

```

-----
name: <unnamed>
log: /Users/julietafigliolia/Downloads/MEAN/TP2/TP2.log
log type: text
opened on: 19 Sep 2017, 23:01:50

. use meap95_01.dta /*Abrir base de datos del Punto 1*/

. xtset distid year /*Indicar al STATA que es un panel*/
panel variable: distid (strongly balanced)
time variable: year, 1995 to 2001
delta: 1 unit

. describe

Contains data from meap95_01.dta
obs: 3,507
vars: 20 10 Jul 2013 18:43
size: 199,899

```

variable name	storage type	display format	value label
distid	long	%9.0g	district identifier
lunch	float	%9.0g	fraction eligible for
free lunch			
enroll	float	%9.0g	district enrollment
found	int	%9.0g	foundation grant, \$:
1995-2001			
exppp	int	%9.0g	exppp/cpi
math4	double	%9.0g	fraction satisfactory,
4th grade math			
year	int	%9.0g	1995-2001
y95	byte	%9.0g	=1 if year == 1995
y96	byte	%9.0g	=1 if year == 1996
y97	byte	%9.0g	=1 if year == 1997
y98	byte	%9.0g	=1 if year == 1998
y99	byte	%9.0g	=1 if year == 1999
y00	byte	%9.0g	=1 if year == 2000
y01	byte	%9.0g	=1 if year == 2001
lexppp	float	%9.0g	log(exppp)
lfound	float	%9.0g	log(found)
lenroll	float	%9.0g	log(enroll)
rexppp	float	%9.0g	exppp/cpi
avgrexp	float	%9.0g	(rexppp + rexppp_1 +
rexppp_2 + rexppp_3)/4			
lavgrexp	float	%9.0g	log(avgrexp)

Sorted by: distid year

. xtsum

Variable		Mean	Std. Dev.	Min	Max	
distid	overall	46673.32	23992.24	1010	83070	N
=	3507					
	between		24012.8	1010	83070	n
=	501					
	within		0	46673.32	46673.32	T
=	7					
lunch	overall	.288576	.1615772	.0087	.9126999	N
=	3507					
	between		.1588852	.0176714	.8787286	n
=	501					
	within		.0300978	.1048331	.5096474	T
=	7					
enroll	overall	3112.313	7965.489	151	175798	N
=	3507					
	between		7957.989	173.4286	165783.4	n
=	501					
	within		477.2993	-13323.12	13126.88	T
=	7					
found	overall	5711.039	873.4839	4200	11335	N
=	3507					
	between		779.0185	5080.286	10868.71	n
=	501					
	within		396.4124	4633.325	6630.754	T
=	7					
exppp	overall	6227.956	1042.251	4023	13982	N
=	3507					
	between		840.4583	4947.714	10872.57	n
=	501					
	within		617.3546	4379.099	10075.38	T
=	7					
math4	overall	.6939173	.151522	.09	1	N
=	3507					
	between		.1086408	.281	.9752857	n
=	501					
	within		.105718	.1844887	1.10106	T

=	7						
year	overall	1998	2.000285	1995	2001	N	
=	3507						
	between		0	1998	1998	n	
=	501						
	within		2.000285	1995	2001	T	
=	7						
y95	overall	.1428571	.349977	0	1	N	
=	3507						
	between		0	.1428571	.1428571	n	
=	501						
	within		.349977	0	1	T	
=	7						
y96	overall	.1428571	.349977	0	1	N	
=	3507						
	between		0	.1428571	.1428571	n	
=	501						
	within		.349977	0	1	T	
=	7						
y97	overall	.1428571	.349977	0	1	N	
=	3507						
	between		0	.1428571	.1428571	n	
=	501						
	within		.349977	0	1	T	
=	7						
y98	overall	.1428571	.349977	0	1	N	
=	3507						
	between		0	.1428571	.1428571	n	
=	501						
	within		.349977	0	1	T	
=	7						
y99	overall	.1428571	.349977	0	1	N	
=	3507						
	between		0	.1428571	.1428571	n	
=	501						
	within		.349977	0	1	T	
=	7						
y00	overall	.1428571	.349977	0	1	N	
=	3507						
	between		0	.1428571	.1428571	n	
=	501						
	within		.349977	0	1	T	
=	7						

y01	overall	.1428571	.349977	0	1	N
=	3507					
	between		0	.1428571	.1428571	n
=	501					
	within		.349977	0	1	T
=	7					
lexppp	overall	8.723806	.1589405	8.299783	9.545527	N
=	3507					
	between		.1245221	8.503574	9.292485	n
=	501					
	within		.0989083	8.431673	9.153075	T
=	7					
lfound	overall	8.639739	.1409581	8.34284	9.33565	N
=	3507					
	between		.1203652	8.526385	9.293328	n
=	501					
	within		.0735268	8.416898	8.812868	T
=	7					
lenroll	overall	7.530791	.9101196	5.01728	12.07709	N
=	3507					
	between		.9097704	5.152771	12.01662	n
=	501					
	within		.0452975	7.214687	7.957096	T
=	7					
rexppp	overall	6708.318	991.4087	4675.022	15191.49	N
=	3507					
	between		908.431	5332.129	11730.34	n
=	501					
	within		398.819	5010.103	10959.04	T
=	7					
avgrexp	overall	6385.509	1034.939	4079.67	11919.67	N
=	3507					
	between		932.5394	4953.491	11788.08	n
=	501					
	within		450.5082	4616.008	8539.059	T
=	7					
lavgrexp	overall	8.749678	.1531332	8.313771	9.385945	N
=	3507					
	between		.1340456	8.502857	9.374819	n
=	501					
	within		.0742449	8.477367	9.056496	T
=	7					

```
. reg math4 lavgrexp lunch lenroll /*Se prueba estimar el modelo por
POLS*/
```

