	0.0000	0.0000	0.8520	0.0000	0.0000		
une_pop	-0.2571*	-0.2935*	-0.2499*	-0.1017*	-0.1720*	-0.1432*	1.0000
	0.0000	0.0000	0.0000	0.0099	0.0000	0.0001	
une_hiv	0.2375*	0.2465*	0.1481*	0.1928*	0.5900*	0.2545*	-0.1188*
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0011
une_edu_sp~d	0.3733*	0.3699*	0.2166*	0.1760*	0.5091*	0.1785*	0.0678
	0.0000	0.0000	0.0000	0.0006	0.0000	0.0001	0.1441

	une_hiv	une_ed~d
une_hiv	1.0000	
une_edu_sp~d	0.5307*	1.0000
	0.0000	

```
1 .
2 . graph matrix adult_mortality infant_mort age14mort alcohol bmi hepatitis measles polio diphth
  > capita gghed che_gdp une_pop une_hiv une_edu_spend, half maxis(ylabel(none) xlabel(none))

3 . testparm i.year

   ( 1)  2001.year = 0
   ( 2)  2002.year = 0
   ( 3)  2003.year = 0
   ( 4)  2004.year = 0
   ( 5)  2005.year = 0
   ( 6)  2006.year = 0
   ( 7)  2007.year = 0
   ( 8)  2008.year = 0
   ( 9)  2009.year = 0
   (10)  2010.year = 0
   (11)  2011.year = 0
   (12)  2012.year = 0
   (13)  2013.year = 0

         F( 13,    41) =    3.04
              Prob > F =    0.0033

4 . gen mbi
  =exp required
  r(100);

5 . gen bim
  =exp required
  r(100);

6 . gen bmi_sq= bmi*bmi

7 . xtreg life_expect adult_mortality infant_mort age14mort alcohol bmi bmi_sq hepatitis measles
  > c_water gni_capita gghed che_gdp une_pop une_hiv une_edu_spend i.year, fe

  Fixed-effects (within) regression               Number of obs      =       267
  Group variable: country_num                     Number of groups   =        42

  R-sq:  within  = 0.9962                         Obs per group: min =         1
         between = 0.9449                                        avg =       6.4
         overall = 0.9473                                        max =        14

                                                  F(30,195)          =   1696.19
  corr(u_i, Xb)  = 0.5638                         Prob > F           =    0.0000
```

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
adult_mortality	-.0387169	.0005748	-67.36	0.000	-.0398505	-.0375834
infant_mort	-28.28556	5.807342	-4.87	0.000	-39.73883	-16.8323
age14mort	-219.8633	18.76193	-11.72	0.000	-256.8657	-182.861
alcohol	.0372525	.0194528	1.92	0.057	-.0011123	.0756174
bmi	9.679821	1.375971	7.03	0.000	6.966126	12.39352
bmi_sq	-.2165196	.0296357	-7.31	0.000	-.2749672	-.158072
hepatitis	-.0010812	.0013292	-0.81	0.417	-.0037026	.0015402
measles	.0093227	.0027206	3.43	0.001	.0039571	.0146883
polio	-.001205	.0030828	-0.39	0.696	-.0072848	.0048749
diphtheria	-.0040919	.0038682	-1.06	0.291	-.0117209	.003537
basic_water	.0129352	.0067028	1.93	0.055	-.0002841	.0261545
gni_capita	.0001162	.0000266	4.36	0.000	.0000637	.0001688
gghed	-.0292503	.0375142	-0.78	0.437	-.1032359	.0447354
che_gdp	.0112347	.0167141	0.67	0.502	-.0217288	.0441983
une_pop	9.93e-06	.0000101	0.98	0.328	-.00001	.0000299
une_hiv	.112963	.034845	3.24	0.001	.0442415	.1816845
une_edu_spend	.0103485	.0151756	0.68	0.496	-.0195809	.0402779
year						
2001	.1681922	.1055981	1.59	0.113	-.0400688	.3764531
2002	.1896464	.1059257	1.79	0.075	-.0192608	.3985536
2003	.3279375	.1153423	2.84	0.005	.1004589	.5554161
2004	.4351193	.1251867	3.48	0.001	.1882257	.6820129
2005	.563806	.1443108	3.91	0.000	.2791956	.8484164
2006	.6065227	.1582489	3.83	0.000	.2944236	.9186219
2007	.7195078	.1786609	4.03	0.000	.367152	1.071864
2008	.7891541	.1907591	4.14	0.000	.4129383	1.16537
2009	.9442952	.2101557	4.49	0.000	.5298253	1.358765
2010	1.074392	.2248494	4.78	0.000	.6309434	1.517841
2011	1.204537	.2396909	5.03	0.000	.7318177	1.677256
2012	1.334321	.25523	5.23	0.000	.8309555	1.837687
2013	1.445006	.2731354	5.29	0.000	.906327	1.983685
_cons	-36.16339	16.14386	-2.24	0.026	-68.00237	-4.324416
sigma_u	1.7357592					
sigma_e	.1491869					
rho	.99266693	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 195) = 92.81 Prob > F = 0.0000

```
8 . xtreg life_expect adult_mortality infant_mort age14mort alcohol bmi bmi_sq hepatitis measles
> c_water gni_capita gghed che_gdp une_pop une_hiv une_edu_spend i.year, fe robust

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.9962                         Obs per group: min =         1
       between = 0.9449                                        avg =       6.4
       overall = 0.9473                                        max =        14

                                                F(30,41)           =  28598.16
corr(u_i, Xb)  = 0.5638                         Prob > F           =    0.0000

                                (Std. Err. adjusted for 42 clusters in country_num)
```

