

BEERTAX = 0 by Year and State	Year						
	1982	1983	1984	1985	1986	1987	1988
	Mandatory Jail Sentence	Mandatory Jail Sentence	Mandatory Jail Sentence	Mandatory Jail Sentence	Mandatory Jail Sentence	Mandatory Jail Sentence	Mandatory Jail Sentence
	Sum	Sum	Sum	Sum	Sum	Sum	Sum
State ID (FIPS) Code							
AL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CA	0.00	0.00	0.00	0.00	0.00	0.00	
CO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CT	0.00	0.00	0.00	.	.	.	.
DE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ID	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KY	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MD	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MI	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NV	0.00	.	.	.	.	.	.
NH	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NY	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OH	0.00	.	.	.	.	0.00	0.00
OK	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OR	0.00	0.00	.	.	.	.	.
PA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RI	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SC	0.00	.	.	.	.	.	.
SD	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TX	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UT	0.00	.	.	.	.	.	.
VT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WI	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DRY=0 by Year and State	Year						
	1982	1983	1984	1985	1986	1987	1988
	% Residing in Dry Counties	% Residing in Dry Counties	% Residing in Dry Counties	% Residing in Dry Counties	% Residing in Dry Counties	% Residing in Dry Counties	% Residing in Dry Counties
	Sum	Sum	Sum	Sum	Sum	Sum	Sum
State ID (FIPS) Code							
AZ	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ID	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MI	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NV	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OK	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SD	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TN	.	.	.	.	0.00	0.00	0.00
VA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WV	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WY	0.00	0.00	0.00	0.00	0.00	0.00	0.00



```

. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c_000000.tmp"

. xtreg mrall spircons unrte ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild c
> ralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mra1dall pop pop1517_rate pop1820_rate
> rate gspch i.year, fe vce(cluster state)

Fixed-effects (within) regression              Number of obs   =       335
Group variable: state                        Number of groups  =       48

R-sq:                                         Obs per group:
    within = 0.8152                          min =           6
    between = 0.2834                        avg =          7.0
    overall = 0.3222                        max =           7

corr(u_i, Xb) = -0.4307                      F(29,47)         =
                                                Prob > F         =

```

Step 1 Model (R1): b (Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000352	.0000111	3.19	0.003	.000013	.0000575
unrate	-1.81e-06	8.88e-07	-2.04	0.047	-3.60e-06	-2.68e-08
ln_perinc	.0000943	.0000301	3.13	0.003	.0000337	.0001549
beertax	-.0000139	9.75e-06	-1.42	0.161	-.0000335	5.73e-06
ln_sobapt	.0000272	.0000311	0.87	0.386	-.0000353	.0000897
ln_mormon	-.0000194	.0000262	-0.74	0.463	-.0000721	.0000333
mlda	9.45e-07	1.07e-06	0.88	0.381	-1.21e-06	3.10e-06
dry	1.11e-06	4.53e-07	2.45	0.018	1.99e-07	2.02e-06
yngdrv	.0000634	.0000531	1.19	0.238	-.0000434	.0001702
vmiles	1.40e-09	3.49e-10	4.00	0.000	6.94e-10	2.10e-09
jaild	-1.39e-06	2.07e-06	-0.67	0.504	-5.55e-06	2.77e-06
comserd	8.21e-06	4.16e-06	1.97	0.054	-1.62e-07	.0000166
mralln	1.354405	.1723115	7.86	0.000	1.007759	1.701051
mra1517	.0523947	.0149943	3.49	0.001	.02223	.0825594
mra1517n	-.0777077	.031065	-2.50	0.016	-.1402023	-.015213
mra1820	.0702242	.0093801	7.49	0.000	.0513539	.0890946
mra1820n	-.0543998	.0281293	-1.93	0.059	-.1109887	.0021891
mra2124	.0798483	.0121784	6.56	0.000	.0553486	.104348
mra2124n	-.1151565	.0357295	-3.22	0.002	-.1870349	-.0432781
mra1dall	.1491037	.0776248	1.92	0.061	-.0070572	.3052647
pop	1.47e-12	2.00e-12	0.74	0.466	-2.56e-12	5.50e-12
pop1517_rate	-.0000273	.0005345	-0.05	0.959	-.0011026	.001048
pop1820_rate	-.0000288	.0006142	-0.05	0.963	-.0012645	.0012069
pop2124_rate	-.0000241	.000445	-0.05	0.957	-.0009193	.000871
gspch	-.0000388	.0000292	-1.33	0.191	-.0000975	.000002
year						
1983	2.78e-06	3.08e-06	0.90	0.371	-3.41e-06	8.97e-06
1984	6.04e-08	2.95e-06	0.02	0.984	-5.88e-06	6.00e-06
1985	-5.03e-07	4.25e-06	-0.12	0.906	-9.04e-06	8.04e-06
1986	1.60e-06	6.54e-06	0.24	0.808	-.0000116	.0000147
1987	1.08e-06	7.90e-06	0.14	0.892	-.0000148	.000017
1988	-1.15e-06	8.54e-06	-0.14	0.893	-.0000183	.000016
_cons	-.0009277	.0003041	-3.05	0.004	-.0015394	-.0003159
sigma_u	.00005183					
sigma_e	8.823e-06					
rho	.97183455	(fraction of variance due to u_i)				

```

. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c_000000.tmp"

. xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jailed c
> ralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mra1dall pop pop1517_rate pop1820_rate
> rate gspch, fe cluster(state)

Fixed-effects (within) regression                               Number of obs   =       335
Group variable: state                                         Number of groups  =       48

R-sq:                                                         Obs per group:
    within = 0.8125                                           min =             6
    between = 0.2931                                         avg =            7.0
    overall = 0.3310                                         max =             7

corr(u_i, Xb) = -0.4350                                         F(23,47)         =       .
                                                         Prob > F         =       .

```

Step 1 Model (R1): c

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000352	9.43e-06	3.74	0.001	.0000163	.0000542
unrate	-1.33e-06	6.21e-07	-2.15	0.037	-2.58e-06	-8.30e-08
ln_perinc	.0000997	.000027	3.69	0.001	.0000454	.000154
beertax	-.000014	9.72e-06	-1.44	0.156	-.0000336	5.55e-06
ln_sobapt	.000028	.000031	0.90	0.370	-.0000343	.0000904
ln_mormon	-.0000178	.0000258	-0.69	0.495	-.0000698	.0000342
mlda	9.00e-07	1.05e-06	0.85	0.397	-1.22e-06	3.02e-06
dry	1.11e-06	4.30e-07	2.59	0.013	2.50e-07	1.98e-06
yngdrv	.0000723	.0000478	1.51	0.137	-.0000237	.0001684
vmiles	1.35e-09	3.29e-10	4.09	0.000	6.86e-10	2.01e-09
jailed	-1.03e-06	1.94e-06	-0.53	0.599	-4.93e-06	2.87e-06
comserd	8.04e-06	4.40e-06	1.83	0.074	-8.20e-07	.0000169
mralln	1.391133	.172189	8.08	0.000	1.044734	1.737533
mra1517	.054705	.0151342	3.61	0.001	.0242589	.0851511
mra1517n	-.0818413	.0328816	-2.49	0.016	-.1479905	-.0156921
mra1820	.0698745	.0088135	7.93	0.000	.0521441	.0876049
mra1820n	-.0563169	.0280791	-2.01	0.051	-.1128048	.0001709
mra2124	.0798523	.012014	6.65	0.000	.0556834	.1040213
mra2124n	-.1182463	.0346906	-3.41	0.001	-.1880348	-.0484579
mra1dall	.1469089	.0809589	1.81	0.076	-.0159595	.3097772
pop	1.61e-12	2.06e-12	0.78	0.438	-2.53e-12	5.75e-12
pop1517_rate	.000022	.0004392	0.05	0.960	-.0008615	.0009055
pop1820_rate	.0002864	.0004301	0.67	0.509	-.0005789	.0011517
pop2124_rate	-.0002353	.0003039	-0.77	0.443	-.0008466	.0003761
gspch	-.0000259	.000018	-1.44	0.155	-.0000621	.0000102
_cons	-.0009906	.0002826	-3.51	0.001	-.0015591	-.0004221
sigma_u	.0000516					
sigma_e	8.785e-06					
rho	.97182949	(fraction of variance due to u_i)				

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	335	3185.648	3466.064	24	-6884.128	-6792.589

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
. xtreg mra11 spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild c
> ralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mra1dall pop pop1517_rate pop1820_rate
> rate gspch, fe
```

Fixed-effects (within) regression	Number of obs	=	335
Group variable: <b>state</b>	Number of groups	=	48
R-sq:	Obs per group:		
within = 0.8125	min =		6
between = 0.2931	avg =		7.0
overall = 0.3310	max =		7

corr(u_i, Xb) = -0.4350	F(25,262)	=	45.42
	Prob > F	=	0.0000

Step 1 Model (R1): d

mra11	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000352	7.36e-06	4.78	0.000	.0000207	.0000497
unrate	-1.33e-06	6.53e-07	-2.04	0.042	-2.62e-06	-4.79e-08
ln_perinc	.0000997	.0000239	4.17	0.000	.0000526	.0001469
beertax	-.000014	9.79e-06	-1.43	0.154	-.0000333	5.26e-06
ln_sobapt	.000028	.0000282	0.99	0.322	-.0000276	.0000837
ln_mormon	-.0000178	.0000245	-0.73	0.468	-.000066	.0000304
mlda	9.00e-07	1.04e-06	0.87	0.388	-1.15e-06	2.95e-06
dry	1.11e-06	7.45e-07	1.50	0.136	-3.53e-07	2.58e-06
yngdrv	.0000723	.0000503	1.44	0.151	-.0000267	.0001713
vmiles	1.35e-09	5.08e-10	2.66	0.008	3.49e-10	2.35e-09
jaild	-1.03e-06	6.88e-06	-0.15	0.881	-.0000146	.0000125
comserd	8.04e-06	7.91e-06	1.02	0.311	-7.54e-06	.0000236
mra11n	1.391133	.1465053	9.50	0.000	1.102656	1.679611
mra1517	.054705	.0099582	5.49	0.000	.0350966	.0743133
mra1517n	-.0818413	.0213492	-3.83	0.000	-.1238792	-.0398035
mra1820	.0698745	.0088681	7.88	0.000	.0524127	.0873363
mra1820n	-.0563169	.0159976	-3.52	0.001	-.0878171	-.0248167
mra2124	.0798523	.0100219	7.97	0.000	.0601186	.0995861
mra2124n	-.1182463	.0211036	-5.60	0.000	-.1598006	-.076692
mra1dall	.1469089	.0478144	3.07	0.002	.0527594	.2410583
pop	1.61e-12	3.19e-12	0.50	0.614	-4.67e-12	7.89e-12
pop1517_rate	.000022	.0004376	0.05	0.960	-.0008397	.0008836
pop1820_rate	.0002864	.0004791	0.60	0.550	-.0006569	.0012297
pop2124_rate	-.0002353	.000269	-0.87	0.383	-.000765	.0002944
gspch	-.0000259	.0000194	-1.34	0.183	-.0000642	.0000123
_cons	-.0009906	.0002613	-3.79	0.000	-.001505	-.0004761
sigma_u	.0000516					
sigma_e	8.785e-06					
rho	.97182949	(fraction of variance due to u_i)				

F test that all u\_i=0: F(47, 262) = 9.62 Prob > F = 0.0000

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	335	3185.648	3466.064	25	-6882.128	-6786.775

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
. estimates store fixed_1
```

```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c_000000.tmp"
```

```
. xtreg mrall spircons unrate ln_perinc dry vmiles comserd mralln mra1517 mra1517n mra1820 mra1820n
> 4 mra2124n mraidall gspch, fe cluster(state)
```

```
Fixed-effects (within) regression      Number of obs   =      335
Group variable: state                 Number of groups =      48
```

```
R-sq:                                Obs per group:
    within = 0.8079                  min =      6
    between = 0.2926                  avg  =     7.0
    overall  = 0.3411                  max  =      7
```

```
corr(u_i, Xb)  = -0.1495              F(14,47)         =      .
                                          Prob > F         =      .
```