Source	SS	df	MS	Number of obs	=
	3,507				
-----+-----				F(3, 3503)	=
	361.34				
Model	19.0227258	3	6.34090858	Prob > F	=
	0.0000				
Residual	61.4712321	3,503	.017548168	R-squared	=
	0.2363				
-----+-----				Adj R-squared	=
	0.2357				
Total	80.4939579	3,506	.022958916	Root MSE	
	.13247				

math4	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lavgrexp	.2828483	.015304	18.48	0.000	.
	2528427	.3128539			
lunch	-.4121171	.0143768	-28.67	0.000	-.4403049
	-.3839292				
lenroll	-.0095643	.0026314	-3.63	0.000	-.0147235
	-.0044051				
_cons	-1.58996	.1292287	-12.30	0.000	-1.843332
	-1.336589				

```
. *Ejercicio 1c: Se estima el modelo por efectos fijos sin ajustar la
varianza. Se guarda como est1
```

```
. xtreg math4 lavgrexp lunch lenroll, fe
```

```
Fixed-effects (within) regression      Number of obs      =
3,507
Group variable: distid                 Number of groups   =
501
```

```
R-sq:
within = 0.3233
7
between = 0.0037
7.0
overall = 0.0443
7
Obs per group:
min =
avg =
max =
```

478.30  
 corr(u\_i, Xb) = -0.6670  
 0.0000

F(3,3003) =  
 Prob > F =

---

	math4	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
+-----+						
	lavgrexp	.8061467	.0224553	35.90	0.000	.
7621174		.8501759				
	lunch	.0594154	.0549491	1.08	0.280	-. .
0483264		.1671572				
	lenroll	.0429253	.0354615	1.21	0.226	-. .
026606		.1124566				
	_cons	-6.700014	.3503658	-19.12	0.000	-7.386996
-6.013033						
+-----+						
	sigma_u	.16107528				
	sigma_e	.09396503				
	rho	.74609607	(fraction of variance due to u_i)			

---

F test that all u\_i=0: F(500, 3003) = 7.92  
 = 0.0000

Prob > F

```
. eststo est1 /*Se guarda modelo como est1*/

. *Ejercicio 1d: Se estima el modelo por efectos fijos y se ajustan la
varianza con errores robustos agrupados por distritos. Se guarda como est2
> or distritos. Se guarda como est2
. xtreg math4 lavgrexp lunch lenroll, fe vce(cluster distid)
```

Fixed-effects (within) regression  
 3,507  
 Group variable: distid  
 501

Number of obs =  
 Number of groups =

R-sq:  
 within = 0.3233  
 7  
 between = 0.0037  
 7.0  
 overall = 0.0443  
 7

Obs per group:  
 min =  
 avg =  
 max =

F(3,500) =

294.29  
 corr(u\_i, Xb) = -0.6670 Prob > F =  
 0.0000

(Std. Err. adjusted for 501 clusters in  
 distid)

	math4	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
lavgrexp		.8061467	.0276569	29.15	0.000	.
7518086	.8604848					
lunch		.0594154	.0722056	0.82	0.411	-. 0824483
0824483	.2012791					
lenroll		.0429253	.0496873	0.86	0.388	-. 0546963
0546963	.1405469					
_cons		-6.700014	.4434828	-15.11	0.000	-7.571334 -5.828695
sigma_u		.16107528				
sigma_e		.09396503				
rho		.74609607	(fraction of variance due to u_i)			

. eststo est2

. \*Ejercicio 1e: fe por STATA, se realiza la transformacion within de  
 manera manual

. bysort distid: egen math4\_m=mean(math4)

. bysort distid: egen lunch\_m=mean(lunch)

. bysort distid: egen lavgrexp\_m=mean(lavgrexp)

. bysort distid: egen lenroll\_m=mean(lenroll)

. \*El comando bysort [var] divide las variables en grupos según la  
 variable var,

. \*en este caso, distid las agrupa por individuo para poder sacar la  
 media temporal.

. \*El comando egen es una extensión del comando gen, que permite  
 comandos como "mean"

. \*que calcula el promedio.