life_expect	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
adult_mortality	-.0387169	.0011805	-32.80	0.000	-.041101	-.0363329
infant_mort	-28.28556	14.94993	-1.89	0.066	-58.47756	1.906432
age14mort	-219.8633	40.1606	-5.47	0.000	-300.9693	-138.7574
alcohol	.0372525	.0233055	1.60	0.118	-.0098139	.0843189
bmi	9.679821	2.671075	3.62	0.001	4.285475	15.07417
bmi_sq	-.2165196	.0574961	-3.77	0.001	-.3326353	-.1004039
hepatitis	-.0010812	.0013064	-0.83	0.413	-.0037195	.0015571
measles	.0093227	.0038966	2.39	0.021	.0014533	.0171921
polio	-.001205	.0029863	-0.40	0.689	-.0072359	.004826
diphtheria	-.0040919	.003351	-1.22	0.229	-.0108593	.0026755

basic_water	.0129352	.0105594	1.22	0.228	-.0083899	.0342603
gni_capita	.0001162	.0000523	2.22	0.032	.0000106	.0002218
gghed	-.0292503	.0605751	-0.48	0.632	-.1515841	.0930836
che_gdp	.0112347	.0246424	0.46	0.651	-.0385317	.0610011
une_pop	9.93e-06	.0000213	0.47	0.644	-.0000331	.000053
une_hiv	.112963	.067511	1.67	0.102	-.0233783	.2493043
une_edu_spend	.0103485	.0203285	0.51	0.613	-.0307058	.0514027
year						
2001	.1681922	.0848914	1.98	0.054	-.0032495	.3396339
2002	.1896464	.0972655	1.95	0.058	-.0067853	.3860781
2003	.3279375	.1151091	2.85	0.007	.0954699	.560405
2004	.4351193	.1339321	3.25	0.002	.1646379	.7056007
2005	.563806	.1718711	3.28	0.002	.2167053	.9109066
2006	.6065227	.2269235	2.67	0.011	.1482415	1.064804
2007	.7195078	.2821593	2.55	0.015	.1496756	1.28934
2008	.7891541	.3148102	2.51	0.016	.1533819	1.424926
2009	.9442952	.3419411	2.76	0.009	.2537311	1.634859
2010	1.074392	.3727207	2.88	0.006	.3216675	1.827117
2011	1.204537	.4064084	2.96	0.005	.3837787	2.025295
2012	1.334321	.4381406	3.05	0.004	.4494782	2.219164
2013	1.445006	.4756646	3.04	0.004	.4843817	2.40563
_cons	-36.16339	30.90249	-1.17	0.249	-98.57224	26.24545
sigma_u	1.7357592					
sigma_e	.1491869					
rho	.99266693	(fraction of variance due to u_i)				

```
 9 . gen l_pop= log(une_pop)

10 . gen l_gnicap=log(gni_capita)
   (139 missing values generated)

11 . gen l_gghed = log( gghed)
   (10 missing values generated)

12 . gen l_ chegdp = log(che_gdp)
   too many variables specified
   r(103);

13 . gen l_chegdp = log(che_gdp)
   (10 missing values generated)

14 . gen l_eduspend=log( une_edu_spend)
   (317 missing values generated)

15 . xtreg life_expect adult_mortality infant_mort age14mort alcohol bmi bmi_sq hepatitis measles
   > c_water l_gnicap  une_hiv l_pop l_gnicap l_gghed l_chegdp l_eduspend i.year, fe
   note: l_gnicap omitted because of collinearity

   Fixed-effects (within) regression               Number of obs      =       267
   Group variable: country_num                     Number of groups   =        42

   R-sq:  within  = 0.9960                         Obs per group: min =         1
          between = 0.8755                                        avg =       6.4
          overall = 0.8912                                        max =        14

                                                   F(30,195)          =   1622.60
   corr(u_i, Xb)  = 0.3184                         Prob > F           =    0.0000
```