## Step 2 Model (R1): c

(Std. Err. adjusted for **48** clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000343	5.84e-06	5.87	0.000	.0000225	.0000461
unrate	-1.36e-06	4.96e-07	-2.74	0.009	-2.36e-06	-3.62e-07
ln_perinc	.0000972	.0000226	4.29	0.000	.0000517	.0001428
dry	1.02e-06	3.48e-07	2.93	0.005	3.20e-07	1.72e-06
vmiles	1.28e-09	2.77e-10	4.61	0.000	7.20e-10	1.84e-09
comserd	6.19e-06	3.99e-06	1.55	0.127	-1.83e-06	.0000142
mralln	1.415417	.159427	8.88	0.000	1.094692	1.736143
mra1517	.0567919	.0148848	3.82	0.000	.0268476	.0867362
mra1517n	-.0846924	.0336564	-2.52	0.015	-.1524004	-.0169844
mra1820	.0686641	.008737	7.86	0.000	.0510875	.0862407
mra1820n	-.0576384	.0268356	-2.15	0.037	-.1116246	-.0036522
mra2124	.0818295	.0113983	7.18	0.000	.058899	.1047599
mra2124n	-.1168128	.0337999	-3.46	0.001	-.1848093	-.0488162
mraidall	.1492288	.0771375	1.93	0.059	-.0059519	.3044096
gspch	-.0000294	.0000161	-1.82	0.075	-.0000618	3.03e-06
_cons	-.0009067	.0002228	-4.07	0.000	-.001355	-.0004584
sigma_u	.00004656					
sigma_e	8.728e-06					
rho	.96605902	(fraction of variance due to u_i)				

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	335	3185.648	3461.97	15	-6893.941	-6836.729

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
. xtreg mra11 spircons unrate ln_perinc dry vmiles comserd mra11n mra1517 mra1517n mra1820 mra1820n
> 4 mra2124n mra1dall gspch, fe
```

```
Fixed-effects (within) regression      Number of obs   =      335
Group variable: state                 Number of groups =      48
```

```
R-sq:                                Obs per group:
    within = 0.8079                  min =          6
    between = 0.2926                 avg  =         7.0
    overall  = 0.3411                 max  =          7
```

```
corr(u_i, Xb) = -0.1495              F(15,272)        =      76.26
                                          Prob > F         =      0.0000
```

Step 2 Model (R1): d

mra11	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000343	5.08e-06	6.76	0.000	.0000243	.0000443
unrate	-1.36e-06	6.01e-07	-2.26	0.025	-2.54e-06	-1.76e-07
ln_perinc	.0000972	.0000197	4.92	0.000	.0000584	.0001361
dry	1.02e-06	7.23e-07	1.41	0.159	-4.02e-07	2.44e-06
vmiles	1.28e-09	4.96e-10	2.58	0.011	3.01e-10	2.25e-09
comserd	6.19e-06	3.86e-06	1.60	0.110	-1.41e-06	.0000138
mra11n	1.415417	.138207	10.24	0.000	1.143326	1.687509
mra1517	.0567919	.0096028	5.91	0.000	.0378867	.0756971
mra1517n	-.0846924	.0203956	-4.15	0.000	-.1248458	-.0445391
mra1820	.0686641	.0084845	8.09	0.000	.0519605	.0853677
mra1820n	-.0576384	.0156865	-3.67	0.000	-.0885208	-.0267559
mra2124	.0818295	.0096276	8.50	0.000	.0628753	.1007836
mra2124n	-.1168128	.0204072	-5.72	0.000	-.156989	-.0766365
mra1dall	.1492288	.0458012	3.26	0.001	.0590589	.2393988
gspch	-.0000294	.0000181	-1.62	0.106	-.0000651	6.33e-06
_cons	-.0009067	.000194	-4.67	0.000	-.0012887	-.0005248
sigma_u	.00004656					
sigma_e	8.728e-06					
rho	.96605902	(fraction of variance due to u_i)				

F test that all u\_i=0: F(47, 272) = 14.28 Prob > F = 0.0000

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	335	3185.648	3461.97	15	-6893.941	-6836.729

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).



```
. estimates store fixed_2
```

```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c_000000.tmp"
```

```
. xtreg mra11 spircons unrate ln_perinc dry vmiles mra11n mra1517 mra1517n mra1820 mra1820n mra212
> 4n mra1dall gspch, fe cluster(state)
```

```
Fixed-effects (within) regression      Number of obs   =      336
Group variable: state                 Number of groups =      48

R-sq:                                Obs per group:
    within = 0.8061                      min =          7
    between = 0.2793                     avg =         7.0
    overall = 0.3284                     max =          7
```

```
Step 3 Model (R1): c                      F(13,47)      =      .
corr(u_i, Xb)  = -0.1514                 Prob > F      =      .
```

(Std. Err. adjusted for **48** clusters in state)

mra11	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000342	5.64e-06	6.08	0.000	.0000229	.0000456
unrate	-1.37e-06	4.95e-07	-2.77	0.008	-2.37e-06	-3.76e-07
ln_perinc	.0000992	.0000219	4.53	0.000	.0000551	.0001433
dry	1.05e-06	3.31e-07	3.16	0.003	3.81e-07	1.71e-06
vmiles	1.27e-09	2.86e-10	4.44	0.000	6.93e-10	1.84e-09
mra11n	1.410741	.1618722	8.72	0.000	1.085096	1.736386
mra1517	.0583499	.0151142	3.86	0.000	.0279441	.0887558
mra1517n	-.085456	.0341999	-2.50	0.016	-.1542573	-.0166547
mra1820	.0683972	.0086825	7.88	0.000	.0509304	.0858641
mra1820n	-.0596094	.0272638	-2.19	0.034	-.1144571	-.0047617
mra2124	.080191	.011086	7.23	0.000	.0578889	.102493
mra2124n	-.1155874	.0339027	-3.41	0.001	-.183791	-.0473839
mra1dall	.1532561	.0796802	1.92	0.061	-.0070398	.3135521
gspch	-.000026	.0000164	-1.58	0.120	-.000059	7.01e-06
_cons	-.0009239	.0002153	-4.29	0.000	-.001357	-.0004909
sigma_u	.00004701					
sigma_e	8.737e-06					
rho	.96661904	(fraction of variance due to u_i)				

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	336	3195.659	3471.224	14	-6914.448	-6861.008

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
. xtreg mra11 spircons unrate ln_perinc dry vmiles mra11n mra1517 mra1517n mra1820 mra1820n mra212
> 4n mra1dall gspch, fe
```

```
Fixed-effects (within) regression      Number of obs   =      336
Group variable: state                 Number of groups =      48
```

```
R-sq:                                Obs per group:
    within = 0.8061                  min =          7
    between = 0.2793                 avg =         7.0
    overall = 0.3284                 max =          7
```

```
corr(u_i, Xb) = -0.1514              F(14,274)        =      81.35
                                          Prob > F         =      0.0000
```

Step 3 Model (R1): d

mra11	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000342	5.07e-06	6.76	0.000	.0000243	.0000442
unrate	-1.37e-06	6.01e-07	-2.28	0.023	-2.56e-06	-1.89e-07
ln_perinc	.0000992	.0000197	5.03	0.000	.0000604	.000138
dry	1.05e-06	7.24e-07	1.45	0.149	-3.77e-07	2.47e-06
vmiles	1.27e-09	4.96e-10	2.55	0.011	2.90e-10	2.24e-09
mra11n	1.410741	.138266	10.20	0.000	1.138543	1.68294
mra1517	.0583499	.0095484	6.11	0.000	.0395524	.0771474
mra1517n	-.085456	.0204101	-4.19	0.000	-.1256366	-.0452754
mra1820	.0683972	.0084853	8.06	0.000	.0516926	.0851019
mra1820n	-.0596094	.0156526	-3.81	0.000	-.090424	-.0287948
mra2124	.080191	.0095828	8.37	0.000	.0613257	.0990563
mra2124n	-.1155874	.0204086	-5.66	0.000	-.1557651	-.0754098
mra1dall	.1532561	.0457787	3.35	0.001	.0631335	.2433788
gspch	-.000026	.000018	-1.44	0.150	-.0000615	9.47e-06
_cons	-.0009239	.0001938	-4.77	0.000	-.0013055	-.0005423
sigma_u	.00004701					
sigma_e	8.737e-06					
rho	.96661904	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(47, 274) = 15.96                      Prob > F = 0.0000
```

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	336	3195.659	3471.224	14	-6914.448	-6861.008

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
. estimates store fixed_3
```

```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c_000000.tmp"

. xtreg mra11 spircons unrate ln_perinc dry vmiles mra11n mra1517 mra1517n mra1820 mra1820n mra212
> 4n mra1dall, fe cluster(state)
```

```
Fixed-effects (within) regression      Number of obs   =      336
Group variable: state                 Number of groups =      48

R-sq:                                Obs per group:
    within = 0.8046                      min =      7
    between = 0.2776                     avg =     7.0
    overall = 0.3268                     max =      7

                                F(12,47)      =      .
corr(u_i, Xb) = -0.1505                 Prob > F      =      .
```

(Std. Err. adjusted for **48** clusters in state)

#### Step 4 Model (R1): c

	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
mra11						
spircons	.0000338	5.69e-06	5.94	0.000	.0000224	.0000453
unrate	-1.07e-06	4.92e-07	-2.17	0.035	-2.06e-06	-7.98e-08
ln_perinc	.0001008	.0000221	4.55	0.000	.0000563	.0001453
dry	1.06e-06	3.27e-07	3.24	0.002	4.01e-07	1.72e-06
vmiles	1.19e-09	2.92e-10	4.06	0.000	5.99e-10	1.77e-09
mra11n	1.41105	.1606329	8.78	0.000	1.087898	1.734202
mra1517	.0590784	.0151316	3.90	0.000	.0286375	.0895192
mra1517n	-.0849647	.034653	-2.45	0.018	-.1546777	-.0152518
mra1820	.0688224	.0085781	8.02	0.000	.0515656	.0860793
mra1820n	-.0594129	.0276242	-2.15	0.037	-.1149856	-.0038401
mra2124	.0793785	.0115537	6.87	0.000	.0561356	.1026215
mra2124n	-.1118069	.0332259	-3.37	0.002	-.1786487	-.0449651
mra1dall	.1530014	.0812487	1.88	0.066	-.0104498	.3164526
_cons	-.0009413	.0002176	-4.33	0.000	-.001379	-.0005036
sigma_u	.00004706					
sigma_e	8.754e-06					
rho	.96655894	(fraction of variance due to u_i)				

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	336	3195.659	3469.951	13	-6913.902	-6864.28

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
. xtreg mra11 spircons unrate ln_perinc dry vmiles mra11n mra1517 mra1517n mra1820 mra1820n mra212
> 4n mra1dall, fe
```

```
Fixed-effects (within) regression      Number of obs   =      336
Group variable: state                 Number of groups =      48

R-sq:                                Obs per group:
    within = 0.8046                      min =      7
    between = 0.2776                     avg =     7.0
    overall = 0.3268                     max =      7

                                F(13,275)      =     87.10
corr(u_i, Xb) = -0.1505                 Prob > F      =     0.0000
```

### Step 4 Model (R1): d

mrall	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000338	5.07e-06	6.67	0.000	.0000238	.0000438
unrate	-1.07e-06	5.64e-07	-1.89	0.059	-2.18e-06	4.19e-08
ln_perinc	.0001008	.0000197	5.11	0.000	.000062	.0001396
dry	1.06e-06	7.25e-07	1.46	0.145	-3.69e-07	2.49e-06
vmiles	1.19e-09	4.94e-10	2.40	0.017	2.13e-10	2.16e-09
mralln	1.41105	.138538	10.19	0.000	1.13832	1.68378
mra1517	.0590784	.0095538	6.18	0.000	.0402705	.0778862
mra1517n	-.0849647	.0204475	-4.16	0.000	-.1252182	-.0447113
mra1820	.0688224	.0084968	8.10	0.000	.0520953	.0855496
mra1820n	-.0594129	.0156828	-3.79	0.000	-.0902864	-.0285393
mra2124	.0793785	.0095851	8.28	0.000	.060509	.0982481
mra2124n	-.1118069	.0202797	-5.51	0.000	-.1517302	-.0718837
mraildall	.1530014	.0458685	3.34	0.001	.0627035	.2432994
_cons	-.0009413	.0001938	-4.86	0.000	-.0013229	-.0005597
sigma_u	.00004706					
sigma_e	8.754e-06					
rho	.96655894	(fraction of variance due to u_i)				

F test that all u\_i=0: F(47, 275) = 15.96 Prob > F = 0.0000

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	336	3195.659	3469.951	13	-6913.902	-6864.28

Note: N=Obs used in calculating BIC; see **[R] BIC note**.

```
. estimates store fixed 4
```

```

.
end of do-file

```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c 000000.tmp"
```

```
. xtreg mra11 spircons unrte ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild c  
> ralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mraidall pop pop1517_rate pop1820_rate  
> rate gspch, re
```

```
Random-effects GLS regression           Number of obs   =      335
Group variable: state                  Number of groups =       48
```

R-sq:		Obs per group:	
within	= 0.7627	min	= 6
between	= 0.9630	avg	= 7.0
overall	= 0.9413	max	= 7

corr(u i, X)	= 0 (assumed)	Wald chi2(24)	=	.
		Prob > chi2	=	.