. gen math4fe=math4-math4\_m

```

. gen lunchfe=lunch-lunch_m
. gen lavgrexpfe=lavgrexp-lavgrexp_m
. gen lenrollfe=lenroll-lenroll_m

. *Se genera las variables restándoles su media temporal
. *Se estima modelo transformado manualmente. Se guarda como est3
. reg math4fe lavgrexpfe lunchfe lenrollfe

```

```

Source |      SS          df           MS       Number of obs   =
-----+-----
3,507
-----+-----
557.93
Model |   12.6692921         3   4.22309738   Prob > F           =
0.0000
Residual |   26.5147662       3,503   .00756916   R-squared           =
0.3233
-----+-----
0.3227
Total |   39.1840583       3,506   .011176286   Adj R-squared       =
=      .087
Root MSE

```

```

-----
math4fe |      Coef.   Std. Err.      t    P>|t|     [95% Conf.
Interval]
-----+-----
lavgrexpfe |   .8061467   .020791   38.77   0.000   .
7653829   .8469104
lunchfe |   .0594154   .0508767    1.17   0.243   -.
0403355   .1591663
lenrollfe |   .0429253   .0328333    1.31   0.191   -.
021449   .1072997
_cons |  -1.71e-09   .0014691   -0.00   1.000   -.
0028804   .0028804

```

```

. eststo est3
. esttab est1 est3

```

```

-----
(1)          (2)
math4        math4fe
-----
lavgrexp     0.806***
              (35.90)

```



lunch	0.0594 (1.08)	
lenroll	0.0429 (1.21)	
lavgrexpfe		0.806*** (38.77)
lunchfe		0.0594 (1.17)
lenrollfe		0.0429 (1.31)
_cons	-6.700*** (-19.12)	-1.71e-09 (-0.00)
-----		
N	3507	3507
-----		

t statistics in parentheses

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

. \*Se compara el modelo 1 automatico con efectos fijos vs el modelo 3 con transformacion within manual. Se corro > bora que los coeficientes son identicos.  
. \*Ejercicio 1d: Se estima el modelo por efectos fijos y se ajusta la varianza con errores robustos agrupados po > r distrito escolar. Se guarda como est4  
. xtreg math4 lavgrexp lunch lenroll, fe vce(cluster distid)

Fixed-effects (within) regression	Number of obs	=
3,507		
Group variable: distid	Number of groups	=
501		
R-sq:	Obs per group:	
within = 0.3233	min =	
7	avg =	
between = 0.0037	max =	
7.0		
overall = 0.0443		
7		
	F(3,500)	=
294.29		
corr(u_i, Xb) = -0.6670	Prob > F	=
0.0000		

(Std. Err. adjusted for 501 clusters in  
 distid)

	math4	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
lavgrexp		.8061467	.0276569	29.15	0.000	.
7518086		.8604848				
lunch		.0594154	.0722056	0.82	0.411	-.0824483
0824483		.2012791				
lenroll		.0429253	.0496873	0.86	0.388	-.0546963
0546963		.1405469				
_cons		-6.700014	.4434828	-15.11	0.000	-7.571334
-5.828695						
sigma_u		.16107528				
sigma_e		.09396503				
rho		.74609607	(fraction of variance due to u_i)			

. eststo est4

. \*Ejercicio 1f: Se estima el modelo por efectos fijos y se agregan dummies temporales para cada año. Se testea > la significatividad de posibles efectos temporales. Se guarda como est5

. xi: xtreg math4 lavgrexp lunch lenroll i.year, fe  
 i.year                    \_Iyear\_1995-2001   (naturally coded; \_Iyear\_1995 omitted)

Fixed-effects (within) regression                   Number of obs        =  
 3,507  
 Group variable: distid                               Number of groups    =  
 501

R-sq:    Obs per group:  
       within = 0.4713    min =  
 7    avg =  
 7.0        between = 0.0219   max =  
 7    overall = 0.2049

296.84    F(9,2997)    =

corr(u\_i, Xb) = -0.1787 Prob > F =  
0.0000

---

math4	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lavgrep	.3770929	.0477736	7.89	0.000	.
2834205	.4707653				
lunch	-.0419467	.0494759	-0.85	0.397	-.1389568
1389568	.0550634				
lenroll	.0020568	.034024	0.06	0.952	-.0646561
0646561	.0687696				
_Iyear_1996	-.0155968	.0058955	-2.65	0.008	-.0271565
-.0040372					
_Iyear_1997	-.0589732	.0074515	-7.91	0.000	-.0735838
-.0443627					
_Iyear_1998	.0781686	.0088193	8.86	0.000	.
0608761	.095461				
_Iyear_1999	.0642748	.0093591	6.87	0.000	.
0459239	.0826257				
_Iyear_2000	.0895688	.0101226	8.85	0.000	.
0697208	.1094168				
_Iyear_2001	.0630091	.0109936	5.73	0.000	.
0414532	.084565				
_cons	-2.640402	.5584002	-4.73	0.000	-3.735288
-1.545515					

---

sigma_u	.1130256				
sigma_e	.08314135				
rho	.64888558	(fraction of variance due to u_i)			

---

F test that all u\_i=0: F(500, 2997) = 7.68 Prob > F = 0.0000

. eststo est5

. \*Se testea significatividad conjunta de dummies temporales  
. test \_Iyear\_1996 \_Iyear\_1997 \_Iyear\_1998 \_Iyear\_1999 \_Iyear\_2000  
\_Iyear\_2001