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
adult_mortality	-.0389214	.0005421	-71.80	0.000	-.0399906	-.0378523
infant_mort	-19.97202	5.544515	-3.60	0.000	-30.90694	-9.037104
age14mort	-229.0095	19.39756	-11.81	0.000	-267.2654	-190.7535
alcohol	.0254177	.0200575	1.27	0.207	-.0141398	.0649752
bmi	10.14822	1.575845	6.44	0.000	7.040334	13.25611
bmi_sq	-.2316612	.0330089	-7.02	0.000	-.2967616	-.1665609
hepatitis	-.0022883	.0013274	-1.72	0.086	-.0049063	.0003296
measles	.0108024	.0027639	3.91	0.000	.0053515	.0162533
polio	-.0014973	.0031379	-0.48	0.634	-.0076858	.0046912
diphtheria	-.0037066	.0039757	-0.93	0.352	-.0115474	.0041342
basic_water	.0070428	.0067057	1.05	0.295	-.0061821	.0202677
l_gnicap	.4643252	.1930343	2.41	0.017	.0836223	.8450282
une_hiv	.1455411	.0335778	4.33	0.000	.0793188	.2117634
l_pop	-.7827353	.734413	-1.07	0.288	-2.231148	.665677
l_gnicap	0	(omitted)				
l_gghed	-.0413142	.0522892	-0.79	0.430	-.1444391	.0618107
l_chegdp	.1085863	.1032212	1.05	0.294	-.0949869	.3121595
l_eduspend	.010921	.055988	0.20	0.846	-.0994986	.1213407
year						
2001	.1888739	.1076814	1.75	0.081	-.0234957	.4012435
2002	.2631578	.1060698	2.48	0.014	.0539665	.4723492
2003	.4583628	.1135616	4.04	0.000	.2343962	.6823294
2004	.619121	.11977	5.17	0.000	.3829101	.8553318
2005	.8033698	.1344833	5.97	0.000	.5381413	1.068598
2006	.9058585	.1443152	6.28	0.000	.6212395	1.190477
2007	1.090169	.1606343	6.79	0.000	.7733655	1.406973
2008	1.19885	.1704572	7.03	0.000	.8626737	1.535027
2009	1.41902	.1862366	7.62	0.000	1.051723	1.786316
2010	1.596848	.199385	8.01	0.000	1.20362	1.990076
2011	1.780629	.2116657	8.41	0.000	1.363181	2.198077
2012	1.966189	.228887	8.59	0.000	1.514777	2.417601
2013	2.126152	.2465964	8.62	0.000	1.639814	2.61249
_cons	-35.52846	15.75102	-2.26	0.025	-66.5927	-4.464233
sigma_u	2.2676746					
sigma_e	.15251911					
rho	.99549674	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 195) = 100.45 Prob > F = 0.0000

```
16 . xtreg life_expect adult_mortality infant_mort age14mort alcohol bmi bmi_sq hepatitis measles
> c_water l_gnicap  une_hiv l_pop l_gnicap l_gghed l_chegdp l_eduspend i.year, fe robust
note: l_gnicap omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.9960                         Obs per group: min =         1
       between = 0.8755                                        avg =       6.4
       overall = 0.8912                                        max =        14

                                                F(30,41)           =  35031.64
corr(u_i, Xb)  = 0.3184                         Prob > F           =    0.0000

                                (Std. Err. adjusted for 42 clusters in country_num)
```