Step 1 Model (R1): e

mrall	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	7.33e-06	2.34e-06	3.14	0.002	2.75e-06	.0000119
unrate	-1.52e-06	5.78e-07	-2.63	0.009	-2.65e-06	-3.87e-07
ln_perinc	-.000035	.0000147	-2.38	0.017	-.0000639	-6.19e-06
beertax	3.77e-06	3.55e-06	1.06	0.289	-3.19e-06	.0000107
ln_sobapt	8.41e-06	1.73e-06	4.86	0.000	5.01e-06	.0000118
ln_mormon	6.94e-06	1.92e-06	3.61	0.000	3.17e-06	.0000107
mllda	9.74e-07	1.06e-06	0.92	0.356	-1.10e-06	3.04e-06
dry	1.23e-07	1.68e-07	0.73	0.465	-2.07e-07	4.52e-07
yngdrv	.0001008	.0000485	2.08	0.038	5.82e-06	.0001958
vmiles	1.67e-09	5.68e-10	2.94	0.003	5.55e-10	2.78e-09
jaild	6.57e-07	3.40e-06	0.19	0.847	-6.00e-06	7.32e-06
comserd	4.33e-06	3.89e-06	1.11	0.266	-3.29e-06	.0000119
mralln	1.691318	.1599576	10.57	0.000	1.377807	2.004829
mra1517	.0691969	.0112994	6.12	0.000	.0470504	.0913433
mra1517n	-.1015923	.024663	-4.12	0.000	-.1499309	-.0532537
mra1820	.103745	.0096303	10.77	0.000	.08487	.12262
mra1820n	-.1071737	.0180661	-5.93	0.000	-.1425826	-.0717647
mra2124	.1225913	.0109685	11.18	0.000	.1010935	.1440891
mra2124n	-.1688907	.0239419	-7.05	0.000	-.2158159	-.1219655
mraiddall	.1615826	.0507559	3.18	0.001	.0621029	.2610623
pop	1.97e-13	3.15e-13	0.62	0.532	-4.21e-13	8.15e-13
pop1517_rate	-.0003058	.000407	-0.75	0.452	-.0011035	.0004918
pop1820_rate	-.0005528	.0004874	-1.13	0.257	-.0015081	.0004025
pop2124_rate	-.0001561	.0002706	-0.58	0.564	-.0006863	.0003742
gspch	-.0000135	.0000208	-0.65	0.517	-.0000543	.0000273
_cons	.0003643	.0001486	2.45	0.014	.0000731	.0006555
sigma_u	6.347e-06					
sigma_e	8.785e-06					
rho	.34294777	(fraction of variance due to u_i)				

. estimates store random\_1

. hausman fixed\_1 random\_1

Note: the rank of the differenced variance matrix (15) does not equal the number of coefficients b tested (25); 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 variables so that the coefficients are on a similar scale.

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed_1	(B) random_1		
spircons	.0000352	7.33e-06	.0000279	6.98e-06
unrate	-1.33e-06	-1.52e-06	1.86e-07	3.03e-07
ln_perinc	.0000997	-.000035	.0001348	.0000189
beertax	-.000014	3.77e-06	-.0000178	9.12e-06
ln_sobapt	.000028	8.41e-06	.0000196	.0000282
ln_mormon	-.0000178	6.94e-06	-.0000247	.0000244
mllda	9.00e-07	9.74e-07	-7.38e-08	.
dry	1.11e-06	1.23e-07	9.92e-07	7.26e-07
yngdrv	.0000723	.0001008	-.0000285	.0000134
vmiles	1.35e-09	1.67e-09	-3.21e-10	.
jaild	-1.03e-06	6.57e-07	-1.68e-06	5.98e-06
comserd	8.04e-06	4.33e-06	3.72e-06	6.89e-06
mralln	1.391133	1.691318	-.3001843	.
mra1517	.054705	.0691969	-.0144919	.
mra1517n	-.0818413	-.1015923	.019751	.
mra1820	.0698745	.103745	-.0338705	.
mra1820n	-.0563169	-.1071737	.0508568	.
mra2124	.0798523	.1225913	-.042739	.
mra2124n	-.1182463	-.1688907	.0506444	.

mraidall	.1469089	.1615826	-.0146737	.
pop	1.61e-12	1.97e-13	1.41e-12	3.17e-12
pop1517_rate	.000022	-.0003058	.0003278	.0001608
pop1820_rate	.0002864	-.0005528	.0008392	.
pop2124_rate	-.0002353	-.0001561	-.0000792	.
gspch	-.0000259	-.0000135	-.0000125	.

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(15) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= -85.95      chi2<0 ==> model fitted on these  
data fails to meet the asymptotic  
assumptions of the Hausman test;  
see suest for a generalized test

.  
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c\_000000.tmp"

. xtreg mrall spircons unrate ln\_perinc dry vmiles comserd mralln mra1517 mra1517n mra1820 mra1820n  
> 4 mra2124n mraidall gspch, re

Random-effects GLS regression      Number of obs      =      335  
Group variable: **state**      Number of groups      =      48

R-sq:      Obs per group:  
within = 0.7553      min = 6  
between = 0.9534      avg = 7.0  
overall = 0.9257      max = 7

corr(u\_i, X) = 0 (assumed)      Wald chi2(15) = 1650.19  
Prob > chi2 = 0.0000

Step 2 Model (R1): e

mrall	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	2.37e-06	2.36e-06	1.00	0.315	-2.26e-06	7.00e-06
unrate	-2.07e-06	5.64e-07	-3.67	0.000	-3.18e-06	-9.64e-07
ln_perinc	-.0000392	.0000123	-3.18	0.001	-.0000633	-.000015
dry	4.80e-07	1.91e-07	2.51	0.012	1.05e-07	8.55e-07
vmiles	2.01e-09	5.71e-10	3.51	0.000	8.87e-10	3.13e-09
comserd	.0000125	3.34e-06	3.73	0.000	5.91e-06	.000019
mralln	1.763377	.1574153	11.20	0.000	1.454849	2.071905
mra1517	.0736688	.0112411	6.55	0.000	.0516366	.0957011
mra1517n	-.1097727	.0245678	-4.47	0.000	-.1579246	-.0616208
mra1820	.1060202	.0094196	11.26	0.000	.0875581	.1244822
mra1820n	-.1081812	.0182374	-5.93	0.000	-.1439259	-.0724366
mra2124	.1272756	.0108026	11.78	0.000	.1061028	.1484483
mra2124n	-.1869631	.0234694	-7.97	0.000	-.2329623	-.1409638
mraidall	.1738138	.0519504	3.35	0.001	.0719928	.2756348
gspch	-.0000239	.0000208	-1.15	0.251	-.0000647	.0000169
_cons	.0004104	.0001209	3.39	0.001	.0001735	.0006473
sigma_u	9.021e-06					
sigma_e	8.728e-06					
rho	.51654028	(fraction of variance due to u_i)				

```
. estimates store random_2
. hausman fixed_2 random_2
```

Note: the rank of the differenced variance matrix (9) does not equal the number of coefficients being tested (15); 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 variables so that the coefficients are on a similar scale.

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed_2	(B) random_2		
spircons	.0000343	2.37e-06	.0000319	4.49e-06
unrate	-1.36e-06	-2.07e-06	7.10e-07	2.08e-07
ln_perinc	.0000972	-.0000392	.0001364	.0000154
dry	1.02e-06	4.80e-07	5.41e-07	6.97e-07
vmiles	1.28e-09	2.01e-09	-7.29e-10	.
comserd	6.19e-06	.0000125	-6.26e-06	1.94e-06
mralln	1.415417	1.763377	-.3479596	.
mra1517	.0567919	.0736688	-.0168769	.
mra1517n	-.0846924	-.1097727	.0250803	.
mra1820	.0686641	.1060202	-.037356	.
mra1820n	-.0576384	-.1081812	.0505429	.
mra2124	.0818295	.1272756	-.0454461	.
mra2124n	-.1168128	-.1869631	.0701503	.
mraidall	.1492288	.1738138	-.0245849	.
gspch	-.0000294	-.0000239	-5.50e-06	.

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

```
chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
        = 266.30
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)
```

```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c_000000.tmp"
```

```
. xtreg mrall spircons unrate ln_perinc dry vmiles mralln mra1517 mra1517n mra1820 mra1820n mra2124
> 4n mraidall gspch, re
```

Random-effects GLS regression	Number of obs	=	336
Group variable: <b>state</b>	Number of groups	=	48
R-sq:	Obs per group:		
within = 0.7538	min =		7
between = 0.9473	avg =		7.0
overall = 0.9183	max =		7
corr(u_i, X) = 0 (assumed)	Wald chi2(14)	=	1535.42
	Prob > chi2	=	0.0000

Step 3 Model (R1): e

mrall	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	2.63e-06	2.45e-06	1.07	0.283	-2.17e-06	7.43e-06
unrate	-2.15e-06	5.76e-07	-3.74	0.000	-3.28e-06	-1.02e-06
ln_perinc	-.0000375	.0000127	-2.95	0.003	-.0000624	-.0000126
dry	3.97e-07	1.98e-07	2.00	0.046	7.82e-09	7.85e-07
vmiles	1.93e-09	5.78e-10	3.34	0.001	7.97e-10	3.06e-09
mralln	1.75107	.159314	10.99	0.000	1.438821	2.06332
mra1517	.0782607	.0112622	6.95	0.000	.0561872	.1003343
mra1517n	-.1127829	.0247743	-4.55	0.000	-.1613397	-.0642262
mra1820	.1054713	.0095307	11.07	0.000	.0867916	.1241511
mra1820n	-.1120344	.0183685	-6.10	0.000	-.148036	-.0760329
mra2124	.1252482	.0109318	11.46	0.000	.1038224	.146674
mra2124n	-.1862506	.02372	-7.85	0.000	-.232741	-.1397603
mraidall	.1853879	.0525576	3.53	0.000	.0823768	.288399
gspch	-.0000176	.000021	-0.84	0.402	-.0000587	.0000235
_cons	.0003977	.0001245	3.19	0.001	.0001537	.0006417
sigma_u	9.462e-06					
sigma_e	8.737e-06					
rho	.53976815	(fraction of variance due to u_i)				

. estimates store random\_3

. hausman fixed\_3 random\_3

Note: the rank of the differenced variance matrix (10) does not equal the number of coefficients b tested (14); 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 variables so that the coefficients are on a similar scale.

	Coefficients			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed_3	random_3	Difference	S.E.
spircons	.0000342	2.63e-06	.0000316	4.44e-06
unrate	-1.37e-06	-2.15e-06	7.81e-07	1.71e-07
ln_perinc	.0000992	-.0000375	.0001367	.0000151
dry	1.05e-06	3.97e-07	6.50e-07	6.96e-07
vmiles	1.27e-09	1.93e-09	-6.62e-10	.
mralln	1.410741	1.75107	-.340329	.
mra1517	.0583499	.0782607	-.0199108	.
mra1517n	-.085456	-.1127829	.0273269	.
mra1820	.0683972	.1054713	-.0370741	.
mra1820n	-.0596094	-.1120344	.052425	.
mra2124	.080191	.1252482	-.0450572	.
mra2124n	-.1155874	-.1862506	.0706632	.
mraidall	.1532561	.1853879	-.0321318	.
gspch	-.000026	-.0000176	-8.43e-06	.

