2534208 .8784774

whtcollar | .6818333 .1949893 3.50 0.000 .2996613 1.064005

retired | 1.879073 .208352 9.02 0.000 1.470711 2.287436

\_cons | -.299337 .25624 -1.17 0.243 -.8015581 .2028842

-------------+----------------------------------------------------------------

5 |

income | -.0069136 .0050566 -1.37 0.172 -.0168243 .0029972

fs3\_4 | .6711735 .181047 3.71 0.000 .3163278 1.026019

fs5 | .9094561 .2202487 4.13 0.000 .4777766 1.341136

college | -.3616703 .149808 -2.41 0.016 -.6552885 -.068052

whtcollar | .6620936 .1533787 4.32 0.000 .3614769 .9627103

retired | .4237449 .2125821 1.99 0.046 .0070916 .8403981

\_cons | -3.584525 .2176954 -16.47 0.000 -4.011201 -3.15785

-------------+----------------------------------------------------------------

6 |

income | .0352965 .0055164 6.40 0.000 .0244845 .0461085

fs3\_4 | -.5767658 .3544277 -1.63 0.104 -1.271431 .1178996

fs5 | .877989 .3746298 2.34 0.019 .143728 1.61225

college | .0933939 .2857514 0.33 0.744 -.4666685 .6534563

whtcollar | .1058859 .326931 0.32 0.746 -.534887 .7466588

retired | 1.55598 .3628095 4.29 0.000 .8448868 2.267074

\_cons | -3.161782 .3943245 -8.02 0.000 -3.934644 -2.38892

-------------+----------------------------------------------------------------

7 |

income | -.0076891 .0049351 -1.56 0.119 -.0173617 .0019834

fs3\_4 | -.5274105 .1507774 -3.50 0.000 -.8229288 -.2318922

fs5 | -1.391386 .26955 -5.16 0.000 -1.919695 -.8630781

college | .0770796 .1442475 0.53 0.593 -.2056403 .3597995

whtcollar | -.0895406 .1475104 -0.61 0.544 -.3786556 .1995745

retired | -.7999763 .2101253 -3.81 0.000 -1.211814 -.3881383

\_cons | .9555026 .1858891 5.14 0.000 .5911668 1.319839

-------------+----------------------------------------------------------------

8 |

income | .0291053 .0044216 6.58 0.000 .0204391 .0377716

fs3\_4 | -.3387872 .1793967 -1.89 0.059 -.6903982 .0128239

fs5 | -1.350289 .3494354 -3.86 0.000 -2.035169 -.6654078

college | -.3763867 .18264 -2.06 0.039 -.7343545 -.0184189

whtcollar | -.4298136 .1738171 -2.47 0.013 -.7704888 -.0891385

retired | -.89439 .2812585 -3.18 0.001 -1.445647 -.3431334

\_cons | 1.276828 .2365385 5.40 0.000 .8132206 1.740435

-------------+----------------------------------------------------------------

9 |

income | .0276714 .0042876 6.45 0.000 .0192678 .036075

fs3\_4 | -1.245933 .1796662 -6.93 0.000 -1.598073 -.893794

fs5 | -1.70463 .3416895 -4.99 0.000 -2.374329 -1.034931

college | -.328472 .1741714 -1.89 0.059 -.6698417 .0128977

whtcollar | .4174319 .1912189 2.18 0.029 .0426498 .792214

retired | .7497852 .2088549 3.59 0.000 .340437 1.159133

\_cons | 1.758283 .2520161 6.98 0.000 1.26434 2.252225

-------------+----------------------------------------------------------------

10 |

income | -.002114 .0137226 -0.15 0.878 -.0290098 .0247819

fs3\_4 | .7373966 .6797413 1.08 0.278 -.5948719 2.069665

fs5 | 2.412485 .6714745 3.59 0.000 1.096419 3.72855

college | .0925164 .406091 0.23 0.820 -.7034073 .8884401

whtcollar | 2.091628 .7706833 2.71 0.007 .5811163 3.602139

retired | 1.106112 .601928 1.84 0.066 -.073645 2.285869

\_cons | -6.827578 .9295821 -7.34 0.000 -8.649525 -5.005631

------------------------------------------------------------------------------

. eststo mixed\_logit\_no4\_3

. esttab mixed\_logit\_no4\_3, noomitted nostar unstack compress se(3) ///

> nonumbers title(Mixed Logit Regression Without Choice = 4)