life_expect	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
adult_mortality	-.0389214	.0011827	-32.91	0.000	-.0413099	-.0365329
infant_mort	-19.97202	12.20093	-1.64	0.109	-44.61231	4.668267
age14mort	-229.0095	34.12832	-6.71	0.000	-297.933	-160.0859
alcohol	.0254177	.0294355	0.86	0.393	-.0340285	.0848639
bmi	10.14822	2.563917	3.96	0.000	4.970285	15.32616
bmi_sq	-.2316612	.0538208	-4.30	0.000	-.3403546	-.1229679
hepatitis	-.0022883	.0016212	-1.41	0.166	-.0055624	.0009857
measles	.0108024	.0036761	2.94	0.005	.0033783	.0182265

polio	-.0014973	.0028921	-0.52	0.607	-.007338	.0043434
diphtheria	-.0037066	.0035313	-1.05	0.300	-.0108381	.003425
basic_water	.0070428	.0094494	0.75	0.460	-.0120407	.0261263
l_gnicap	.4643252	.2881576	1.61	0.115	-.1176208	1.046271
une_hiv	.1455411	.0554972	2.62	0.012	.0334623	.2576199
l_pop	-.7827353	1.37392	-0.57	0.572	-3.557423	1.991953
l_gnicap	0	(omitted)				
l_gghed	-.0413142	.0568037	-0.73	0.471	-.1560317	.0734033
l_chegdp	.1085863	.1346689	0.81	0.425	-.163383	.3805557
l_eduspend	.010921	.06165	0.18	0.860	-.1135836	.1354257
year						
2001	.1888739	.0907005	2.08	0.044	.0057006	.3720473
2002	.2631578	.1088843	2.42	0.020	.0432616	.4830541
2003	.4583628	.0982186	4.67	0.000	.2600062	.6567194
2004	.619121	.1116383	5.55	0.000	.3936628	.8445792
2005	.8033698	.137594	5.84	0.000	.5254931	1.081247
2006	.9058585	.151102	6.00	0.000	.6007017	1.211015
2007	1.090169	.2263332	4.82	0.000	.6330801	1.547258
2008	1.19885	.2542751	4.71	0.000	.6853311	1.712369
2009	1.41902	.2615487	5.43	0.000	.8908114	1.947228
2010	1.596848	.2941409	5.43	0.000	1.002818	2.190877
2011	1.780629	.3197859	5.57	0.000	1.134808	2.426449
2012	1.966189	.3532606	5.57	0.000	1.252765	2.679614
2013	2.126152	.3727451	5.70	0.000	1.373378	2.878926
_cons	-35.52846	23.98759	-1.48	0.146	-83.97238	12.91545
sigma_u	2.2676746					
sigma_e	.15251911					
rho	.99549674	(fraction of variance due to u_i)				