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= -74.08      chi2<0 ==> model fitted on these  
data fails to meet the asymptotic  
assumptions of the Hausman test;  
see suest for a generalized test



```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c_000000.tmp"
```

```
. xtreg mra11 spircons unrate ln_perinc dry vmiles mra11n mra1517 mra1517n mra1820 mra1820n mra212
> 4n mra1dall, re
```

```
Random-effects GLS regression              Number of obs   =       336
Group variable: state                     Number of groups  =       48
```

```
R-sq:                                     Obs per group:
      within = 0.7529                      min =           7
      between = 0.9487                     avg  =          7.0
      overall = 0.9191                     max  =           7
```

```
corr(u_i, X)   = 0 (assumed)                Wald chi2(13)     =    1520.10
                                           Prob > chi2       =      0.0000
```

Step 4 Model (R1): e

mra11	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	<b>2.44e-06</b>	<b>2.45e-06</b>	<b>0.99</b>	<b>0.320</b>	<b>-2.37e-06</b>	<b>7.25e-06</b>
unrate	<b>-2.00e-06</b>	<b>5.44e-07</b>	<b>-3.68</b>	<b>0.000</b>	<b>-3.07e-06</b>	<b>-9.37e-07</b>
ln_perinc	<b>-.0000372</b>	<b>.0000128</b>	<b>-2.92</b>	<b>0.004</b>	<b>-.0000622</b>	<b>-.0000122</b>
dry	<b>3.86e-07</b>	<b>2.00e-07</b>	<b>1.93</b>	<b>0.053</b>	<b>-5.27e-09</b>	<b>7.77e-07</b>
vmiles	<b>1.88e-09</b>	<b>5.75e-10</b>	<b>3.27</b>	<b>0.001</b>	<b>7.55e-10</b>	<b>3.01e-09</b>
mra11n	<b>1.747112</b>	<b>.1588688</b>	<b>11.00</b>	<b>0.000</b>	<b>1.435735</b>	<b>2.05849</b>
mra1517	<b>.0784941</b>	<b>.0112145</b>	<b>7.00</b>	<b>0.000</b>	<b>.0565142</b>	<b>.1004741</b>
mra1517n	<b>-.112186</b>	<b>.0246737</b>	<b>-4.55</b>	<b>0.000</b>	<b>-.1605455</b>	<b>-.0638264</b>
mra1820	<b>.1053127</b>	<b>.0095008</b>	<b>11.08</b>	<b>0.000</b>	<b>.0866915</b>	<b>.1239339</b>
mra1820n	<b>-.1109093</b>	<b>.0182989</b>	<b>-6.06</b>	<b>0.000</b>	<b>-.1467745</b>	<b>-.075044</b>
mra2124	<b>.1240495</b>	<b>.010882</b>	<b>11.40</b>	<b>0.000</b>	<b>.1027211</b>	<b>.1453778</b>
mra2124n	<b>-.1828111</b>	<b>.0234532</b>	<b>-7.79</b>	<b>0.000</b>	<b>-.2287787</b>	<b>-.1368436</b>
mra1dall	<b>.1862546</b>	<b>.0524277</b>	<b>3.55</b>	<b>0.000</b>	<b>.0834982</b>	<b>.289011</b>
_cons	<b>.000394</b>	<b>.000125</b>	<b>3.15</b>	<b>0.002</b>	<b>.0001491</b>	<b>.000639</b>
sigma_u	<b>9.655e-06</b>					
sigma_e	<b>8.754e-06</b>					
rho	<b>.54884098</b>	(fraction of variance due to u_i)				

```
. estimates store random_4
```

```
. hausman fixed_4 random_4
```

Note: the rank of the differenced variance matrix (9) does not equal the number of coefficients being tested (13); 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 variables so that the coefficients are on a similar scale.

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed_4	(B) random_4		
spircons	<b>.0000338</b>	<b>2.44e-06</b>	<b>.0000314</b>	<b>4.44e-06</b>
unrate	<b>-1.07e-06</b>	<b>-2.00e-06</b>	<b>9.35e-07</b>	<b>1.49e-07</b>
ln_perinc	<b>.0001008</b>	<b>-.0000372</b>	<b>.000138</b>	<b>.0000151</b>
dry	<b>1.06e-06</b>	<b>3.86e-07</b>	<b>6.72e-07</b>	<b>6.97e-07</b>
vmiles	<b>1.19e-09</b>	<b>1.88e-09</b>	<b>-6.96e-10</b>	.
mra11n	<b>1.41105</b>	<b>1.747112</b>	<b>-.3360627</b>	.
mra1517	<b>.0590784</b>	<b>.0784941</b>	<b>-.0194158</b>	.
mra1517n	<b>-.0849647</b>	<b>-.112186</b>	<b>.0272212</b>	.
mra1820	<b>.0688224</b>	<b>.1053127</b>	<b>-.0364903</b>	.
mra1820n	<b>-.0594129</b>	<b>-.1109093</b>	<b>.0514964</b>	.
mra2124	<b>.0793785</b>	<b>.1240495</b>	<b>-.0446709</b>	.
mra2124n	<b>-.1118069</b>	<b>-.1828111</b>	<b>.0710042</b>	.

mraidall	.1530014	.1862546	-.0332532	.
----------	----------	----------	-----------	---

---

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
 = **-48.22**      chi2<0 ==> model fitted on these  
                          data fails to meet the asymptotic  
                          assumptions of the Hausman test;  
                          see suest for a generalized test

.  
 end of do-file  
 .

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	335	3185.648	3468.484	30	-6876.967	-6762.543

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
. estimates store Dummy_year1
```

```
. testparm i.year
```

```
( 1) 1983.year = 0
( 2) 1984.year = 0
( 3) 1985.year = 0
( 4) 1986.year = 0
( 5) 1987.year = 0
( 6) 1988.year = 0
```

```
F( 6, 47) = 0.38
Prob > F = 0.8888
```

```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c_000000.tmp"
```

```
. xtreg mra11 spircons unrate ln_perinc dry vmiles comserd mra11n mra1517 mra1517n mra1820 mra1820n
> 4 mra2124n mra1dall i.year, fe vce(cluster state)
```

```
Fixed-effects (within) regression               Number of obs   =       335
Group variable: state                          Number of groups =       48

R-sq:                                           Obs per group:
    within = 0.8102                             min =          6
    between = 0.2585                             avg =         7.0
    overall  = 0.3091                             max =          7

corr(u_i, Xb) = -0.1812                       F(19,47)         =
                                                Prob > F         =
```

Step 2 Model (R1): b

(Std. Err. adjusted for 48 clusters in state)

mra11	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000349	9.18e-06	3.80	0.000	.0000164	.0000534
unrate	-1.67e-06	6.11e-07	-2.73	0.009	-2.90e-06	-4.39e-07
ln_perinc	.0000959	.0000268	3.58	0.001	.000042	.0001498
dry	1.01e-06	3.45e-07	2.92	0.005	3.12e-07	1.70e-06
vmiles	1.31e-09	3.15e-10	4.15	0.000	6.73e-10	1.94e-09
comserd	5.59e-06	3.88e-06	1.44	0.156	-2.21e-06	.0000134
mra11n	1.374403	.1578429	8.71	0.000	1.056864	1.691942
mra1517	.053839	.0150265	3.58	0.001	.0236096	.0840684
mra1517n	-.0826853	.0322848	-2.56	0.014	-.147634	-.0177366
mra1820	.0696256	.0089287	7.80	0.000	.0516634	.0875877
mra1820n	-.055613	.0268766	-2.07	0.044	-.1096817	-.0015443
mra2124	.077829	.0124045	6.27	0.000	.0528743	.1027837
mra2124n	-.1123665	.0340254	-3.30	0.002	-.1808168	-.0439163
mra1dall	.1447083	.0761934	1.90	0.064	-.008573	.2979897
year						
1983	5.69e-07	1.82e-06	0.31	0.755	-3.08e-06	4.22e-06
1984	-3.24e-06	2.24e-06	-1.45	0.155	-7.74e-06	1.27e-06

1985	-2.30e-06	2.96e-06	-0.78	0.442	-8.25e-06	3.66e-06
1986	-3.30e-07	3.77e-06	-0.09	0.931	-7.91e-06	7.25e-06
1987	-5.28e-07	4.56e-06	-0.12	0.908	-9.71e-06	8.65e-06
1988	-3.23e-06	4.96e-06	-0.65	0.518	-.0000132	6.75e-06
_cons	-.0008893	.000254	-3.50	0.001	-.0014002	-.0003784
sigma_u	.00004798					
sigma_e	8.755e-06					
rho	.9677747	(fraction of variance due to u_i)				

. estat ic

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	335	3185.648	3464.024	20	-6888.049	-6811.766

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

. estimates store Dummy\_year2

. testparm i.year

```
( 1) 1983.year = 0
( 2) 1984.year = 0
( 3) 1985.year = 0
( 4) 1986.year = 0
( 5) 1987.year = 0
( 6) 1988.year = 0
```

```
F( 6, 47) = 1.09
Prob > F = 0.3817
```

.  
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c\_000000.tmp"

```
. xtreg mra11 spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jailed c
> ralln mra1517 mra1517n mra1820 mra1820n mra2124 mra2124n mra1dall pop pop1517_rate pop1820_rate
> rate gspch, fe vce(cluster state)
```

Fixed-effects (within) regression  
Group variable: **state**

Number of obs = 335  
Number of groups = 48

R-sq:

```
within = 0.8125
between = 0.2931
overall = 0.3310
```

Obs per group:

```
min = 6
avg = 7.0
max = 7
```

corr(u\_i, Xb) = -0.4350

```
F(23,47) = .
Prob > F = .
```

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000352	9.43e-06	3.74	0.001	.0000163	.0000542
unrate	-1.33e-06	6.21e-07	-2.15	0.037	-2.58e-06	-8.30e-08
ln_perinc	.0000997	.000027	3.69	0.001	.0000454	.000154
beertax	-.000014	9.72e-06	-1.44	0.156	-.0000336	5.55e-06
ln_sobapt	.000028	.000031	0.90	0.370	-.0000343	.0000904
ln_mormon	-.0000178	.0000258	-0.69	0.495	-.0000698	.0000342
mllda	9.00e-07	1.05e-06	0.85	0.397	-1.22e-06	3.02e-06
dry	1.11e-06	4.30e-07	2.59	0.013	2.50e-07	1.98e-06
yngdrv	.0000723	.0000478	1.51	0.137	-.0000237	.0001684
vmiles	1.35e-09	3.29e-10	4.09	0.000	6.86e-10	2.01e-09
jailld	-1.03e-06	1.94e-06	-0.53	0.599	-4.93e-06	2.87e-06
comserd	8.04e-06	4.40e-06	1.83	0.074	-8.20e-07	.0000169
mralln	1.391133	.172189	8.08	0.000	1.044734	1.737533
mra1517	.054705	.0151342	3.61	0.001	.0242589	.0851511
mra1517n	-.0818413	.0328816	-2.49	0.016	-.1479905	-.0156921
mra1820	.0698745	.0088135	7.93	0.000	.0521441	.0876049
mra1820n	-.0563169	.0280791	-2.01	0.051	-.1128048	.0001709
mra2124	.0798523	.012014	6.65	0.000	.0556834	.1040213
mra2124n	-.1182463	.0346906	-3.41	0.001	-.1880348	-.0484579
mraida11	.1469089	.0809589	1.81	0.076	-.0159595	.3097772
pop	1.61e-12	2.06e-12	0.78	0.438	-2.53e-12	5.75e-12
pop1517_rate	.000022	.0004392	0.05	0.960	-.0008615	.0009055
pop1820_rate	.0002864	.0004301	0.67	0.509	-.0005789	.0011517
pop2124_rate	-.0002353	.0003039	-0.77	0.443	-.0008466	.0003761
gspch	-.0000259	.000018	-1.44	0.155	-.0000621	.0000102
_cons	-.0009906	.0002826	-3.51	0.001	-.0015591	-.0004221
sigma_u	.0000516					
sigma_e	8.785e-06					
rho	.97182949	(fraction of variance due to u_i)				

.  
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c\_000000.tmp"

. xtreg mrall spircons unrate ln\_perinc dry vmiles comserd mralln mra1517 mra1517n mra1820 mra1820  
> 4 mra2124n mraida11, fe vce(cluster state)

Fixed-effects (within) regression	Number of obs	=	335
Group variable: <b>state</b>	Number of groups	=	48

R-sq:	Obs per group:	
within = 0.8060	min =	6
between = 0.2890	avg =	7.0
overall = 0.3378	max =	7

corr(u_i, Xb) = -0.1488	$F(13, 47)$	=	.
	Prob > F	=	.

(Std. Err. adjusted for **48** clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000338	5.90e-06	5.74	0.000	.000022	.0000457
unrate	-1.02e-06	4.95e-07	-2.06	0.045	-2.02e-06	-2.55e-08
ln_perinc	.0000993	.0000228	4.35	0.000	.0000533	.0001452
dry	1.04e-06	3.39e-07	3.05	0.004	3.53e-07	1.72e-06
vmiles	1.19e-09	2.85e-10	4.16	0.000	6.11e-10	1.76e-09
comserd	5.47e-06	3.66e-06	1.50	0.141	-1.89e-06	.0000128
mralln	1.414969	.1582677	8.94	0.000	1.096576	1.733363
mr1517	.0578184	.01499	3.86	0.000	.0276623	.0879744
mr1517n	-.0842209	.0342589	-2.46	0.018	-.1531409	-.015301
mr1820	.0690852	.0086149	8.02	0.000	.0517543	.0864161
mr1820n	-.0576341	.0273059	-2.11	0.040	-.1125664	-.0027017
mr2124	.0807398	.0119107	6.78	0.000	.0567785	.1047011
mr2124n	-.1124332	.0331194	-3.39	0.001	-.1790609	-.0458055
mr1aidall	.149439	.0792203	1.89	0.065	-.0099318	.3088098
_cons	-.0009284	.0002248	-4.13	0.000	-.0013807	-.0004761
sigma_u	.00004668					
sigma_e	8.754e-06					
rho	.96602283	(fraction of variance due to u_i)				

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll (null)	ll (model)	df	AIC	BIC
.	335	3185.648	3460.362	14	-6892.725	-6839.327

Note: N=Obs used in calculating BIC; see **[R] BIC note**.