Mixed Logit Regression Without Choice = 4

-------------------------------------------------------------------------------

> ---------------------

sel

>

selection 2 3 5 6 7

> 8 9 10

-------------------------------------------------------------------------------

> ---------------------

p -6.429

>

(0.194)

>

income -0.00270 0.0244 -0.00691 0.0353 -0.00769 0.029

> 1 0.0277 -0.00211

(0.004) (0.004) (0.005) (0.006) (0.005) (0.004

> ) (0.004) (0.014)

fs3\_4 0.0740 -0.904 0.671 -0.577 -0.527 -0.33

> 9 -1.246 0.737

(0.130) (0.192) (0.181) (0.354) (0.151) (0.179

> ) (0.180) (0.680)

fs5 -0.245 -0.873 0.909 0.878 -1.391 -1.35

> 0 -1.705 2.412

(0.184) (0.285) (0.220) (0.375) (0.270) (0.349

> ) (0.342) (0.671)

college 0.0572 0.566 -0.362 0.0934 0.0771 -0.37

> 6 -0.328 0.0925

(0.114) (0.159) (0.150) (0.286) (0.144) (0.183

> ) (0.174) (0.406)

whtcollar -0.0461 0.682 0.662 0.106 -0.0895 -0.43

> 0 0.417 2.092

(0.118) (0.195) (0.153) (0.327) (0.148) (0.174

> ) (0.191) (0.771)

retired 0.291 1.879 0.424 1.556 -0.800 -0.89

> 4 0.750 1.106

(0.155) (0.208) (0.213) (0.363) (0.210) (0.281

> ) (0.209) (0.602)

\_cons -0.946 -0.299 -3.585 -3.162 0.956 1.27

> 7 1.758 -6.828

(0.152) (0.256) (0.218) (0.394) (0.186) (0.237

> ) (0.252) (0.930)

-------------------------------------------------------------------------------

> ---------------------

N 34893

>

-------------------------------------------------------------------------------

> ---------------------

Standard errors in parentheses

.

. \* hausman test

. hausman mixed\_logit\_betas\_3 mixed\_logit\_no4\_3, alleqs constant

Note: the rank of the differenced variance matrix (56) does not equal the

number of coefficients being tested (57); be sure this is what you

expect, or there may be problems computing the test. Examine the

output of your estimators for anything unexpected and possibly consider

scaling your variables so that the coefficients are on a similar scale.

---- Coefficients ----

| (b) (B) (b-B) sqrt(diag(V\_b-V\_B))

| mixed\_logi~3 mixed\_logi~3 Difference S.E.

-------------+----------------------------------------------------------------

selection |

p | -6.727505 -6.429004 -.2985014 .

-------------+----------------------------------------------------------------

2 |

income | -.0031802 -.0026979 -.0004824 .

fs3\_4 | .0731491 .0739866 -.0008374 .

fs5 | -.2352675 -.2453173 .0100498 .

college | .0497422 .0571756 -.0074334 .

whtcollar | -.0394665 -.0461271 .0066606 .

retired | .2625538 .2907387 -.0281849 .

\_cons | -.929614 -.9456119 .0159979 .

-------------+----------------------------------------------------------------

3 |

income | .0217094 .0244358 -.0027264 .

fs3\_4 | -.9008914 -.9037337 .0028423 .

fs5 | -.8852396 -.8733382 -.0119014 .0256374

college | .5795113 .5659491 .0135622 .

whtcollar | .6047619 .6818333 -.0770714 .

retired | 1.774491 1.879073 -.1045822 .

\_cons | -.018311 -.299337 .281026 .

-------------+----------------------------------------------------------------

5 |

income | -.0072133 -.0069136 -.0002997 .

fs3\_4 | .6627288 .6711735 -.0084447 .

fs5 | .9184167 .9094561 .0089606 .

college | -.3604242 -.3616703 .0012461 .0030673

whtcollar | .6898882 .6620936 .0277946 .

retired | .4102554 .4237449 -.0134895 .

\_cons | -3.663883 -3.584525 -.0793579 .

-------------+----------------------------------------------------------------

6 |

income | .0303074 .0352965 -.0049891 .

fs3\_4 | -.5696844 -.5767658 .0070814 .

fs5 | .8469134 .877989 -.0310756 .0403591

college | .0944586 .0933939 .0010647 .0225331

whtcollar | .1254908 .1058859 .0196049 .

retired | 1.481564 1.55598 -.0744161 .