17 . vif, uncentered

Variable	VIF	1/VIF
adult_mort~y	92.60	0.010800
infant_mort	85.63	0.011679
age14mort	25.17	0.039735
alcohol	4.51	0.221700
bmi	3046.73	0.000328
bmi_sq	1341.36	0.000746
hepatitis	105.29	0.009498
measles	238.57	0.004192
polio	497.29	0.002011
diphtheria	572.44	0.001747
basic_water	71.67	0.013952
l_gnicap	455.38	0.002196
une_hiv	13.75	0.072720
l_pop	83.95	0.011912
l_gghed	4.75	0.210340
l_chegdp	50.66	0.019741
l_eduspend	18.66	0.053588
year		
2001	2.31	0.433426
2002	3.71	0.269423
2003	3.94	0.253706
2004	5.87	0.170365
2005	5.92	0.169023
2006	5.88	0.170154
2007	5.28	0.189284
2008	7.79	0.128438
2009	6.88	0.145421
2010	9.81	0.101987
2011	8.56	0.116833
2012	8.60	0.116314
2013	9.52	0.105019
Mean VIF	226.41	

```
18 . xtreg life_expect  infant_mort age14mort alcohol bmi bmi_sq hepatitis measles basic_water l_g
> i.year, fe robust
note: l_gnicap omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.8895                         Obs per group: min =         1
       between = 0.4311                                        avg =       6.4
       overall = 0.5208                                        max =        14

                                                F(27,41)           =     48.98
corr(u_i, Xb)  = -0.9251                        Prob > F           =    0.0000

                                (Std. Err. adjusted for 42 clusters in country_num)
------------------------------------------------------------------------------
             |               Robust
 life_expect |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 infant_mort |  -84.05009   55.47482    -1.52   0.137    -196.0838    27.98359
   age14mort |  -431.7248   234.3611    -1.84   0.073    -905.0266    41.57699
     alcohol |   .1297818   .1592223     0.82   0.420    -.1917742    .4513378
         bmi |  -25.29906   15.04581    -1.68   0.100    -55.68469    5.086574
      bmi_sq |   .5597266    .315419     1.77   0.083     -.077275    1.196728
  hepatitis  |    -.00963   .0075032    -1.28   0.207    -.0247831    .0055231
    measles  |   .0308583   .0190038     1.62   0.112    -.0075205    .0692372
 basic_water |   .0668009   .0787633     0.85   0.401    -.0922647    .2258666
    l_gnicap |   1.461476   1.491837     0.98   0.333    -1.551351    4.474303
     une_hiv |  -1.230148     .37823    -3.25   0.002    -1.993999   -.4662968
       l_pop |  -8.005374   5.647573    -1.42   0.164    -19.41088    3.400131
    l_gnicap |          0  (omitted)
     l_gghed |   .4094253   .3163542     1.29   0.203    -.2294649    1.048316
    l_chegdp |  -.4133533   .8168112    -0.51   0.616    -2.062937     1.23623
  l_eduspend |  -.1164933   .4754475    -0.25   0.808    -1.076679    .8436925

        year |
        2001 |   .2121396   .3866958     0.55   0.586    -.5688083    .9930876
        2002 |  -.1163629   .6550282    -0.18   0.860    -1.439219    1.206493
        2003 |  -.0527132    .720556    -0.07   0.942    -1.507905    1.402479
        2004 |  -.0950475   .8501356    -0.11   0.912    -1.811931    1.621836
        2005 |    -.13406   .9318434    -0.14   0.886    -2.015956    1.747836
        2006 |   .2676506   .9724868     0.28   0.785    -1.696326    2.231628
        2007 |   .5211987   .9797425     0.53   0.598    -1.457431    2.499829
        2008 |   .9464319   1.075914     0.88   0.384    -1.226421    3.119284
        2009 |   1.113022   1.095525     1.02   0.316    -1.099435     3.32548
        2010 |   1.232296   1.142467     1.08   0.287    -1.074964    3.539556
        2011 |    1.52401   1.196931     1.27   0.210    -.8932414    3.941262
        2012 |   1.638879    1.31294     1.25   0.219    -1.012657    4.290415
        2013 |   1.867104   1.392051     1.34   0.187    -.9442005    4.678409

       _cons |   412.7418   146.8652     2.81   0.008     116.1415    709.3421
-------------+----------------------------------------------------------------
     sigma_u |  11.401649
     sigma_e |    .796472
         rho |  .99514386   (fraction of variance due to u_i)
------------------------------------------------------------------------------

19 . xtreg life_expect gni_capita gghed une_edu_spend basic_water une_hiv, fe

Fixed-effects (within) regression               Number of obs      =       363
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.6962                         Obs per group: min =         1
       between = 0.5650                                        avg =       8.6
       overall = 0.4881                                        max =        14

                                                F(5,316)           =    144.86
corr(u_i, Xb)  = -0.9022                        Prob > F           =    0.0000
```

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
gni_capita	.0010974	.0001317	8.33	0.000	.0008383	.0013565
gghed	.1471833	.2274303	0.65	0.518	-.3002856	.5946523
une_edu_spend	.2765442	.1249322	2.21	0.028	.0307403	.5223482
basic_water	.439495	.0279009	15.75	0.000	.3846001	.49439
une_hiv	-1.849944	.146287	-12.65	0.000	-2.137764	-1.562125
_cons	34.9247	1.826993	19.12	0.000	31.3301	38.51931
sigma_u	11.055274					
sigma_e	1.7239086					
rho	.97626138	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 316) = 48.35 Prob > F = 0.0000

20 . xtreg life_expect gni_capita gghed une_edu_spend basic_water une_hiv measles infant_mort , fe

Fixed-effects (within) regression Number of obs = 363
Group variable: country_num Number of groups = 42