- ( 1) \_Iyear\_1996 = 0
- ( 2) \_Iyear\_1997 = 0
- ( 3) \_Iyear\_1998 = 0
- ( 4) \_Iyear\_1999 = 0
- ( 5) \_Iyear\_2000 = 0

( 6) \_Iyear\_2001 = 0

F( 6, 2997) = 139.80  
Prob > F = 0.0000

. \*ANEXO EJERCICIO 1: Queremos analizar la significatividad de lunch y lenroll. Mas detalles en el informe.  
. tabulate year, generate(yr) /\*Se genera dummies temporales de nuevo por facilidad de números\*/

1995-2001	Freq.	Percent	Cum.
1995	501	14.29	14.29
1996	501	14.29	28.57
1997	501	14.29	42.86
1998	501	14.29	57.14
1999	501	14.29	71.43
2000	501	14.29	85.71
2001	501	14.29	100.00
Total	3,507	100.00	

. forvalues i=1/7 {  
2. generate lunch`i'=lunch\*yr`i'  
3. }

. forvalues i=1/7 {  
2. generate lenroll`i'=lunch\*yr`i'  
3. }

. \*Los códigos anteriores crean las variables que interactúan con las dummies

. xtreg math4 lavgrexp lunch1 lunch2 lunch3 lunch4 lunch5 lunch6 lunch7 lenroll, fe

Fixed-effects (within) regression  
3,507  
Group variable: distid  
501

Number of obs =  
Number of groups =

R-sq:  
within = 0.4359  
7  
between = 0.0374  
7.0  
overall = 0.0910  
7

Obs per group:  
min =  
avg =  
max =

F(9,2997) =

257.34  
 corr(u\_i, Xb) = -0.7570 Prob > F =  
 0.0000

```
-----
```

	math4	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----						
+	lavgrexp	.5964657	.040578	14.70	0.000	.
5169022	.6760292					
	lunch1	-.0882346	.0577039	-1.53	0.126	-.2013779
2013779	.0249087					
	lunch2	-.1764215	.0563599	-3.13	0.002	-.2869295
-.0659134						
	lunch3	-.3273264	.0549269	-5.96	0.000	-.4350247
-.2196281						
	lunch4	.0334576	.0533789	0.63	0.531	-.0712054
0712054	.1381205					
	lunch5	-.0121761	.0525578	-0.23	0.817	-.115229
115229	.0908768					
	lunch6	.0430616	.052338	0.82	0.411	-.0595604
0595604	.1456835					
	lunch7	-.0332522	.0504679	-0.66	0.510	-.1322073
1322073	.065703					
	lenroll	.1406664	.0334316	4.21	0.000	.0751152
0751152	.2062175					
	_cons	-5.561854	.4362718	-12.75	0.000	-6.417277
-4.706432						
-----						
+	sigma_u	.18484826				
	sigma_e	.08587841				
	rho	.82247485	(fraction of variance due to u_i)			

F test that all u\_i=0: F(500, 2997) = 7.49 Prob > F = 0.0000

```
. xtreg math4 lavgrexp lunch lenroll1 lenroll2 lenroll3 lenroll4 lenroll5 lenroll6, fe
```

Fixed-effects (within) regression Number of obs = 3,507  
 Group variable: distid Number of groups = 501  
 R-sq: within = 0.4326 Obs per group: min =

7  
 7.0 between = 0.0231 avg =  
 overall = 0.1471 max =  
 7

285.70 F(8,2998) =  
 corr(u\_i, Xb) = -0.3833 Prob > F =  
 0.0000

---

	math4	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lavgrexp		.5961643	.0406908	14.65	0.000	.
5163797		.675949				
lunch		-.0389445	.0505901	-0.77	0.441	-.1381393
1381393		.0602503				
lenroll1		-.0458936	.0296605	-1.55	0.122	-.1040506
1040506		.0122634				
lenroll2		-.1311817	.0247358	-5.30	0.000	-.0826809
-.0826809						
lenroll3		-.2780862	.0204849	-13.58	0.000	-.2379202
-.2379202						
lenroll4		.0802784	.0177117	4.53	0.000	.0455501
0455501		.1150068				
lenroll5		.0267805	.0167134	1.60	0.109	.0059903
0059903		.0595514				
lenroll6		.078686	.0161088	4.88	0.000	.0471005
0471005		.1102714				
_cons		-4.500622	.3569664	-12.61	0.000	-3.800698
-3.800698						
sigma_u		.12468411				
sigma_e		.08611732				
rho		.67702773	(fraction of variance due to u_i)			

---

F test that all u\_i=0: F(500, 2998) = 7.41 Prob > F = 0.0000

. xtreg math4 lavgrexp lunch lenroll1 lenroll2 lenroll3 lenroll4  
 lenroll5 lenroll6 yr1 yr2 yr3 yr4 yr5 yr6, fe

