```
                                                      ___  ____  ____  ____  ____(R)
                                                     /__    /   ____/   /   ____/
                                                    ___/   /   /___/   /   /___/
                                                      Statistics/Data Analysis

                                                         User: TianyuHW5_4

      ___  ____  ____  ____  ____ (R)
     /__    /   ____/   /   ____/
    ___/   /   /___/   /   /___/   15.0  Copyright 1985-2017 StataCorp LLC
      Statistics/Data Analysis            StataCorp
                                          4905 Lakeway Drive
          Special Edition                 College Station, Texas 77845 USA
                                          800-STATA-PC        http://www.stata.com
                                          979-696-4600        stata@stata.com
                                          979-696-4601 (fax)

    1150-user Stata network license expires 23 Jul 2019:
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                           personal

    Notes:
          1.  Unicode is supported; see help unicode advice.
          2.  Maximum number of variables is set to 5000; see help set_maxvar.
          3.  New update available; type -update all-

  1 . doedit "C:\Users\cuiti\Master Study\Second Semester\econometrics\TIANYUCUI\ps5\ps4.do"

  2 . do "C:\Users\cuiti\AppData\Local\Temp\STD42c4_000000.tmp"

  3 . clear all

  4 . set more off, perm
    (set more preference recorded)

  5 . set scrollbufsize 2000000
    (set scrollbufsize will take effect the next time you launch Stata)

  6 .
  7 . *****import the database*****
  8 . import excel "C:\Users\cuiti\Master Study\Second Semester\econometrics\TIANYUCUI\ps4\Koop-Tobia
    >  sheet("Koop-Tobias") firstrow clear

  9 .
 10 . *convert data into panel data
 11 . xtset PERSONID TIMETRND
            panel variable:  PERSONID (unbalanced)
             time variable:  TIMETRND, 0 to 14, but with gaps
                     delta:  1 unit

 12 . bysort PERSONID: gen t = _n

 13 . *Represent the panel dimension of wages for 5 randomly selected individuals
 14 . tabulate TIMETRND LOGWAGE if PERSONID == 5
```

TIMETRND	LOGWAGE 2.41	2.5	2.56	Total
3	**1**	**0**	**0**	**1**
5	**0**	**1**	**0**	**1**
6	**0**	**0**	**1**	**1**
Total	**1**	**1**	**1**	**3**

15 . tabulate TIMETRND LOGWAGE if PERSONID == 15

TIMETRND	LOGWAGE 2.11	2.12	2.2	2.23	2.24	2.37	2.54	To
4	**0**	**1**	**0**	**0**	**0**	**0**	**0**	
5	**0**	**0**	**0**	**0**	**1**	**0**	**0**	
6	**0**	**0**	**0**	**1**	**0**	**0**	**0**	
7	**1**	**0**	**0**	**0**	**0**	**0**	**0**	
8	**0**	**0**	**1**	**0**	**0**	**0**	**0**	
9	**0**	**0**	**0**	**0**	**0**	**1**	**0**	
10	**0**	**0**	**0**	**0**	**0**	**0**	**1**	
11	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
12	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
13	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
14	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
Total	**1**	**1**	**1**	**1**	**1**	**1**	**1**	

TIMETRND	LOGWAGE 2.66	2.89	3.21	3.22	Total
4	**0**	**0**	**0**	**0**	**1**
5	**0**	**0**	**0**	**0**	**1**
6	**0**	**0**	**0**	**0**	**1**
7	**0**	**0**	**0**	**0**	**1**
8	**0**	**0**	**0**	**0**	**1**
9	**0**	**0**	**0**	**0**	**1**
10	**0**	**0**	**0**	**0**	**1**
11	**1**	**0**	**0**	**0**	**1**
12	**0**	**1**	**0**	**0**	**1**
13	**0**	**0**	**1**	**0**	**1**
14	**0**	**0**	**0**	**1**	**1**
Total	**1**	**1**	**1**	**1**	**11**

16 . tabulate TIMETRND LOGWAGE if PERSONID == 155

TIMETRND	LOGWAGE 2.19	2.27	2.3	2.32	2.38	2.39	2.4	To
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
2	**0**	**0**	**1**	**0**	**0**	**0**	**0**	
3	**1**	**0**	**0**	**0**	**0**	**0**	**0**	
4	**0**	**0**	**0**	**1**	**0**	**0**	**0**	
5	**0**	**0**	**0**	**0**	**0**	**0**	**1**	
6	**0**	**1**	**0**	**0**	**0**	**0**	**0**	
7	**0**	**0**	**0**	**1**	**0**	**0**	**0**	
8	**0**	**0**	**0**	**0**	**0**	**0**	**1**	
9	**0**	**0**	**0**	**0**	**1**	**0**	**0**	
10	**0**	**0**	**0**	**0**	**0**	**1**	**0**	
11	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
12	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
13	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
14	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
Total	**1**	**1**	**1**	**2**	**1**	**1**	**2**	