```

.
end of do-file

```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\10\STD250c 000000.tmp"
```

```
. xtreg mra11 spircons unrte ln_perinc dry vmiles mra11n mra1517 mra1517n mra1820 mra1820n mra212  
> 4n mra1dall, fe vce(cluster state)
```

```
Fixed-effects (within) regression      Number of obs   =      336
Group variable: state                 Number of groups =       48
```

R-sq:		Obs per group:	
within	= 0.8046	min	= 7
between	= 0.2776	avg	= 7.0
overall	= 0.3268	max	= 7

corr(u i, Xb)	= -0.1505	F(12,47)	=	.
		Prob > F	=	.

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000338	5.69e-06	5.94	0.000	.0000224	.0000453
unrate	-1.07e-06	4.92e-07	-2.17	0.035	-2.06e-06	-7.98e-08
ln_perinc	.0001008	.0000221	4.55	0.000	.0000563	.0001453
dry	1.06e-06	3.27e-07	3.24	0.002	4.01e-07	1.72e-06
vmiles	1.19e-09	2.92e-10	4.06	0.000	5.99e-10	1.77e-09
mralln	1.41105	.1606329	8.78	0.000	1.087898	1.734202
mra1517	.0590784	.0151316	3.90	0.000	.0286375	.0895192
mra1517n	-.0849647	.034653	-2.45	0.018	-.1546777	-.0152518
mra1820	.0688224	.0085781	8.02	0.000	.0515656	.0860793
mra1820n	-.0594129	.0276242	-2.15	0.037	-.1149856	-.0038401
mra2124	.0793785	.0115537	6.87	0.000	.0561356	.1026215
mra2124n	-.1118069	.0332259	-3.37	0.002	-.1786487	-.0449651
mraidal1	.1530014	.0812487	1.88	0.066	-.0104498	.3164526
_cons	-.0009413	.0002176	-4.33	0.000	-.001379	-.0005036
sigma_u	.00004706					
sigma_e	8.754e-06					
rho	.96655894	(fraction of variance due to u_i)				

. estat ic

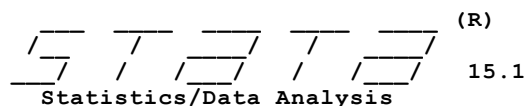
Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	336	3195.659	3469.951	13	-6913.902	-6864.28

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

.  
end of do-file

.



(R)

15.1

***Special Edition***

Copyright 1985-2017 StataCorp LLC  
StataCorp  
4905 Lakeway Drive  
College Station, Texas 77845 USA  
800-STATA-PC <http://www.stata.com>  
979-696-4600 [stata@stata.com](mailto:stata@stata.com)  
979-696-4601 (fax)

55-user Stata network license expires 4 Oct 2019:  
Serial number: 401509214975  
Licensed to: University of Texas at Dallas  
Jindal School of Management

Notes:

1. Unicode is supported; see [help unicode advice](#).
2. Maximum number of variables is set to 5000; see [help set\\_maxvar](#).

```
. doedit "H:\BUAN 6312\Project\Project.do"

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. use "H:\BUAN 6312\Project\car_fatalities.dta"

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. gen pop1517_rate = pop1517/pop

. gen pop1820_rate = pop1820/pop

. gen pop2124_rate = pop2124/pop

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. gen ln_perinc = ln(perinc)

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. histogram perinc
(bin=18, start=9513.7617, width=704.42741)

.
end of do-file
```



```

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"
. histogram ln_perinc
(bin=18, start=9.1604948, width=.04705879)

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. gen ln_sobapt = ln(sobapt+1)

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. histogram sobapt
(bin=18, start=0, width=1.6864278)

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. histogram ln_sobapt
(bin=18, start=0, width=.19141089)

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. histogram mormon
(bin=18, start=.1, width=3.656472)

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. gen ln_mormon = ln(mormon+1)

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. histogram ln_mormon
(bin=18, start=.09531018, width=.22822974)

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

```

```

. miles_pop = miles/pop
command miles_pop is unrecognized
r(199);

end of do-file

r(199);

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. gen miles_pop = miles/pop

.

end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. reg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlds dry yngdrv vmiles jaild com
> p pop1517_rate pop1820_rate pop2124_rate gspch, vce (cluster state)
variable mlds not found
r(111);

end of do-file

r(111);

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. *model 1.9;
. reg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild com
> pop1517_rate pop1820_rate pop2124_rate gspch, vce (cluster state)

Linear regression                                Number of obs      =           335
                                                F(16, 47)          =              .
                                                Prob > F            =              .
                                                R-squared           =           0.6787
                                                Root MSE           =           3.3e-05

```

Step 1 Model (R2): a (Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000293	5.84e-06	5.02	0.000	.0000175	.000041
unrate	-4.18e-06	1.85e-06	-2.26	0.028	-7.90e-06	-4.66e-07
ln_perinc	-.0001957	.0000426	-4.60	0.000	-.0002813	-.0001101
beertax	-.0000175	.0000127	-1.37	0.176	-.0000431	8.14e-06
ln_sobapt	.0000269	6.41e-06	4.20	0.000	.000014	.0000398
ln_mormon	.0000142	7.80e-06	1.82	0.075	-1.48e-06	.0000299
mlda	-3.53e-06	4.26e-06	-0.83	0.412	-.0000121	5.04e-06
dry	-7.31e-07	6.04e-07	-1.21	0.233	-1.95e-06	4.85e-07
yngdrv	.0002041	.0001454	1.40	0.167	-.0000883	.0004965
vmiles	7.52e-09	5.13e-09	1.47	0.149	-2.79e-09	1.78e-08
jaild	.0000126	.000012	1.05	0.298	-.0000115	.0000366
comserd	-3.29e-06	.0000135	-0.24	0.809	-.0000305	.0000239
pop	4.66e-13	7.53e-13	0.62	0.539	-1.05e-12	1.98e-12
pop1517_rate	.0027574	.0020824	1.32	0.192	-.0014319	.0069466
pop1820_rate	-.0032021	.0015545	-2.06	0.045	-.0063293	-.0000748
pop2124_rate	-.0009766	.0009002	-1.08	0.283	-.0027876	.0008343
gspch	-.0000268	.0000864	-0.31	0.757	-.0002007	.000147
_cons	.0020847	.0003778	5.52	0.000	.0013246	.0028449

```

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. *model 1.9;
. xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild c
> op pop1517_rate pop1820_rate pop2124_rate gspch, fe vce(cluster state)
must specify panelvar; use xtset
r(459);

end of do-file

r(459);

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. xtset state year
    panel variable: state (strongly balanced)
    time variable: year, 1982 to 1988
                delta: 1 unit

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. xtreg mrall spircons unrate ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jaild c
> op pop1517_rate pop1820_rate pop2124_rate gspch, fe vce(cluster state)

Fixed-effects (within) regression              Number of obs   =          335
Group variable: state                        Number of groups =          48

R-sq:                                         Obs per group:
    within = 0.4542                             min =           6
    between = 0.0178                             avg  =          7.0
    overall = 0.0092                             max  =           7

                                         F(16,47)        =
corr(u_i, Xb)  = -0.8608                      Prob > F         =

```

Step 1 Model (R2): c

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000772	.0000189	4.08	0.000	.0000391	.0001153
unrate	-2.18e-06	1.04e-06	-2.09	0.042	-4.28e-06	-8.52e-08
ln_perinc	.0002555	.0000624	4.10	0.000	.00013	.0003809
beertax	-.0000373	.0000246	-1.51	0.137	-.0000868	.0000123
ln_sobapt	.0000439	.000068	0.64	0.522	-.000093	.0001807
ln_mormon	-.0000334	.0000667	-0.50	0.619	-.0001675	.0001007
mlda	1.66e-06	2.19e-06	0.76	0.452	-2.74e-06	6.07e-06
dry	2.54e-06	1.05e-06	2.42	0.020	4.24e-07	4.65e-06
yngdrv	.0000147	.0000998	0.15	0.884	-.0001861	.0002155
vmiles	1.28e-09	6.94e-10	1.85	0.071	-1.15e-10	2.68e-09
jaild	3.33e-06	2.49e-06	1.34	0.188	-1.68e-06	8.35e-06
comserd	-9.17e-07	.0000112	-0.08	0.935	-.0000234	.0000216
pop	1.15e-12	5.45e-12	0.21	0.833	-9.81e-12	1.21e-11
pop1517_rate	.0030132	.0009964	3.02	0.004	.0010087	.0050177
pop1820_rate	-.0002036	.0008586	-0.24	0.814	-.0019308	.0015237
pop2124_rate	.000126	.0005896	0.21	0.832	-.0010601	.0013121
gspch	-.000019	.000022	-0.86	0.391	-.0000633	.0000252
_cons	-.002572	.0006854	-3.75	0.000	-.0039508	-.0011932
sigma_u	.00010948					
sigma_e	.00001476					



Step 1 Model (R2): d

mrall	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000772	.0000119	6.50	0.000	.0000539	.0001006
unrate	-2.18e-06	1.07e-06	-2.05	0.042	-4.28e-06	-8.45e-08
ln_perinc	.0002555	.0000375	6.81	0.000	.0001816	.0003293
beertax	-.0000373	.0000163	-2.29	0.023	-.0000693	-5.20e-06
ln_sobapt	.0000439	.0000458	0.96	0.339	-.0000463	.0001341
ln_mormon	-.0000334	.0000408	-0.82	0.414	-.0001136	.0000469
mllda	1.66e-06	1.70e-06	0.98	0.330	-1.69e-06	5.01e-06
dry	2.54e-06	1.24e-06	2.04	0.042	9.03e-08	4.98e-06
yngdrv	.0000147	.0000839	0.18	0.861	-.0001505	.0001799
vmiles	1.28e-09	8.39e-10	1.53	0.128	-3.72e-10	2.93e-09
jaild	3.33e-06	.0000115	0.29	0.771	-.0000192	.0000259
comserd	-9.17e-07	.0000131	-0.07	0.944	-.0000267	.0000249
pop	1.15e-12	5.28e-12	0.22	0.827	-9.25e-12	1.16e-11
pop1517_rate	.0030132	.0006863	4.39	0.000	.001662	.0043644
pop1820_rate	-.0002036	.0007606	-0.27	0.789	-.0017011	.001294
pop2124_rate	.000126	.0004249	0.30	0.767	-.0007106	.0009626
gspch	-.000019	.0000321	-0.59	0.554	-.0000822	.0000442
_cons	-.002572	.0004083	-6.30	0.000	-.0033758	-.0017682
sigma_u	.00010948					
sigma_e	.00001476					
rho	.98213872	(fraction of variance due to u_i)				

F test that all u i=0: F(47, 270) = 28.40 Prob > F = 0.0000

```
. estimates store fixed_19
```

```

.
end of do-file

```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"
```

```
. xtreg mrall spircons unrte ln_perinc beertax ln_sobapt ln_mormon mlda dry yngdrv vmiles jailed c  
> op pop1517_rate pop1820_rate pop2124_rate gspch, re
```