\_cons | -2.937473 -3.161782 .2243096 .

-------------+----------------------------------------------------------------

7 |

income | -.0073341 -.0076891 .000355 .

fs3\_4 | -.5224592 -.5274105 .0049513 .

fs5 | -1.371098 -1.391386 .0202881 .

college | .0791835 .0770796 .0021038 .

whtcollar | -.0807929 -.0895406 .0087476 .

retired | -.7739959 -.7999763 .0259804 .

\_cons | 1.017887 .9555026 .0623843 .

-------------+----------------------------------------------------------------

8 |

income | .0289606 .0291053 -.0001448 .

fs3\_4 | -.3329097 -.3387872 .0058774 .

fs5 | -1.430573 -1.350289 -.0802841 .0348496

college | -.3869988 -.3763867 -.0106122 .0130292

whtcollar | -.4358122 -.4298136 -.0059986 .

retired | -.8953734 -.89439 -.0009834 .

\_cons | 1.42636 1.276828 .1495324 .

-------------+----------------------------------------------------------------

9 |

income | .026776 .0276714 -.0008954 .

fs3\_4 | -1.247258 -1.245933 -.0013245 .

fs5 | -1.752459 -1.70463 -.0478289 .0379075

college | -.3315221 -.328472 -.0030501 .0049797

whtcollar | .365318 .4174319 -.0521139 .

retired | .6922821 .7497852 -.057503 .

\_cons | 2.010108 1.758283 .2518258 .

-------------+----------------------------------------------------------------

10 |

income | -.0026379 -.002114 -.0005239 .

fs3\_4 | .700144 .7373966 -.0372526 .

fs5 | 2.477214 2.412485 .0647295 .

college | .0426424 .0925164 -.049874 .

whtcollar | 2.171549 2.091628 .0799217 .

retired | 1.043842 1.106112 -.0622702 .

\_cons | -6.883823 -6.827578 -.0562446 .

------------------------------------------------------------------------------

b = consistent under Ho and Ha; obtained from asclogit

B = inconsistent under Ha, efficient under Ho; obtained from asclogit

Test: Ho: difference in coefficients not systematic

chi2(56) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)

= -113.33 chi2<0 ==> model fitted on these

data fails to meet the asymptotic

assumptions of the Hausman test;

see suest for a generalized test

.

. clear

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Assignment 4 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. cd "/Users/admin/Documents/Econ\_613/Data/Assignment 4"

/Users/admin/Documents/Econ\_613/Data/Assignment 4

. insheet using "Koop-Tobias.csv",clear

(10 vars, 17,919 obs)

. cd "/Users/admin/Documents/Econ\_613/Assignment Output"

/Users/admin/Documents/Econ\_613/Assignment Output

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. keep personid logwage timetrnd

. reshape wide logwage, i(personid) j(timetrnd)

(note: j = 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14)

Data long -> wide

-----------------------------------------------------------------------------

Number of obs. 17919 -> 2178

Number of variables 3 -> 16

j variable (15 values) timetrnd -> (dropped)

xij variables:

logwage -> logwage0 logwage1 ... logwage14

-----------------------------------------------------------------------------

. sample 5, count

(2,173 observations deleted)

. count

5

. list

+-------------------------------------------------------------------------

> -------------------------+

1. | personid | logwage0 | logwage1 | logwage2 | logwage3 | logwage4 | logwag

> e5 | logwage6 | logwage7 |

| 309 | 2.29 | 2.2 | 2.3 | 2.47 | 2.35 | 2.

> 42 | 2.6 | . |

|-------------------------------------------------------------------------

> -------------------------|

| logwage8 | logwage9 | logwa~10 | logwa~11 | logwa~12 | l

> ogwa~13 | logwa~14 |

| . | 2.69 | . | 2.8 | . |

> . | . |

+-------------------------------------------------------------------------

> -------------------------+

+-------------------------------------------------------------------------

> -------------------------+

2. | personid | logwage0 | logwage1 | logwage2 | logwage3 | logwage4 | logwag

> e5 | logwage6 | logwage7 |

| 1242 | . | . | . | . | . | 1.