Fixed-effects (within) regression Number of obs =  
 3,507

Group variable: distid  
501

Number of groups =

R-sq:

within = 0.4727  
7  
between = 0.0382  
7.0  
overall = 0.2312  
7

Obs per group:  
min =  
avg =  
max =

191.58  
corr(u\_i, Xb) = -0.1183  
0.0000

F(14,2992) =  
Prob > F =

---

	math4	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lavgrexp		.3371553	.0485657	6.94	0.000	.
2419297		.4323809				
lunch		-.0360258	.0518738	-0.69	0.487	-.1377377
1377377		.0656861				
lenroll1		-.0382496	.0354289	-1.08	0.280	-.1077171
1077171		.0312179				
lenroll2		-.0689508	.0342289	-2.01	0.044	-.1360652
-.0018363						
lenroll3		-.0611222	.0331598	-1.84	0.065	-.1261404
1261404		.0038961				
lenroll4		.0013974	.0322913	0.04	0.965	-.0619179
0619179		.0647128				
lenroll5		-.0145275	.0316026	-0.46	0.646	-.0764926
0764926		.0474376				
lenroll6		-.0143946	.0312426	-0.46	0.645	-.0756536
0756536		.0468645				
yr1		-.0601821	.0126652	-4.75	0.000	-.0850154
-.0353488						
yr2		-.0651941	.0117913	-5.53	0.000	-.088314
-.0420742						
yr3		-.1085446	.0111605	-9.73	0.000	-.1304277
-.0866615						
yr4		.0125268	.0109784	1.14	0.254	-.0089992
0089992		.0340527				
yr5		.0039702	.010842	0.37	0.714	-.0172883
0172883		.0252287				
yr6		.0300227	.0107664	2.79	0.005	.0089124
0089124		.051133				

```

      _cons |   -2.211047   .4278687   -5.17   0.000   -3.049994
-1.372101
-----

```

```

+-----+
      sigma_u |   .10929186
      sigma_e |   .08310054
      rho     |   .63365784   (fraction of variance due to u_i)
-----

```

```

-----
F test that all u_i=0: F(500, 2992) = 7.65           Prob > F
= 0.0000

```

```

. xtreg math4 lavgrexp lunch1 lunch2 lunch3 lunch4 lunch5 lunch6
lunch7 lenroll yr1 yr2 yr3 yr4 yr5 yr6, fe

```

```

Fixed-effects (within) regression           Number of obs   =
3,507
Group variable: distid                     Number of groups =
501

```

```

R-sq:                                       Obs per group:
      within = 0.4728                        min =
7                                             avg =
7.0                                           max =
7

```

```

178.80                                     F(15,2991)      =
corr(u_i, Xb) = -0.1855                   Prob > F         =
0.0000

```

```

-----
-----
      math4 |      Coef.   Std. Err.      t    P>|t|     [95% Conf.
Interval]
-----+-----

```

```

      lavgrexp |      .34523   .0502163     6.87   0.000   .
246768   .4436919
      lunch1 |     -.0774038 .0586626    -1.32   0.187   -.
192427   .0376194
      lunch2 |     -.1075923 .0576409    -1.87   0.062   -.
2206121   .0054275
      lunch3 |     -.0994037 .0563805    -1.76   0.078   -.
2099522   .0111448
      lunch4 |     -.0359068 .0552951    -0.65   0.516   -.
1443271   .0725136
      lunch5 |     -.0506297 .053772     -0.94   0.346   -.

```





corr(u\_i, Xb) = -0.6670 Prob > F =  
0.0000

---

	math4	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----						
lavgrexp		.8061467	.0224553	35.90	0.000	.
7621174		.8501759				
lunch		.0594154	.0549491	1.08	0.280	-.0483264
0483264		.1671572				
lenroll		.0429253	.0354615	1.21	0.226	-.026606
026606		.1124566				
_cons		-6.700014	.3503658	-19.12	0.000	-7.386996
-6.013033						
-----						
sigma_u		.16107528				
sigma_e		.09396503				
rho		.74609607	(fraction of variance due to u_i)			

---

F test that all u\_i=0: F(500, 3003) = 7.92 Prob > F = 0.0000

. eststo FE1

. xtreg math4 lavgrexp, fe

Fixed-effects (within) regression Number of obs =  
3,507  
Group variable: distid Number of groups =  
501

R-sq: Obs per group:  
within = 0.3228 min =  
7 between = 0.0041 avg =  
7.0 overall = 0.0540 max =  
7

1432.11 F(1, 3005) =  
corr(u\_i, Xb) = -0.5976 Prob > F =  
0.0000

---

	math4	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lavgrexp		.8089474	.0213763	37.84	0.000	.
lunch		.850861				
_cons		-6.384112	.1870423	-34.13	0.000	-6.750856
						-6.017368
sigma_u		.14848557				
sigma_e		.09397333				
rho		.71401273	(fraction of variance due to u_i)			