```
Random-effects GLS regression           Number of obs   =      335
Group variable: state                  Number of groups =       48
```

R-sq:		Obs per group:	
within	= 0.3466	min	= 6
between	= 0.4598	avg	= 7.0
overall	= 0.4451	max	= 7

corr(u i, X)	= 0 (assumed)	Wald chi2(16)	=	.
		Prob > chi2	=	.

Step 1 Model (R2): e

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	.0000232	6.89e-06	3.37	0.001	9.70e-06	.0000367
unrate	-5.03e-06	1.08e-06	-4.66	0.000	-7.15e-06	-2.92e-06
ln_perinc	.0000733	.0000343	2.14	0.033	6.07e-06	.0001405
beertax	-.0000157	.0000107	-1.47	0.142	-.0000367	5.24e-06
ln_sobapt	.0000395	5.45e-06	7.26	0.000	.0000289	.0000502
ln_mormon	.0000295	6.37e-06	4.62	0.000	.000017	.0000419
mlda	4.12e-07	1.88e-06	0.22	0.826	-3.27e-06	4.10e-06
dry	3.05e-07	5.55e-07	0.55	0.582	-7.82e-07	1.39e-06
yngdrv	.0002016	.0000883	2.28	0.022	.0000285	.0003747
vmiles	1.86e-09	9.48e-10	1.96	0.050	6.80e-13	3.72e-09
jaild	.0000202	9.17e-06	2.20	0.028	2.21e-06	.0000381
comserd	-.000017	.0000106	-1.60	0.109	-.0000377	3.78e-06
pop	-2.19e-12	1.05e-12	-2.09	0.037	-4.25e-12	-1.35e-13
pop1517_rate	.0030578	.0007263	4.21	0.000	.0016342	.0044813
pop1820_rate	-.0011543	.0008366	-1.38	0.168	-.0027939	.0004853

pop2124_rate	.0004426	.0004427	1.00	0.317	-.0004251	.0013103
gspch	-.0000349	.000036	-0.97	0.333	-.0001055	.0000358
_cons	-.0007311	.0003471	-2.11	0.035	-.0014114	-.0000509
<hr/>						
sigma_u	.00002778					
sigma_e	.00001476					
rho	.77968528	(fraction of variance due to u_i)				

. estimates store random\_19

. hausman fixed\_19 random\_19

Note: the rank of the differenced variance matrix (15) does not equal the number of coefficients b tested (17); 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 variables so that the coefficients are on a similar scale.

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b)	(B)		
	fixed_19	random_19		
spircons	.0000772	.0000232	.000054	9.67e-06
unrate	-2.18e-06	-5.03e-06	2.85e-06	.
ln_perinc	.0002555	.0000733	.0001822	.0000152
beertax	-.0000373	-.0000157	-.0000216	.0000123
ln_sobapt	.0000439	.0000395	4.34e-06	.0000455
ln_mormon	-.0000334	.0000295	-.0000628	.0000403
mlda	1.66e-06	4.12e-07	1.25e-06	.
dry	2.54e-06	3.05e-07	2.23e-06	1.11e-06
yngdrv	.0000147	.0002016	-.0001869	.
vmiles	1.28e-09	1.86e-09	-5.79e-10	.
jaild	3.33e-06	.0000202	-.0000168	6.86e-06
comserd	-9.17e-07	-.000017	.0000161	7.74e-06
pop	1.15e-12	-2.19e-12	3.35e-12	5.18e-12
pop1517_rate	.0030132	.0030578	-.0000446	.
pop1820_rate	-.0002036	-.0011543	.0009508	.
pop2124_rate	.000126	.0004426	-.0003166	.
gspch	-.000019	-.0000349	.0000158	.

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(15) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= 313.36  
Prob>chi2 = 0.0000  
(V\_b-V\_B is not positive definite)

.  
end of do-file

.

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. reg mrall spircons unrte ln_perinc beertax ln_sobapt ln_mormon dry yngdrv vmiles jaild comserd
> rate popl820_rate, vce (cluster state)
```

```
Linear regression                                Number of obs      =          335
                                                F(13, 47)          =          24.56
                                                Prob > F            =          0.0000
                                                R-squared           =          0.6737
                                                Root MSE            =          3.3e-05
```

Step 2 Model (R2): a (Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000277	5.78e-06	4.80	0.000	.0000161	.0000393
unrate	-3.82e-06	1.88e-06	-2.03	0.048	-7.60e-06	-3.72e-08
ln_perinc	-.0001949	.0000404	-4.82	0.000	-.0002762	-.0001135
beertax	-.0000163	.0000122	-1.33	0.190	-.0000409	8.33e-06
ln_sobapt	.0000264	6.18e-06	4.27	0.000	.0000139	.0000388
ln_mormon	.0000131	8.77e-06	1.50	0.141	-4.51e-06	.0000308
dry	-8.04e-07	5.42e-07	-1.48	0.145	-1.89e-06	2.86e-07
yngdrv	.0001816	.0001578	1.15	0.256	-.000136	.0004991
vmiles	7.38e-09	4.98e-09	1.48	0.144	-2.63e-09	1.74e-08
jaild	.0000114	.0000125	0.92	0.365	-.0000137	.0000365
comserd	-3.93e-06	.0000139	-0.28	0.778	-.0000319	.0000024
popl517_rate	.0031877	.0019254	1.66	0.104	-.0006856	.0070611
popl820_rate	-.0044244	.0013791	-3.21	0.002	-.0071989	-.00165
_cons	.0019887	.0004062	4.90	0.000	.0011716	.0028058

```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. xtreg mrall spircons unrte ln_perinc beertax ln_sobapt ln_mormon dry yngdrv vmiles jaild comserd
> 7_rate popl820_rate, fe vce (cluster state)
```

```
Fixed-effects (within) regression                Number of obs      =          335
Group variable: state                          Number of groups   =          48
```

```
R-sq:                                           Obs per group:
  within = 0.4514                               min =              6
  between = 0.0408                             avg =             7.0
  overall = 0.0252                             max =              7
```

```
corr(u_i, Xb) = -0.8604                        F(12,47)           =          .
                                                Prob > F            =          .
```

Step 2 Model (R2): b (Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000762	.0000152	5.00	0.000	.0000455	.0001068
unrate	-2.01e-06	1.01e-06	-2.00	0.052	-4.04e-06	1.39e-08
ln_perinc	.000259	.0000615	4.21	0.000	.0001353	.0003826
beertax	-.0000372	.0000246	-1.51	0.137	-.0000867	.0000122
ln_sobapt	.0000338	.0000618	0.55	0.586	-.0000904	.0001581
ln_mormon	-.000032	.0000661	-0.48	0.631	-.000165	.0001011
dry	2.42e-06	1.02e-06	2.37	0.022	3.68e-07	4.48e-06
yngdrv	.0000193	.000108	0.18	0.859	-.000198	.0002366
vmiles	1.20e-09	7.08e-10	1.69	0.097	-2.25e-10	2.62e-09
jaild	2.74e-06	2.18e-06	1.26	0.215	-1.64e-06	7.12e-06





corr(u\_i, Xb) = -0.8604      F(13,274) = 17.35  
 Step 2 Model (R2): d      Prob > F = 0.0000

mrall	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000762	.00001	7.58	0.000	.0000564	.0000959
unrate	-2.01e-06	1.00e-06	-2.01	0.045	-3.99e-06	-4.35e-08
ln_perinc	.000259	.0000366	7.07	0.000	.0001868	.0003311
beertax	-.0000372	.0000162	-2.30	0.022	-.0000691	-5.40e-06
ln_sobapt	.0000338	.0000417	0.81	0.417	-.0000482	.0001159
ln_mormon	-.000032	.0000395	-0.81	0.419	-.0001097	.0000458
dry	2.42e-06	1.21e-06	2.00	0.047	3.47e-08	4.82e-06
yngdrv	.0000193	.0000811	0.24	0.812	-.0001403	.0001789
vmiles	1.20e-09	8.29e-10	1.45	0.149	-4.33e-10	2.83e-09
jaild	2.74e-06	.0000113	0.24	0.809	-.0000196	.000025
comserd	-1.02e-06	.000013	-0.08	0.937	-.0000267	.0000246
pop1517_rate	.0030783	.0005988	5.14	0.000	.0018994	.0042572
pop1820_rate	-.0002474	.0006919	-0.36	0.721	-.0016094	.0011146
_cons	-.0025443	.0003944	-6.45	0.000	-.0033207	-.0017678
sigma_u	.00010835					
sigma_e	.00001469					
rho	.98194142	(fraction of variance due to u_i)				

F test that all u\_i=0: F(47, 274) = 29.18      Prob > F = 0.0000

. estimates store fixed\_29

.  
 end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24\_000000.tmp"

. xtreg mrall spircons unrate ln\_perinc beertax ln\_sobapt ln\_mormon dry yngdrv vmiles jaild comserd  
 > 7\_rate pop1820\_rate, re

Random-effects GLS regression      Number of obs = 335  
 Group variable: **state**      Number of groups = 48

R-sq:      Obs per group:  
     within = 0.3246      min = 6  
     between = 0.4548      avg = 7.0  
     overall = 0.4393      max = 7

corr(u\_i, X) = 0 (assumed)      Wald chi2(13) = 171.17  
     Prob > chi2 = 0.0000

Step 2 Model (R2): e

mrall	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	.0000266	6.37e-06	4.17	0.000	.0000141	.0000391
unrate	-5.18e-06	9.90e-07	-5.23	0.000	-7.12e-06	-3.23e-06
ln_perinc	.0000465	.0000315	1.48	0.140	-.0000152	.0001082
beertax	-.000016	.0000107	-1.49	0.136	-.0000369	5.00e-06
ln_sobapt	.0000385	5.44e-06	7.08	0.000	.0000278	.0000491
ln_mormon	.0000312	6.38e-06	4.89	0.000	.0000187	.0000437
dry	3.00e-07	5.57e-07	0.54	0.591	-7.93e-07	1.39e-06
yngdrv	.0002435	.0000832	2.93	0.003	.0000804	.0004066
vmiles	1.90e-09	9.44e-10	2.01	0.044	4.84e-11	3.75e-09
jaild	.0000217	9.10e-06	2.39	0.017	3.90e-06	.0000396
comserd	-.0000185	.0000106	-1.75	0.080	-.0000393	2.25e-06
pop1517_rate	.0029527	.0006658	4.43	0.000	.0016478	.0042577
pop1820_rate	-.0009889	.0007192	-1.37	0.169	-.0023985	.0004208
_cons	-.0004649	.0003239	-1.44	0.151	-.0010996	.0001699
sigma_u	.00002783					

sigma_e	.00001469	
rho	.78199423	(fraction of variance due to u_i)

. estimates store random\_29

. hausman fixed\_29 random\_29

Note: the rank of the differenced variance matrix (12) does not equal the number of coefficients b tested (13); 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 variables so that the coefficients are on a similar scale.

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed_29	(B) random_29		
spircons	.0000762	.0000266	.0000496	7.77e-06
unrate	-2.01e-06	-5.18e-06	3.16e-06	1.48e-07
ln_perinc	.000259	.0000465	.0002125	.0000188
beertax	-.0000372	-.000016	-.0000213	.0000121
ln_sobapt	.0000338	.0000385	-4.63e-06	.0000413
ln_mormon	-.000032	.0000312	-.0000632	.000039
dry	2.42e-06	3.00e-07	2.13e-06	1.08e-06
yngdrv	.0000193	.0002435	-.0002242	.
vmiles	1.20e-09	1.90e-09	-6.99e-10	.
jaild	2.74e-06	.0000217	-.000019	6.74e-06
comserd	-1.02e-06	-.0000185	.0000175	7.56e-06
pop1517_rate	.0030783	.0029527	.0001256	.
pop1820_rate	-.0002474	-.0009889	.0007415	.

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= 275.35  
Prob>chi2 = 0.0000  
(V\_b-V\_B is not positive definite)

.  
end of do-file

.

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. reg mrall spircons unrte ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate, vce
> state)
```

```
Linear regression                                Number of obs      =          336
                                                F(9, 47)           =          30.30
                                                Prob > F           =          0.0000
                                                R-squared          =          0.6309
                                                Root MSE          =          3.5e-05
```

Step 3 Model (R2): a (Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000303	4.50e-06	6.72	0.000	.0000212	.0000393
unrate	-3.47e-06	1.80e-06	-1.93	0.059	-7.08e-06	1.43e-07
ln_perinc	-.0002558	.0000388	-6.60	0.000	-.0003339	-.0001778
beertax	-.0000206	.0000124	-1.66	0.104	-.0000457	4.38e-06
ln_sobapt	.0000255	6.01e-06	4.25	0.000	.0000135	.0000376
dry	-1.25e-06	5.15e-07	-2.43	0.019	-2.28e-06	-2.14e-07
vmiles	8.08e-09	5.45e-09	1.48	0.145	-2.88e-09	1.90e-08
pop1517_rate	.0030495	.0018371	1.66	0.104	-.0006463	.0067453
pop1820_rate	-.0051351	.0010117	-5.08	0.000	-.0071705	-.0030998
_cons	.0026498	.0003915	6.77	0.000	.0018622	.0034373

```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. reg mrall spircons unrte ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate, fe v
> ter state)
option fe not allowed
r(198);
```

```
end of do-file
```

```
r(198);
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. xtreg mrall spircons unrte ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate, fe
> ster state)
```

```
Fixed-effects (within) regression                                Number of obs      =          336
Group variable: state                                           Number of groups   =           48

R-sq:                                                            Obs per group:
    within = 0.4494                                              min =              7
    between = 0.0281                                              avg =             7.0
    overall  = 0.0148                                              max =              7

                                                                    F(9,47)            =          12.00
                                                                    Prob > F           =          0.0000
```

```
corr(u_i, Xb) = -0.8198
```

Step 3 Model (R2): c

(Std. Err. adjusted for **48** clusters in state)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000748	.0000125	6.01	0.000	.0000498	.0000999
unrate	-2.08e-06	9.94e-07	-2.09	0.042	-4.08e-06	-7.70e-08
ln_perinc	.0002584	.0000608	4.25	0.000	.000136	.0003807
beertax	-.000034	.0000228	-1.49	0.142	-.0000798	.0000118
ln_sobapt	.0000256	.0000537	0.48	0.635	-.0000824	.0001337
dry	2.48e-06	1.00e-06	2.47	0.017	4.58e-07	4.50e-06
vmiles	1.19e-09	6.93e-10	1.71	0.093	-2.08e-10	2.58e-09
pop1517_rate	.003128	.0008997	3.48	0.001	.001318	.004938
pop1820_rate	-.0000931	.0008148	-0.11	0.910	-.0017323	.0015461
_cons	-.0025534	.0006657	-3.84	0.000	-.0038927	-.0012142
sigma_u	.00009694					
sigma_e	.00001459					
rho	.97785164	(fraction of variance due to u_i)				