> 12 | . | 1.2 |

|-------------------------------------------------------------------------

> -------------------------|

| logwage8 | logwage9 | logwa~10 | logwa~11 | logwa~12 | l

> ogwa~13 | logwa~14 |

| .97 | .99 | 1.49 | . | . |

> . | . |

+-------------------------------------------------------------------------

> -------------------------+

+-------------------------------------------------------------------------

> -------------------------+

3. | personid | logwage0 | logwage1 | logwage2 | logwage3 | logwage4 | logwag

> e5 | logwage6 | logwage7 |

| 2007 | . | . | . | . | . | 2.

> 21 | 2.64 | 2.59 |

|-------------------------------------------------------------------------

> -------------------------|

| logwage8 | logwage9 | logwa~10 | logwa~11 | logwa~12 | l

> ogwa~13 | logwa~14 |

| 2.54 | 2.65 | 2.64 | 2.47 | . |

> 2.29 | 2.4 |

+-------------------------------------------------------------------------

> -------------------------+

+-------------------------------------------------------------------------

> -------------------------+

4. | personid | logwage0 | logwage1 | logwage2 | logwage3 | logwage4 | logwag

> e5 | logwage6 | logwage7 |

| 1707 | . | . | . | 2.7 | . |

> . | . | 2.1 |

|-------------------------------------------------------------------------

> -------------------------|

| logwage8 | logwage9 | logwa~10 | logwa~11 | logwa~12 | l

> ogwa~13 | logwa~14 |

| 2.63 | 2.84 | 2.68 | 2.72 | 2.69 |

> 2.68 | 2.57 |

+-------------------------------------------------------------------------

> -------------------------+

+-------------------------------------------------------------------------

> -------------------------+

5. | personid | logwage0 | logwage1 | logwage2 | logwage3 | logwage4 | logwag

> e5 | logwage6 | logwage7 |

| 1209 | . | . | 1.73 | 1.43 | 1.76 | 1.

> 94 | . | . |

|-------------------------------------------------------------------------

> -------------------------|

| logwage8 | logwage9 | logwa~10 | logwa~11 | logwa~12 | l

> ogwa~13 | logwa~14 |

| 1.96 | 2.32 | 2.19 | 2.1 | 2.06 |

> 2.44 | 2.32 |

+-------------------------------------------------------------------------

> -------------------------+

. clear

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. cd "/Users/admin/Documents/Econ\_613/Data/Assignment 4"

/Users/admin/Documents/Econ\_613/Data/Assignment 4

. insheet using "Koop-Tobias.csv",clear

(10 vars, 17,919 obs)

. cd "/Users/admin/Documents/Econ\_613/Assignment Output"

/Users/admin/Documents/Econ\_613/Assignment Output

. xtset personid timetrnd

panel variable: personid (unbalanced)

time variable: timetrnd, 0 to 14, but with gaps

delta: 1 unit

. xtreg logwage educ potexper

Random-effects GLS regression Number of obs = 17,919

Group variable: personid Number of groups = 2,178

R-sq: Obs per group:

within = 0.1961 min = 1

between = 0.1533 avg = 8.2

overall = 0.1578 max = 15

Wald chi2(2) = 4209.96

corr(u\_i, X) = 0 (assumed) Prob > chi2 = 0.0000

------------------------------------------------------------------------------

logwage | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

educ | .107938 .0033832 31.90 0.000 .1013071 .114569

potexper | .0387645 .0007178 54.00 0.000 .0373576 .0401714

\_cons | .5635206 .0438846 12.84 0.000 .4775083 .6495328

-------------+----------------------------------------------------------------

sigma\_u | .37207276

sigma\_e | .33545728

rho | .5516129 (fraction of variance due to u\_i)

------------------------------------------------------------------------------

. eststo re\_betas\_4

. esttab re\_betas\_4, se(3) nonumbers title(Random Effects Model)

Random Effects Model

----------------------------

logwage

----------------------------

educ 0.108\*\*\*

(0.003)

potexper 0.0388\*\*\*

(0.001)

\_cons 0.564\*\*\*

(0.044)

----------------------------

N 17919

----------------------------

Standard errors in parentheses

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 3 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. \* between estimator

. xtreg logwage educ potexper, be

Between regression (regression on group means) Number of obs = 17,919

Group variable: personid Number of groups = 2,178

R-sq: Obs per group:

within = 0.1962 min = 1

between = 0.1553 avg = 8.2

overall = 0.1518 max = 15

F(2,2175) = 200.01

sd(u\_i + avg(e\_i.))= .3991313 Prob > F = 0.0000

------------------------------------------------------------------------------

logwage | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

educ | .0930999 .0046685 19.94 0.000 .0839447 .1022551

potexper | .0259987 .0036049 7.21 0.000 .0189294 .0330681

\_cons | .8455688 .0770179 10.98 0.000 .6945324 .9966052

------------------------------------------------------------------------------

. eststo between\_betas\_4

.