F test that all u\_i=0: F(500, 3005) = 11.24 Prob > F = 0.0000

- . eststo FE2
- . esttab FE1 FE2, ar2

	(1) math4	(2) math4
lavgrexp	0.806*** (35.90)	0.809*** (37.84)
lunch	0.0594 (1.08)	
lenroll	0.0429 (1.21)	
_cons	-6.700*** (-19.12)	-6.384*** (-34.13)
N	3507	3507
adj. R-sq	0.210	0.210

t statistics in parentheses  
\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

- . \*Conclusiones en el informe.
- . \*FIN DEL ANEXO AL EJERCICIO 1
- . \*Fin del Punto 1
- .
- . \*Limpiar variables

```

. clear all

. *Inicio del Punto 2
. *Abrir base de datos del Punto2
. use nls_panel2.dta

```

```

. describe

```

Contains data from nls\_panel2.dta

```

obs:      1,432
vars:      26
size:     138,904

```

28 Sep 2016 09:44

---

variable name	storage type	display format	value label	variable label
id	int	%8.0g		group(id)
year	byte	%8.0g		interview year
lwage	double	%10.0g		ln(wage/GNP deflator)
hours	byte	%8.0g		usual hours worked
age	byte	%8.0g		age in current year
educ	byte	%8.0g		current grade completed
collgrad	byte	%8.0g		1 if college graduate
msp	byte	%8.0g		1 if married, spouse
present				
nev_mar	byte	%8.0g		1 if never yet married
not_smsa	byte	%8.0g		1 if not SMSA
c_city	byte	%8.0g		1 if central city
south	byte	%8.0g		1 if south
black	byte	%8.0g		1 if black
union	byte	%8.0g		1 if union
exper	double	%10.0g		total work experience
exper2	double	%10.0g		exper^2
tenure	double	%10.0g		job tenure, in years
tenure2	double	%10.0g		tenure^2
d lwage	double	%10.0g		= (lwage - lwage[_n-1])
d exper	double	%10.0g		= (exper - exper[_n-1])
d tenure	double	%10.0g		= (tenure -
tenure[_n-1])				
dsouth	byte	%8.0g		= (south - south[_n-1])
dunion	byte	%8.0g		= (union - union[_n-1])
dexper2	double	%10.0g		= (exper2 -
exper2[_n-1])				
dtenure2	double	%10.0g		= (tenure2 -
tenure2[_n-1])				
d88	byte	%8.0g		1 if year 1988

---

Sorted by:

```
. *Indicar al STATA que es un panel
. xtset id year
      panel variable:  id (strongly balanced)
      time variable:  year, 87 to 88
                  delta:  1 unit
```

```
. xtsum
```

Variable		Mean	Std. Dev.	Min	Max	
Observations						
-----+-----						
id	overall	358.5	206.7634	1	716	N
=	1432					
	between		206.8357	1	716	n
=	716					
	within		0	358.5	358.5	T
=	2					
year	overall	87.5	.5001747	87	88	N
=	1432					
	between		0	87.5	87.5	n
=	716					
	within		.5001747	87	88	T
=	2					
lwage	overall	1.989213	.4827518	.5440826	4.005049	N
=	1432					
	between		.4657895	.5629528	3.804284	n
=	716					
	within		.1274404	.7529273	3.225499	T
=	2					
hours	overall	38.55726	7.666681	2	70	N
=	1432					
	between		7.053259	7.5	60	n
=	716					
	within		3.010696	19.55726	57.55726	T
=	2					
age	overall	38.50279	3.137429	33	46	N
=	1432					
	between		3.052683	33.5	45.5	n
=	716					
	within		.7287641	37.50279	39.50279	T
=	2					
educ	overall	13.02235	2.444533	4	18	N

=	1432							
	between		2.445387		4		18	n
=	716							
	within		0	13.02235		13.02235		T
=	2							
collgrad	overall		.2304469	.421266	0		1	N
=	1432							
	between		.4214133		0		1	n
=	716							
	within		0	.2304469		.2304469		T
=	2							
msp	overall		.6634078	.4727091	0		1	N
=	1432							
	between		.4631623		0		1	n
=	716							
	within		.0953129	.1634078		1.163408		T
=	2							
nev_mar	overall		.1222067	.3276388	0		1	N
=	1432							
	between		.3261492		0		1	n
=	716							
	within		.0323762	-.3777933		.6222067		T
=	2							
not_smsa	overall		.3009777	.4588433	0		1	N
=	1432							
	between		.4570953		0		1	n
=	716							
	within		.0417975	-.1990223		.8009777		T
=	2							
c_city	overall		.2925978	.4551142	0		1	N
=	1432							
	between		.4486978		0		1	n
=	716							
	within		.0770708	-.2074022		.7925978		T
=	2							
south	overall		.4273743	.4948702	0		1	N
=	1432							
	between		.4936286		0		1	n
=	716							
	within		.0373848	-.0726257		.9273743		T
=	2							
black	overall		.2821229	.4501901	0		1	N
=	1432							