```

.
end of do-file

```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"
```

```
. xtreg mrrall spircons unrte ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate, fe
> (state)
```

```
Fixed-effects (within) regression      Number of obs   =      336
Group variable: state                Number of groups =       48
```

R-sq:		Obs per group:	
within	= 0.4494	min	= 7
between	= 0.0281	avg	= 7.0
overall	= 0.0148	max	= 7

		F(9, 47)	=	12.00
corr(u_i, Xb)	= -0.8198	Prob > F	=	0.0000

(Std. Err. adjusted for **48** clusters in state)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000748	.0000125	6.01	0.000	.0000498	.0000999
unrate	-2.08e-06	9.94e-07	-2.09	0.042	-4.08e-06	-7.70e-08
ln_perinc	.0002584	.0000608	4.25	0.000	.000136	.0003807
beertax	-.000034	.0000228	-1.49	0.142	-.0000798	.0000118
ln_sobapt	.0000256	.0000537	0.48	0.635	-.0000824	.0001337
dry	2.48e-06	1.00e-06	2.47	0.017	4.58e-07	4.50e-06
vmiles	1.19e-09	6.93e-10	1.71	0.093	-2.08e-10	2.58e-09
pop1517_rate	.003128	.0008997	3.48	0.001	.001318	.004938
pop1820_rate	-.0000931	.0008148	-0.11	0.910	-.0017323	.0015461
_cons	-.0025534	.0006657	-3.84	0.000	-.0038927	-.0012142
sigma_u	.00009694					
sigma_e	.00001459					
rho	.97785164	(fraction of variance due to u_i)				

```

. xtreg mrall spircons unrte ln_perinc beertax ln_sobapt dry vmiles popl517_rate popl820_rate, fe

Fixed-effects (within) regression              Number of obs   =       336
Group variable: state                        Number of groups =       48

R-sq:                                         Obs per group:
    within = 0.4494                             min =           7
    between = 0.0281                            avg =          7.0
    overall = 0.0148                             max =           7

corr(u_i, Xb) = -0.8198                        F(9,279)         =       25.30
                                                Prob > F         =       0.0000

```

### Step 3 Model (R2): d

mrall	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000748	9.29e-06	8.05	0.000	.0000565	.0000931
unrate	-2.08e-06	9.87e-07	-2.10	0.036	-4.02e-06	-1.33e-07
ln_perinc	.0002584	.0000361	7.15	0.000	.0001872	.0003295
beertax	-.000034	.0000157	-2.17	0.031	-.0000648	-3.21e-06
ln_sobapt	.0000256	.0000393	0.65	0.515	-.0000518	.000103
dry	2.48e-06	1.20e-06	2.06	0.040	1.09e-07	4.85e-06
vmiles	1.19e-09	8.20e-10	1.45	0.149	-4.26e-10	2.80e-09
popl517_rate	.003128	.0005848	5.35	0.000	.0019769	.0042791
popl820_rate	-.0000931	.0006288	-0.15	0.882	-.0013309	.0011447
_cons	-.0025534	.0003902	-6.54	0.000	-.0033216	-.0017852
sigma_u	.00009694					
sigma_e	.00001459					
rho	.97785164	(fraction of variance due to u_i)				

F test that all u\_i=0: F(47, 279) = **34.25** Prob > F = **0.0000**

```

. estimates store fixed_39

```

```

.
end of do-file

```

```

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

```

```

. xtreg mrall spircons unrte ln_perinc beertax ln_sobapt dry vmiles popl517_rate popl820_rate, re

```

```

Random-effects GLS regression              Number of obs   =       336
Group variable: state                        Number of groups =       48

R-sq:                                         Obs per group:
    within = 0.2790                             min =           7
    between = 0.2487                            avg =          7.0
    overall = 0.2473                             max =           7

corr(u_i, X) = 0 (assumed)                  Wald chi2(9)     =      111.94
                                                Prob > chi2      =       0.0000

```

### Step 3 Model (R2): e

mrall	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	.0000283	6.70e-06	4.22	0.000	.0000152	.0000414
unrate	-5.35e-06	1.04e-06	-5.13	0.000	-7.39e-06	-3.30e-06
ln_perinc	-2.15e-07	.0000317	-0.01	0.995	-.0000624	.000062
beertax	-.0000235	.0000112	-2.09	0.036	-.0000455	-1.49e-06
ln_sobapt	.0000378	5.81e-06	6.50	0.000	.0000264	.0000492
dry	-2.57e-07	5.87e-07	-0.44	0.661	-1.41e-06	8.93e-07
vmiles	1.91e-09	9.94e-10	1.93	0.054	-3.43e-11	3.86e-09
popl517_rate	.002646	.0006963	3.80	0.000	.0012813	.0040107
popl820_rate	-.0004382	.0006546	-0.67	0.503	-.0017212	.0008448
_cons	.0000396	.0003246	0.12	0.903	-.0005966	.0006759

sigma_u	.00002823	
sigma_e	.00001459	
rho	.78920951	(fraction of variance due to u_i)

. estimates store random\_39

. hausman fixed\_39 random\_39

Note: the rank of the differenced variance matrix (8) does not equal the number of coefficients being tested (9); be sure this is what you expect, or there may be problems computing the test. 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) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed_39	(B) random_39		
spircons	.0000748	.0000283	.0000466	6.44e-06
unrate	-2.08e-06	-5.35e-06	3.27e-06	.
ln_perinc	.0002584	-2.15e-07	.0002586	.0000173
beertax	-.000034	-.0000235	-.0000105	.0000109
ln_sobapt	.0000256	.0000378	-.0000121	.0000389
dry	2.48e-06	-2.57e-07	2.73e-06	1.05e-06
vmiles	1.19e-09	1.91e-09	-7.26e-10	.
pop1517_rate	.003128	.002646	.000482	.
pop1820_rate	-.0000931	-.0004382	.0003451	.

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= -2291.76      chi2<0 ==> model fitted on these  
data fails to meet the asymptotic  
assumptions of the Hausman test;  
see suest for a generalized test

.  
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24\_000000.tmp"

. xtreg mrrall spircons unrate ln\_perinc beertax ln\_sobapt ln\_mormon mlda dry yngdrv vmiles jailed c  
> op pop1517\_rate pop1820\_rate pop2124\_rate gspch i.year, fe vce(cluster state)

Fixed-effects (within) regression	Number of obs	=	335
Group variable: <b>state</b>	Number of groups	=	48

R-sq:	Obs per group:	
within = 0.4976	min =	6
between = 0.0755	avg =	7.0
overall = 0.0512	max =	7

corr(u_i, Xb) = -0.8827	F(22,47)	=	.
	Prob > F	=	.

## Step 1 Model (R2): b

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000808	.0000186	4.33	0.000	.0000433	.0001183
unrate	-3.84e-06	1.29e-06	-2.98	0.005	-6.43e-06	-1.25e-06
ln_perinc	.0001979	.0000559	3.54	0.001	.0000854	.0003104
beertax	-.0000379	.0000229	-1.65	0.105	-.000084	8.24e-06
ln_sobapt	.0000285	.0000609	0.47	0.643	-.0000941	.0001511
ln_mormon	-.0000391	.0000581	-0.67	0.504	-.0001559	.0000778
mlda	1.40e-06	2.05e-06	0.68	0.497	-2.72e-06	5.52e-06
dry	2.11e-06	1.03e-06	2.05	0.046	4.37e-08	4.19e-06
yngdrv	-.0000315	.0001036	-0.30	0.762	-.0002398	.0001768
vmiles	1.19e-09	6.92e-10	1.72	0.093	-2.05e-10	2.58e-09
jaild	4.57e-06	2.51e-06	1.82	0.075	-4.77e-07	9.61e-06
comserd	-2.07e-07	.0000121	-0.02	0.986	-.0000245	.0000241
pop	3.14e-12	4.15e-12	0.76	0.453	-5.21e-12	1.15e-11
pop1517_rate	.0011259	.0010708	1.05	0.298	-.0010282	.00328
pop1820_rate	-.0014173	.0012214	-1.16	0.252	-.0038745	.0010398
pop2124_rate	.0004539	.0006741	0.67	0.504	-.0009022	.00181
gspch	.0000219	.0000384	0.57	0.571	-.0000554	.0000992
year						
1983	-6.81e-06	5.38e-06	-1.27	0.212	-.0000176	4.01e-06
1984	-.0000181	6.87e-06	-2.64	0.011	-.000032	-4.33e-06
1985	-.0000214	8.13e-06	-2.63	0.012	-.0000377	-5.03e-06
1986	-9.51e-06	.0000111	-0.86	0.397	-.0000319	.0000128
1987	-.0000157	.0000133	-1.18	0.244	-.0000425	.0000111
1988	-.0000231	.0000171	-1.35	0.184	-.0000576	.0000114
_cons	-.0018452	.0006021	-3.06	0.004	-.0030564	-.0006341
sigma_u	.00011628					
sigma_e	.00001433					
rho	.9850499	(fraction of variance due to u_i)				

.

end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24\_000000.tmp"

. xtreg mrall spircons unrate ln\_perinc beertax ln\_sobapt ln\_mormon dry yngdrv vmiles jaild comserd  
> 7\_rate pop1820\_rate i.year, fe vce (cluster state)

Fixed-effects (within) regression

Number of obs = 335

Group variable: state

Number of groups = 48

R-sq:

Obs per group:

within = 0.4946

min = 6

between = 0.1276

avg = 7.0

overall = 0.0914

max = 7

corr(u\_i, Xb) = -0.8888

F(18,47)

Prob &gt; F

= .

= .

## Step 2 Model (R2): b

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000789	.0000181	4.36	0.000	.0000425	.0001153
unrate	-4.08e-06	1.22e-06	-3.35	0.002	-6.53e-06	-1.63e-06
ln_perinc	.0002078	.0000592	3.51	0.001	.0000888	.0003268
beertax	-.0000377	.000023	-1.64	0.108	-.0000839	8.60e-06
ln_sobapt	.000014	.0000576	0.24	0.809	-.0001019	.00013
ln_mormon	-.0000383	.0000608	-0.63	0.531	-.0001606	.0000839
dry	1.91e-06	9.51e-07	2.01	0.050	-3.93e-09	3.82e-06
yngdrv	-.0000381	.0001077	-0.35	0.725	-.0002548	.0001785
vmiles	1.22e-09	7.13e-10	1.71	0.095	-2.18e-10	2.65e-09
jaild	4.52e-06	2.28e-06	1.98	0.053	-6.55e-08	9.11e-06
comserd	-4.44e-07	.0000114	-0.04	0.969	-.0000233	.0000224
pop1517_rate	.0010451	.0010781	0.97	0.337	-.0011237	.0032139
pop1820_rate	-.001021	.00116	-0.88	0.383	-.0033547	.0013128
year						
1983	-5.77e-06	4.22e-06	-1.37	0.178	-.0000143	2.73e-06
1984	-.0000174	5.95e-06	-2.92	0.005	-.0000293	-5.41e-06
1985	-.0000219	7.97e-06	-2.75	0.008	-.0000379	-5.88e-06
1986	-.000012	.0000107	-1.12	0.267	-.0000335	9.51e-06
1987	-.0000185	.000013	-1.42	0.161	-.0000446	7.64e-06
1988	-.0000246	.0000171	-1.44	0.158	-.000059	9.86e-06
_cons	-.001853	.0006176	-3.00	0.004	-.0030955	-.0006105
sigma_u	.00011638					
sigma_e	.00001426					
rho	.98520653	(fraction of variance due to u_i)				

.

end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24\_000000.tmp"

```
. xtreg mrall spircons unrate ln_perinc beertax ln_sobapt dry vmiles pop1517_rate pop1820_rate i.y
> vce(cluster state)
```

Fixed-effects (within) regression  
Group variable: **state**

Number of obs = 336  
Number of groups = 48

R-sq:

within = 0.4910  
between = 0.0678  
overall = 0.0418

Obs per group:

min = 7  
avg = 7.0  
max = 7

corr(u\_i, Xb) = -0.8366

F(15,47) = 11.18  
Prob > F = 0.0000

## Step 3 Model (R2): b

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000741	.0000149	4.96	0.000	.000044	.0001041
unrate	-4.18e-06	1.14e-06	-3.67	0.001	-6.46e-06	-1.89e-06
ln_perinc	.000209	.0000617	3.39	0.001	.0000848	.0003332
beertax	-.0000343	.0000225	-1.52	0.134	-.0000795	.000011
ln_sobapt	.000013	.0000557	0.23	0.816	-.0000991	.0001251
dry	2.00e-06	8.99e-07	2.23	0.031	1.94e-07	3.81e-06
vmiles	1.26e-09	7.34e-10	1.72	0.092	-2.13e-10	2.74e-09
pop1517_rate	.0012118	.0010547	1.15	0.256	-.00091	.0033336
pop1820_rate	-.0010375	.0012303	-0.84	0.403	-.0035126	.0014376



year						
1983	-5.21e-06	4.02e-06	-1.30	0.201	-.0000133	2.87e-06
1984	-.0000168	5.47e-06	-3.07	0.004	-.0000278	-5.78e-06
1985	-.0000212	7.37e-06	-2.88	0.006	-.000036	-6.38e-06
1986	-.000012	.0000103	-1.17	0.249	-.0000326	8.67e-06
1987	-.0000186	.0000125	-1.48	0.145	-.0000438	6.64e-06
1988	-.0000244	.0000164	-1.49	0.144	-.0000575	8.61e-06
_cons	-.0018949	.0006489	-2.92	0.005	-.0032004	-.0005894
sigma_u	.00010008					
sigma_e	.00001418					
rho	.98031907	(fraction of variance due to u_i)				

```

.
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. testparm i.year

( 1) 1983.year = 0
( 2) 1984.year = 0
( 3) 1985.year = 0
( 4) 1986.year = 0
( 5) 1987.year = 0
( 6) 1988.year = 0

      F( 6, 47) = 3.35
      Prob > F = 0.0079

.
end of do-file

.