. \* within estimator

. xtreg logwage educ potexper, fe

Fixed-effects (within) regression Number of obs = 17,919

Group variable: personid Number of groups = 2,178

R-sq: Obs per group:

within = 0.1964 min = 1

between = 0.1550 avg = 8.2

overall = 0.1551 max = 15

F(2,15739) = 1923.47

corr(u\_i, Xb) = -0.1273 Prob > F = 0.0000

------------------------------------------------------------------------------

logwage | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

educ | .123662 .0057619 21.46 0.000 .1123681 .1349559

potexper | .0385611 .0007585 50.84 0.000 .0370744 .0400478

\_cons | .4068016 .0717348 5.67 0.000 .2661931 .54741

-------------+----------------------------------------------------------------

sigma\_u | .40290853

sigma\_e | .33545728

rho | .59059603 (fraction of variance due to u\_i)

------------------------------------------------------------------------------

F test that all u\_i=0: F(2177, 15739) = 9.95 Prob > F = 0.0000

. eststo within\_betas\_4

.

. \* first time difference estimator

. reg d.(logwage educ potexper), noconstant

Source | SS df MS Number of obs = 13,684

-------------+---------------------------------- F(2, 13682) = 171.87

Model | 38.7282937 2 19.3641469 Prob > F = 0.0000

Residual | 1541.54171 13,682 .112669326 R-squared = 0.0245

-------------+---------------------------------- Adj R-squared = 0.0244

Total | 1580.27001 13,684 .115483046 Root MSE = .33566

------------------------------------------------------------------------------

D.logwage | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

educ |

D1. | .0431084 .0151792 2.84 0.005 .0133551 .0728617

|

potexper |

D1. | .0535369 .0029221 18.32 0.000 .0478092 .0592647

------------------------------------------------------------------------------

. eststo firstd\_betas\_4

. esttab between\_betas\_4 within\_betas\_4 firstd\_betas\_4, se(3) nonumbers ///

> title(Fixed Effects Estimators) mtitles("Between" "Within" "First Difference"

> )

Fixed Effects Estimators

------------------------------------------------------------

Between Within First Diff~e

------------------------------------------------------------

educ 0.0931\*\*\* 0.124\*\*\*

(0.005) (0.006)

potexper 0.0260\*\*\* 0.0386\*\*\*

(0.004) (0.001)

D.educ 0.0431\*\*

(0.015)

D.potexper 0.0535\*\*\*

(0.003)

\_cons 0.846\*\*\* 0.407\*\*\*

(0.077) (0.072)

------------------------------------------------------------

N 17919 17919 13684

------------------------------------------------------------

Standard errors in parentheses

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Exercise 4 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. keep personid educ potexper logwage timetrnd ability mothered fathered ///

> brknhome siblings

. reshape wide educ logwage potexper, i(personid) j(timetrnd)

(note: j = 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14)

Data long -> wide

-----------------------------------------------------------------------------

Number of obs. 17919 -> 2178

Number of variables 10 -> 51

j variable (15 values) timetrnd -> (dropped)

xij variables:

educ -> educ0 educ1 ... educ14

logwage -> logwage0 logwage1 ... logwage14

potexper -> potexper0 potexper1 ... potexper

> 14

-----------------------------------------------------------------------------

. sample 100, count

(2,078 observations deleted)

. reshape long

(note: j = 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14)

Data wide -> long

-----------------------------------------------------------------------------

Number of obs. 100 -> 1500

Number of variables 51 -> 10

j variable (15 values) -> timetrnd

xij variables:

educ0 educ1 ... educ14 -> educ

logwage0 logwage1 ... logwage14 -> logwage

potexper0 potexper1 ... potexper14 -> potexper

-----------------------------------------------------------------------------

.