=	716	between		.4503475	0	1		n
=	2	within		0	.2821229	.2821229		T
union	1432	overall		.2604749	.4390471	0	1	N
=	716	between		.4125165	0	1		n
=	2	within		.150703	-.2395251	.7604749		T
exper	1432	overall		14.50569	3.287519	2.544872	27.1923	N
=	716	between		3.221085	3.227564	26.51922		n
=	2	within		.6630555	13.73646	15.27492		T
exper2	1432	overall		221.2153	95.34746	6.476373	739.4214	N
=	716	between		93.29161	10.88324	703.7225		n
=	2	within		19.84678	185.5164	256.9142		T
tenure	1432	overall		8.531948	5.6371	0	24.75	N
=	716	between		5.565967	0	24.04167		n
=	2	within		.9047397	1.240283	15.82361		T
tenure2	1432	overall		104.5488	113.7672	0	612.5625	N
=	716	between		112.7748	0	578.5035		n
=	2	within		15.28725	-1.787951	210.8856		T
dlwage	716	overall		.0265633	.2535805	-2.472572	1.833063	N
=	716	between		.2535805	-2.472572	1.833063		n
=	1	within		0	.0265633	.0265633		T
dexper	716	overall		1.303905	.2392759	0	1.538462	N
=		between		.2392759	0	1.538462		n

=	716						
=	1	within		0	1.303905	1.303905	T
dtenure	overall		1.070182	1.45932	-14.58333	2.416667	N
=	716	between		1.45932	-14.58333	2.416667	n
=	716	within		0	1.070182	1.070182	T
=	1						
dsouth	overall		-.0027933	.0747435	-1	1	N
=	716	between		.0747435	-1	1	n
=	716	within		0	-.0027933	-.0027933	T
=	1						
dunion	overall		.0013966	.3015081	-1	1	N
=	716	between		.3015081	-1	1	n
=	716	within		0	.0013966	.0013966	T
=	1						
dexper2	overall		37.99855	11.43548	0	71.39789	N
=	716	between		11.43548	0	71.39789	n
=	716	within		0	37.99855	37.99855	T
=	1						
dtenure2	overall		21.32165	21.91359	-212.6736	68.11804	N
=	716	between		21.91359	-212.6736	68.11804	n
=	716	within		0	21.32165	21.32165	T
=	1						
d88	overall		.5	.5001747	0	1	N
=	1432	between		0	.5	.5	n
=	716	within		.5001747	0	1	T
=	2						

. \*Ejercicio 2a: estimar modelo por efectos fijos y sin ajustar la  
varianza  
. xtreg lwage exper exper2 south union, fe



Fixed-effects (within) regression  
 1,432  
 Group variable: id  
 716

Number of obs =

Number of groups =

R-sq:  
 within = 0.0345  
 2  
 between = 0.1279  
 2.0  
 overall = 0.1214  
 2

Obs per group:  
 min =  
 avg =  
 max =

6.36  
 corr(u\_i, Xb) = -0.0415  
 0.0000

F(4,712) =

Prob > F =

---

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
exper	.0574578	.0329942	1.74	0.082	-.0073197 .1222352
exper2	-.0012344	.0011023	-1.12	0.263	0.0033985 .0009297
south	-.3260524	.1257964	-2.59	0.010	-.0790762 -.5730287
union	.0821949	.0312071	2.63	0.009	0.0209259 .1434639
_cons	1.546757	.2522028	6.13	0.000	2.041907 1.051607
sigma_u	.4353571				
sigma_e	.17752691				
rho	.85742785	(fraction of variance due to u_i)			

---

F test that all u\_i=0: F(715, 712) = 11.68 Prob > F = 0.0000

. \*Se guarda modelo como est1  
 . eststo est1

. \*Ejercicio 2b: estimar modelo por efectos fijos y se ajusta la varianza  
 . xtreg lwage exper exper2 south union, fe vce(cluster id)

```

Fixed-effects (within) regression      Number of obs      =
1,432
Group variable: id                    Number of groups   =
716

R-sq:                                  Obs per group:
    within = 0.0345                      min =
    between = 0.1279                      avg =
    overall = 0.1214                      max =

                                          F(4,715)          =
corr(u_i, Xb) = -0.0415                 Prob > F           =
0.0003

```

(Std. Err. adjusted for 716

clusters in id)

	l wage	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
0068942	exper	.0574578	.0327777	1.75	0.080	-.1218098
0033863	exper2	-.0012344	.0010961	-1.13	0.260	-.0009175
8159649	south	-.3260524	.2495368	-1.31	0.192	-.16386
0101932	union	.0821949	.036674	2.24	0.025	.1541965
2.074526	_cons	1.546757	.2688188	5.75	0.000	1.018989
	sigma_u	.4353571				
	sigma_e	.17752691				
	rho	.85742785	(fraction of variance due to u_i)			

- . \*Se guarda modelo como est2
- . eststo est2
- . \*Se comparan las dos regresiones anteriores

```
. esttab est1 est2
```