TIMETRND	LOGWAGE 2.46	2.49	2.52	2.81	Total
0	**0**	**0**	**0**	**1**	**1**
2	**0**	**0**	**0**	**0**	**1**
3	**0**	**0**	**0**	**0**	**1**
4	**0**	**0**	**0**	**0**	**1**
5	**0**	**0**	**0**	**0**	**1**
6	**0**	**0**	**0**	**0**	**1**
7	**0**	**0**	**0**	**0**	**1**
8	**0**	**0**	**0**	**0**	**1**
9	**0**	**0**	**0**	**0**	**1**
10	**0**	**0**	**0**	**0**	**1**
11	**0**	**0**	**1**	**0**	**1**
12	**1**	**0**	**0**	**0**	**1**
13	**0**	**0**	**1**	**0**	**1**
14	**0**	**1**	**0**	**0**	**1**
Total	**1**	**1**	**2**	**1**	**14**

17 . tabulate TIMETRND LOGWAGE if PERSONID == 1555

TIMETRND	LOGWAGE 2.01	2.39	2.77	2.78	2.8	2.84	2.88	To
0	**1**	**0**	**0**	**0**	**0**	**0**	**0**	
1	**0**	**1**	**0**	**0**	**0**	**0**	**0**	
2	**0**	**0**	**0**	**0**	**1**	**0**	**0**	
3	**0**	**0**	**0**	**1**	**0**	**0**	**0**	
4	**0**	**0**	**0**	**0**	**0**	**1**	**0**	
5	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
6	**0**	**0**	**1**	**0**	**0**	**0**	**0**	
7	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
8	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
9	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
10	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
11	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
12	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
13	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
14	**0**	**0**	**0**	**0**	**0**	**0**	**1**	
Total	**1**	**1**	**1**	**1**	**1**	**1**	**1**	

TIMETRND	LOGWAGE 2.92	2.95	2.96	2.97	2.99	3.11	3.17	To
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
1	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
4	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
5	**0**	**1**	**0**	**0**	**0**	**0**	**0**	
6	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
7	**0**	**0**	**0**	**0**	**0**	**0**	**1**	
8	**0**	**0**	**0**	**1**	**0**	**0**	**0**	
9	**0**	**0**	**0**	**0**	**0**	**1**	**0**	
10	**1**	**0**	**0**	**0**	**0**	**0**	**0**	
11	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
12	**0**	**0**	**1**	**0**	**0**	**0**	**0**	
13	**0**	**0**	**0**	**0**	**1**	**0**	**0**	
14	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
Total	**1**	**1**	**1**	**1**	**1**	**1**	**1**	

TIMETRND	LOGWAGE 3.26	Total
0	**0**	**1**
1	**0**	**1**
2	**0**	**1**
3	**0**	**1**
4	**0**	**1**
5	**0**	**1**
6	**0**	**1**
7	**0**	**1**
8	**0**	**1**
9	**0**	**1**
10	**0**	**1**
11	**1**	**1**
12	**0**	**1**
13	**0**	**1**
14	**0**	**1**
Total	**1**	**15**

```
18 . tabulate TIMETRND LOGWAGE if PERSONID == 1333
```

TIMETRND	LOGWAGE 1.9	2.06	2.32	2.35	2.37	Total
4	**0**	**1**	**0**	**0**	**0**	**1**
5	**1**	**0**	**0**	**0**	**0**	**1**
6	**0**	**0**	**0**	**1**	**0**	**1**
7	**0**	**0**	**0**	**0**	**1**	**1**
11	**0**	**0**	**1**	**0**	**0**	**1**
Total	**1**	**1**	**1**	**1**	**1**	**5**

```
19 .
20 . *Exercise 2*
21 . *Random effect model
22 . xtreg LOGWAGE EDUC POTEXPER, re

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)				

```
23 .
24 . *Exercise 3*
25 . ******************Fixed effect model******************
26 . *Between Estimator
27 . 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

```
28 . *Within Estimator
29 . 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	.134956
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

```
30 . *As we take the first difference in Stata, the default setting is to take the difference for ba
   > ata-
31 . *for example when personid=1, Stata only take difference between t=5 and t=6, and omit other ti
   >  Therefore,
32 . *we use the command xtsset to rearrange the data
33 . xtset PERSONID t
       panel variable:  PERSONID (unbalanced)
        time variable:  t, 1 to 15
                delta:  1 unit

34 . gen logwage_D = D.LOGWAGE
   (2,178 missing values generated)

35 . gen educ_D = D.EDUC
   (2,178 missing values generated)

36 . gen potexper_D = D.POTEXPER
   (2,178 missing values generated)

37 . xtreg logwage_D educ_D potexper_D, fe

   Fixed-effects (within) regression               Number of obs      =     15,741
   Group variable: PERSONID                        Number of groups   =      2,095

   R-sq:                                           Obs per group:
        within  = 0.0008                                         min =          1
        between = 0.0010                                         avg =        7.5
        overall = 0.0010                                         max =         14

                                                   F(2,13644)         =       5.32
   corr(u_i, Xb)  = -0.0017                        Prob > F           =     0.0049

   ------------------------------------------------------------------------------
     logwage_D |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
   ------------+----------------------------------------------------------------
       educ_D |   .0218726   .0097279     2.25   0.025     .0028047    .0409406
    potexper_D |   .0114422   .0047082     2.43   0.015     .0022133     .020671
         _cons |   .0419012   .0064347     6.51   0.000     .0292883    .0545141
   ------------+----------------------------------------------------------------
       sigma_u |  .17529421
       sigma_e |  .39181966
           rho |  .16677309   (fraction of variance due to u_i)
   ------------------------------------------------------------------------------
   F test that all u_i=0: F(2094, 13644) = 0.49                 Prob > F = 1.0000

38 .
39 .
40 .
   end of do-file

41 .
```