```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. reg mrall spircons unrte ln_perinc dry popl517_rate popl820_rate, vce (cluster state)
```

```
Linear regression                               Number of obs   =       336
                                                F(6, 47)         =      18.97
                                                Prob > F          =      0.0000
                                                R-squared        =      0.4260
                                                Root MSE        =      4.4e-05
```

#### Step 4 Model (R2): a

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000268	6.38e-06	4.19	0.000	.0000139	.0000396
unrate	-4.10e-06	2.11e-06	-1.94	0.058	-8.36e-06	1.49e-07
ln_perinc	-.0003213	.0000479	-6.71	0.000	-.0004176	-.000225
dry	-2.84e-07	4.44e-07	-0.64	0.526	-1.18e-06	6.10e-07
popl517_rate	.0025811	.0022689	1.14	0.261	-.0019833	.0071456
popl820_rate	-.0063944	.0013322	-4.80	0.000	-.0090746	-.0037143
_cons	.003455	.0004714	7.33	0.000	.0025067	.0044033

```
.
end of do-file
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. xtreg mrall spircons unrte ln_perinc dry popl517_rate popl820_rate i.year, fe vce(cluster state)
```

```
Fixed-effects (within) regression               Number of obs   =       336
Group variable: state                         Number of groups =        48
```

```
R-sq:                                           Obs per group:
    within = 0.4758                             min =           7
    between = 0.1011                            avg =          7.0
    overall = 0.0680                             max =           7
```

```
corr(u_i, Xb) = -0.8550                       F(12,47)        =      12.32
                                                Prob > F         =      0.0000
```

#### Step 4 Model (R2): b

(Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000752	.0000164	4.58	0.000	.0000422	.0001083
unrate	-4.27e-06	1.12e-06	-3.81	0.000	-6.53e-06	-2.01e-06
ln_perinc	.0002139	.000059	3.62	0.001	.0000951	.0003327
dry	1.94e-06	9.72e-07	2.00	0.051	-1.24e-08	3.90e-06
popl517_rate	.0012541	.0012173	1.03	0.308	-.0011948	.0037031
popl820_rate	-.0011305	.0012274	-0.92	0.362	-.0035998	.0013387
year						
1983	-5.06e-06	4.21e-06	-1.20	0.236	-.0000135	3.41e-06
1984	-.0000161	6.17e-06	-2.61	0.012	-.0000285	-3.71e-06
1985	-.0000205	8.21e-06	-2.49	0.016	-.000037	-3.93e-06
1986	-.0000107	.000011	-0.97	0.337	-.0000328	.0000115
1987	-.0000167	.0000135	-1.24	0.223	-.0000438	.0000105
1988	-.0000219	.0000178	-1.23	0.224	-.0000576	.0000139
_cons	-.0019305	.0005755	-3.35	0.002	-.0030883	-.0007728
sigma_u	.00010408					
sigma_e	.00001431					



Step 4 Model (R2): d

mrall	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000744	9.27e-06	8.03	0.000	.0000562	.0000927
unrate	-2.31e-06	9.53e-07	-2.43	0.016	-4.19e-06	-4.39e-07
ln_perinc	.0002601	.0000338	7.71	0.000	.0001937	.0003266
dry	2.45e-06	1.21e-06	2.02	0.045	5.95e-08	4.83e-06
pop1517_rate	.0032126	.0005867	5.48	0.000	.0020576	.0043675
pop1820_rate	-.0004297	.0006067	-0.71	0.479	-.001624	.0007646
_cons	-.0025269	.0003415	-7.40	0.000	-.0031991	-.0018548
sigma_u	.00010582					
sigma_e	.0000147					
rho	.98105983	(fraction of variance due to u_i)				

F test that all u\_i=0: F(47, 282) = 55.53 Prob > F = 0.0000

. estimates store fixed\_49

.  
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24\_000000.tmp"

. xtreg mrall spircons unrate ln\_perinc dry pop1517\_rate pop1820\_rate, re

Random-effects GLS regression	Number of obs	=	336
Group variable: <b>state</b>	Number of groups	=	48

R-sq:	Obs per group:
within = 0.3314	min = 7
between = 0.0390	avg = 7.0
overall = 0.0172	max = 7

corr(u_i, X)	= 0 (assumed)	Wald chi2(6)	= 79.62
		Prob > chi2	= 0.0000

Step 4 Model (R2): e

mrall	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	.0000278	7.63e-06	3.64	0.000	.0000128	.0000427
unrate	-5.29e-06	1.04e-06	-5.09	0.000	-7.32e-06	-3.25e-06
ln_perinc	.0000418	.000033	1.27	0.205	-.0000228	.0001064
dry	1.85e-06	6.72e-07	2.75	0.006	5.32e-07	3.17e-06
pop1517_rate	.0028504	.0006875	4.15	0.000	.0015028	.0041979
pop1820_rate	-.000417	.0006621	-0.63	0.529	-.0017148	.0008807
_cons	-.0003245	.000335	-0.97	0.333	-.0009812	.0003321
sigma_u	.00003942					
sigma_e	.0000147					
rho	.87789182	(fraction of variance due to u_i)				

. estimates store random\_49

```
. hausman fixed_49 random_49
```

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed_49	(B) random_49		
spircons	.0000744	.0000278	.0000466	5.26e-06
unrate	-2.31e-06	-5.29e-06	2.97e-06	.
ln_perinc	.0002601	.0000418	.0002183	7.34e-06
dry	2.45e-06	1.85e-06	5.97e-07	1.01e-06
pop1517_rate	.0032126	.0028504	.0003622	.
pop1820_rate	-.0004297	-.000417	-.0000127	.

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
 = 12.43  
 Prob>chi2 = 0.0531  
 (V\_b-V\_B is not positive definite)

```
.  
end of do-file
```

```
.
```

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. reg mrall spircons unrate ln_perinc dry pop1517_rate, vce (cluster state)

Linear regression                                Number of obs      =           336
                                                F(5, 47)           =           17.60
                                                Prob > F            =           0.0000
                                                R-squared           =           0.3199
                                                Root MSE           =           4.7e-05
```

Step 5 Model (R2): a (Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000192	9.43e-06	2.03	0.048	2.06e-07	.0000382
unrate	-2.37e-06	2.07e-06	-1.14	0.258	-6.54e-06	1.80e-06
ln_perinc	-.0002638	.0000464	-5.69	0.000	-.0003571	-.0001705
dry	-9.20e-08	4.40e-07	-0.21	0.835	-9.78e-07	7.94e-07
pop1517_rate	-.0023931	.0018595	-1.29	0.204	-.0061339	.0013477
_cons	.0028137	.0004671	6.02	0.000	.0018739	.0037534

.  
end of do-file

```
. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24_000000.tmp"

. xtreg mrall spircons unrate ln_perinc dry pop1517_rate i.year, fe vce(cluster state)

Fixed-effects (within) regression                Number of obs      =           336
Group variable: state                          Number of groups   =           48

R-sq:                                           Obs per group:
    within = 0.4738                             min =              7
    between = 0.1061                            avg =             7.0
    overall = 0.0720                             max =              7

                                           F(11,47)           =           12.73
corr(u_i, Xb) = -0.8567                       Prob > F            =           0.0000
```

Step 5 Model (R2): b (Std. Err. adjusted for 48 clusters in state)

mrall	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000752	.0000163	4.62	0.000	.0000425	.000108
unrate	-4.22e-06	1.11e-06	-3.80	0.000	-6.45e-06	-1.98e-06
ln_perinc	.0002174	.0000599	3.63	0.001	.0000968	.000338
dry	1.88e-06	9.25e-07	2.03	0.048	1.55e-08	3.74e-06
pop1517_rate	.0011238	.0012174	0.92	0.361	-.0013252	.0035729
year						
1983	-4.01e-06	3.59e-06	-1.12	0.270	-.0000112	3.21e-06
1984	-.000014	5.11e-06	-2.74	0.009	-.0000243	-3.74e-06
1985	-.0000173	6.25e-06	-2.77	0.008	-.0000299	-4.77e-06
1986	-6.30e-06	7.80e-06	-0.81	0.423	-.000022	9.39e-06
1987	-.0000108	9.14e-06	-1.18	0.243	-.0000292	7.59e-06
1988	-.0000125	.0000107	-1.16	0.251	-.000034	9.11e-06
_cons	-.0020193	.0005894	-3.43	0.001	-.003205	-.0008337
sigma_u	.0001044					
sigma_e	.00001431					
rho	.98154966	(fraction of variance due to u_i)				



Step 5 Model (R2): d

mrall	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
spircons	.0000709	7.80e-06	9.09	0.000	.0000555	.0000862
unrate	-2.43e-06	9.36e-07	-2.60	0.010	-4.28e-06	-5.92e-07
ln_perinc	.0002664	.0000326	8.18	0.000	.0002023	.0003305
dry	2.41e-06	1.21e-06	1.99	0.047	3.10e-08	4.79e-06
pop1517_rate	.0030986	.0005637	5.50	0.000	.0019889	.0042082
_cons	-.0025957	.0003271	-7.94	0.000	-.0032395	-.0019519
sigma_u	.00010519					
sigma_e	.00001469					
rho	.98086952	(fraction of variance due to u_i)				

F test that all u\_i=0: F(47, 283) = 67.01 Prob > F = 0.0000

. estimates store fixed\_59

.  
end of do-file

. do "C:\Users\BXB160~1\AppData\Local\Temp\4\STD4e24\_000000.tmp"

. xtreg mrall spircons unrate ln\_perinc dry pop1517\_rate, re

Random-effects GLS regression                      Number of obs        =        336  
Group variable: **state**                              Number of groups    =        48

R-sq:    Obs per group:  
    within = 0.3459    min =        7  
    between = 0.0593    avg =        7.0  
    overall = 0.0303    max =        7

corr(u\_i, X)        = 0 (assumed)                      Wald chi2(5)        =        84.59  
    Prob > chi2        =        0.0000

Step 5 Model (R2): e

mrall	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
spircons	.0000272	6.70e-06	4.06	0.000	.0000141	.0000403
unrate	-5.24e-06	1.02e-06	-5.15	0.000	-7.24e-06	-3.25e-06
ln_perinc	.0000603	.0000308	1.96	0.050	-1.20e-07	.0001207
dry	1.92e-06	6.87e-07	2.80	0.005	5.74e-07	3.27e-06
pop1517_rate	.0027552	.0006411	4.30	0.000	.0014986	.0040117
_cons	-.0005173	.0003103	-1.67	0.096	-.0011255	.0000909
sigma_u	.00004144					
sigma_e	.00001469					
rho	.88837756	(fraction of variance due to u_i)				

. estimates store random\_59

. hausman fixed\_59 random\_59

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed_59	(B) random_59		
spircons	.0000709	.0000272	.0000437	3.99e-06
unrate	-2.43e-06	-5.24e-06	2.81e-06	.
ln_perinc	.0002664	.0000603	.0002061	.0000105
dry	2.41e-06	1.92e-06	4.92e-07	9.96e-07
pop1517_rate	.0030986	.0027552	.0003434	.

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg



Test: Ho: difference in coefficients not systematic

```
chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
        = 133.31
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)
```

.  
end of do-file

.