R-sq: within = 0.9008 Obs per group: min = 1
between = 0.8604 avg = 8.6
overall = 0.8687 max = 14

F(7,314) = 407.43
corr(u_i, Xb) = -0.6920 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
gni_capita	.0005097	.00008	6.37	0.000	.0003523	.000667
gghed	.3240903	.1305976	2.48	0.014	.0671333	.5810474
une_edu_spend	-.0366651	.0729532	-0.50	0.616	-.1802041	.1068739
basic_water	.0536157	.0220814	2.43	0.016	.0101695	.0970619
une_hiv	-.8323165	.0929163	-8.96	0.000	-1.015134	-.6494991
measles	.0071171	.008448	0.84	0.400	-.0095047	.023739
infant_mort	-185.4007	8.349724	-22.20	0.000	-201.8291	-168.9722
_cons	68.28728	1.916605	35.63	0.000	64.51627	72.05829
sigma_u	3.3404948					
sigma_e	.98819787					
rho	.91953032	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 314) = 22.37 Prob > F = 0.0000

21 . xtreg life_expect gni_capita gghed une_edu_spend basic_water une_hiv polio infant_mort , fe

Fixed-effects (within) regression Number of obs = 363
Group variable: country_num Number of groups = 42

R-sq: within = 0.9017 Obs per group: min = 1
between = 0.8535 avg = 8.6
overall = 0.8638 max = 14

F(7,314) = 411.63
corr(u_i, Xb) = -0.7087 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
gni_capita	.0005378	.0000789	6.81	0.000	.0003825	.0006931
gghed	.3246823	.1299598	2.50	0.013	.0689802	.5803844
une_edu_spend	-.0273286	.0723159	-0.38	0.706	-.1696136	.1149564
basic_water	.0562113	.0220315	2.55	0.011	.0128632	.0995594
une_hiv	-.8369225	.0925218	-9.05	0.000	-1.018964	-.6548814
polio	-.0157472	.0082565	-1.91	0.057	-.0319923	.0004978
infant_mort	-193.9782	7.896006	-24.57	0.000	-209.514	-178.4424
_cons	70.36165	1.831694	38.41	0.000	66.75771	73.96559
sigma_u	3.5099463					
sigma_e	.9836329					

rho	.92718334	(fraction of variance due to u_i)

F test that all u_i=0: F(41, 314) = 22.89 Prob > F = 0.0000

22 . xtreg life_expect gni_capita gghed une_edu_spend basic_water une_hiv polio infant_mort bmi, f

Fixed-effects (within) regression Number of obs = 363
Group variable: country_num Number of groups = 42

R-sq: within = 0.9019 Obs per group: min = 1
between = 0.8477 avg = 8.6
overall = 0.8587 max = 14

F(8,313) = 359.67
corr(u_i, Xb) = -0.7213 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
gni_capita	.0005666	.0000888	6.38	0.000	.0003918	.0007414
gghed	.3422636	.1324145	2.58	0.010	.0817285	.6027987
une_edu_spend	-.0187099	.073391	-0.25	0.799	-.1631119	.1256921
basic_water	.0573216	.0221048	2.59	0.010	.0138288	.1008144
une_hiv	-.8430254	.0929961	-9.07	0.000	-1.026002	-.6600489
polio	-.0157563	.0082631	-1.91	0.057	-.0320145	.0005019
infant_mort	-197.9776	9.715085	-20.38	0.000	-217.0927	-178.8625
bmi	-.2377012	.3358765	-0.71	0.480	-.8985624	.42316
_cons	75.89616	8.032345	9.45	0.000	60.09194	91.70037
sigma_u	3.633066					
sigma_e	.98441566					
rho	.93160237	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 313) = 21.02 Prob > F = 0.0000

23 . xtreg life_expect gni_capita gghed une_edu_spend basic_water une_hiv polio infant_mort bmi bm

Fixed-effects (within) regression Number of obs = 363
Group variable: country_num Number of groups = 42

R-sq: within = 0.9035 Obs per group: min = 1
between = 0.8112 avg = 8.6
overall = 0.8297 max = 14