. xtreg logwage educ potexper, fe

Fixed-effects (within) regression Number of obs = 814

Group variable: personid Number of groups = 100

R-sq: Obs per group:

within = 0.1662 min = 1

between = 0.2923 avg = 8.1

overall = 0.2268 max = 15

F(2,712) = 70.98

corr(u\_i, Xb) = -0.0666 Prob > F = 0.0000

------------------------------------------------------------------------------

logwage | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

educ | .1284146 .0224327 5.72 0.000 .0843725 .1724566

potexper | .0280233 .0032218 8.70 0.000 .0216979 .0343486

\_cons | .4757539 .2772206 1.72 0.087 -.0685137 1.020021

-------------+----------------------------------------------------------------

sigma\_u | .40508796

sigma\_e | .30125164

rho | .6438965 (fraction of variance due to u\_i)

------------------------------------------------------------------------------

F test that all u\_i=0: F(99, 712) = 10.75 Prob > F = 0.0000

. predict alphas, u

(686 missing values generated)

. drop if missing(alphas)

(686 observations deleted)

. duplicates drop alphas, force

Duplicates in terms of alphas

(714 observations deleted)

.

. \* regress the alphas on the time invariant variables

. reg alphas ability mothered fathered brknhome siblings

Source | SS df MS Number of obs = 100

-------------+---------------------------------- F(5, 94) = 1.58

Model | 1.2602208 5 .25204416 Prob > F = 0.1730

Residual | 14.9853087 94 .159418177 R-squared = 0.0776

-------------+---------------------------------- Adj R-squared = 0.0285

Total | 16.2455295 99 .164096257 Root MSE = .39927

------------------------------------------------------------------------------

alphas | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

ability | -.0269507 .0517259 -0.52 0.604 -.1296537 .0757523

mothered | .0030354 .0180542 0.17 0.867 -.0328116 .0388824

fathered | -.0177295 .0158819 -1.12 0.267 -.0492633 .0138043

brknhome | -.1513675 .1132828 -1.34 0.185 -.3762931 .0735581

siblings | -.0541506 .0215985 -2.51 0.014 -.0970349 -.0112663

\_cons | .3143123 .2372976 1.32 0.189 -.1568477 .7854723

------------------------------------------------------------------------------

. eststo alpha\_betas\_4

.

. bootstrap, reps(199): reg alphas ability mothered fathered brknhome siblings

(running regress on estimation sample)

Bootstrap replications (199)

----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5

.................................................. 50

.................................................. 100

.................................................. 150

.................................................

Linear regression Number of obs = 100

Replications = 199

Wald chi2(5) = 5.18

Prob > chi2 = 0.3945

R-squared = 0.0776

Adj R-squared = 0.0285

Root MSE = 0.3993

------------------------------------------------------------------------------

| Observed Bootstrap Normal-based

alphas | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

ability | -.0269507 .054052 -0.50 0.618 -.1328906 .0789893

mothered | .0030354 .015642 0.19 0.846 -.0276224 .0336932

fathered | -.0177295 .0137107 -1.29 0.196 -.044602 .009143

brknhome | -.1513675 .1593637 -0.95 0.342 -.4637145 .1609796

siblings | -.0541506 .0261702 -2.07 0.039 -.1054432 -.002858

\_cons | .3143123 .2618582 1.20 0.230 -.1989203 .8275449

------------------------------------------------------------------------------

. eststo alpha\_betas\_4\_boot

. esttab alpha\_betas\_4 alpha\_betas\_4\_boot, se(4) title(Individual Fixed Effect

> ///

> Regressions) nonumbers ///

> mtitles("Non-Corrected" "Bootstrap 199")

Individual Fixed Effect Regressions

--------------------------------------------

Non-Correc~d Bootstra~199

--------------------------------------------

ability -0.0270 -0.0270

(0.0517) (0.0541)

mothered 0.00304 0.00304

(0.0181) (0.0156)

fathered -0.0177 -0.0177

(0.0159) (0.0137)

brknhome -0.151 -0.151

(0.1133) (0.1594)

siblings -0.0542\* -0.0542\*

(0.0216) (0.0262)

\_cons 0.314 0.314

(0.2373) (0.2619)

--------------------------------------------

N 100 100

--------------------------------------------

Standard errors in parentheses

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

.

. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

. log close

name: <unnamed>

log: /Users/admin/Documents/Econ\_613/Assignment Output/Assignment5\_Jeff

> Hill.smcl

log type: smcl

closed on: 16 Apr 2019, 17:24:22

-------------------------------------------------------------------------------