	(1) lwage	(2) lwage
exper	0.0575 (1.74)	0.0575 (1.75)
exper2	-0.00123 (-1.12)	-0.00123 (-1.13)
south	-0.326** (-2.59)	-0.326 (-1.31)
union	0.0822** (2.63)	0.0822* (2.24)
_cons	1.547*** (6.13)	1.547*** (5.75)
N	1432	1432

t statistics in parentheses

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

```
. test
```

- ( 1) exper = 0
- ( 2) exper2 = 0
- ( 3) south = 0
- ( 4) union = 0

F( 4, 715) = 5.31  
Prob > F = 0.0003

. \*Ejercicio 2c: al primer modelo se le incorpora una variable dicotomica que toma valor 1 para el año 1988

```
. xtreg lwage exper exper2 south union d88, fe
```

Fixed-effects (within) regression

1,432

Group variable: id

716

R-sq:

within = 0.0374

2

between = 0.1360

Number of obs =

Number of groups =

Obs per group:

min =

avg =

2.0 overall = 0.1286 max =  
 2  
 F(5,711) =  
 5.53  
 corr(u\_i, Xb) = -0.3145 Prob > F =  
 0.0001

---

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
l wage					
exper	.1186907	.0529757	2.24	0.025	.
exper2	-.0013651	.0011049	-1.24	0.217	-.0008042
south	-.3453017	.1263664	-2.73	0.006	-.5933977
union	.0814303	.0311856	2.61	0.009	.
d88	-.0774055	.0524206	-1.48	0.140	-.0255121
_cons	.7345634	.605011	1.21	0.225	-.4532584
sigma_u	.45626615				
sigma_e	.17737993				
rho	.86870589	(fraction of variance due to u_i)			

---

F test that all u\_i=0: F(715, 711) = 11.69 Prob > F = 0.0000

. \*Se guarda modelo como est3  
 . eststo est3

. \*Ejercicio 2c: se testea la significatividad de la variable dicotomica incorporada  
 . test d88

( 1) d88 = 0

F( 1, 711) = 2.18  
 Prob > F = 0.1402

. \*Ejercicio 2d: se evalua la inclusion de más variables al modelo

```
. xtreg lwage exper exper2 south union, fe
```

```
Fixed-effects (within) regression      Number of obs      =
1,432
Group variable: id                    Number of groups   =
716

R-sq:                                  Obs per group:
    within = 0.0345                      min =
    between = 0.1279                      avg =
    overall = 0.1214                      max =

6.36                                     F(4,712)           =
corr(u_i, Xb) = -0.0415                  Prob > F           =
0.0000
```

---

	lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
+	exper	.0574578	.0329942	1.74	0.082	-.0073197 .1222352
	exper2	-.0012344	.0011023	-1.12	0.263	-.0033985 .0009297
	south	-.3260524	.1257964	-2.59	0.010	-.0790762 -.5730287
	union	.0821949	.0312071	2.63	0.009	.0209259 .1434639
	_cons	1.546757	.2522028	6.13	0.000	2.041907 1.051607
+	sigma_u	.4353571				
	sigma_e	.17752691				
	rho	.85742785	(fraction of variance due to u_i)			

---

```
F test that all u_i=0: F(715, 712) = 11.68      Prob > F
= 0.0000
```

```
. *Se guarda modelo como est4
```

```
. eststo est4
```

```
. *Nuestra propuesta de modelo con efectos fijos que incluye variables
```

```
hours y age
. xtreg lwage exper south union hours age, fe
```

```
Fixed-effects (within) regression      Number of obs      =
1,432
Group variable: id                    Number of groups   =
716

R-sq:                                  Obs per group:
    within = 0.1300                      min =
    between = 0.0893                      avg =
    overall = 0.0915                      max =

21.25
corr(u_i, Xb) = -0.1198                 F(5,711)           =
0.0000                                  Prob > F           =
```

---

	lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
+	exper	.0403433	.0184899	2.18	0.029	.
0040419		.0766448				
	south	-.2199949	.1207946	-1.82	0.069	-.4571517
4571517		.017162				
	union	.0800571	.0296407	2.70	0.007	.
0218633		.1382509				
	hours	-.0131335	.0014958	-8.78	0.000	-.0160701
-.0101968						
	age	-.0152571	.016867	-0.90	0.366	-.0483721
0483721		.0178579				
	_cons	2.571005	.4184081	6.14	0.000	1.749542
3.392468						
+	sigma_u	.44790836				
	sigma_e	.16863735				
	rho	.87584695	(fraction of variance due to u_i)			

---

```
F test that all u_i=0: F(715, 711) = 13.09      Prob > F
= 0.0000
```

```
. *Se guarda modelo como est5
```

```
. eststo est5
```

```
. *Se comparan los dos modelos anteriores est4 y est5. Se analiza en el informe
```

```
. esttab est4 est5
```

---

	(1)	(2)
	lwage	lwage
exper	0.0575 (1.74)	0.0403* (2.18)
exper2	-0.00123 (-1.12)	
south	-0.326** (-2.59)	-0.220 (-1.82)
union	0.0822** (2.63)	0.0801** (2.70)
hours		-0.0131*** (-8.78)
age		-0.0153 (-0.90)
_cons	1.547*** (6.13)	2.571*** (6.14)

---

N

1432

1432

t statistics in parentheses

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

```
. *Fin del Punto 2
```

```
. exit, clear
```

```
end of do-file
```

```
. exit
```