F(9,312) = 324.49
corr(u_i, Xb) = -0.7605 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
gni_capita	.0004905	.0000944	5.19	0.000	.0003047	.0006763
gghed	.2545914	.1371307	1.86	0.064	-.0152264	.5244092
une_edu_spend	-.004025	.0731998	-0.05	0.956	-.1480527	.1400026
basic_water	.0515064	.0221102	2.33	0.020	.0080024	.0950104
une_hiv	-.9664164	.1072647	-9.01	0.000	-1.17747	-.7553628
polio	-.012695	.0083197	-1.53	0.128	-.0290649	.0036749
infant_mort	-206.4681	10.35456	-19.94	0.000	-226.8417	-186.0945
bmi	-11.31908	4.905606	-2.31	0.022	-20.97134	-1.666829
bmi_sq	.2374461	.1048713	2.26	0.024	.0311016	.4437905
_cons	206.2579	58.12642	3.55	0.000	91.88855	320.6272
sigma_u	4.3514761					
sigma_e	.97799008					
rho	.95191666	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 312) = 21.37 Prob > F = 0.0000

```
24 . xtreg life_expect adult_mortality infant_mort  alcohol bmi bmi_sq hepatitis measles polio dip
> ed une_hiv une_edu_spend i.year, fe robust

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.9934                         Obs per group: min =         1
       between = 0.9115                                        avg =       6.4
       overall = 0.9351                                        max =        14

                                                F(27,41)           =   2705.64
corr(u_i, Xb)  = 0.4547                         Prob > F           =    0.0000

                                (Std. Err. adjusted for 42 clusters in country_num)
------------------------------------------------------------------------------
             |               Robust
life_expect |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
adult_mortality |  -.0397495   .0012318   -32.27   0.000    -.0422372   -.0372619
    infant_mort |  -74.25518   10.78848    -6.88   0.000    -96.04296   -52.46739
        alcohol |   .0424454   .0348627     1.22   0.230    -.0279614    .1128521
            bmi |   14.17133   3.119368     4.54   0.000     7.871643    20.47103
         bmi_sq |  -.3024828   .0661562    -4.57   0.000     -.436088   -.1688776
      hepatitis |  -.0025045   .0015036    -1.67   0.103    -.0055411    .0005321
        measles |   .0180591   .0067357     2.68   0.011     .0044561    .0316621
          polio |  -.0089839   .0051576    -1.74   0.089    -.0193998    .0014321
     diphtheria |  -.0039454   .0050872    -0.78   0.442    -.0142191    .0063284
    basic_water |   .0140568   .0171796     0.82   0.418    -.0206382    .0487517
     gni_capita |   .0001147   .0000606     1.89   0.065    -7.69e-06    .0002371
          gghed |  -.0278828   .0538745    -0.52   0.608    -.1366846    .0809191
        une_hiv |   .1828998    .073859     2.48   0.017     .0337386    .3320611
  une_edu_spend |   .0051659   .0314926     0.16   0.871    -.0584347    .0687665
                |
           year |
           2001 |   .0855904   .0819686     1.04   0.303    -.0799485    .2511294
           2002 |   .1279684   .1144411     1.12   0.270    -.1031501     .359087
           2003 |   .2066303   .1550911     1.33   0.190    -.1065825     .519843
           2004 |   .3184074   .1818929     1.75   0.088    -.0489327    .6857476
           2005 |    .405146   .2242389     1.81   0.078    -.0477136    .8580056
           2006 |   .3932997   .2965074     1.33   0.192    -.2055093    .9921086
           2007 |   .4813339   .3500929     1.37   0.177    -.2256929    1.188361
           2008 |   .5637068   .3983432     1.42   0.165    -.2407637    1.368177
           2009 |   .6458499   .4365027     1.48   0.147    -.2356851    1.527385
           2010 |    .762745   .4785431     1.59   0.119    -.2036924    1.729182
           2011 |   .8974295   .5172587     1.73   0.090    -.1471956    1.942055
           2012 |   1.008098   .5576604     1.81   0.078    -.1181203    2.134316
           2013 |   1.090146   .6046007     1.80   0.079    -.1308695    2.311162
                |
          _cons |  -92.51624    37.2884    -2.48   0.017    -167.8217   -17.21079
-------------+----------------------------------------------------------------
       sigma_u |  1.9080355
       sigma_e |  .19504574
           rho |  .98965846   (fraction of variance due to u_i)
------------------------------------------------------------------------------

25 . xtreg life_expect adult_mortality infant_mort  alcohol bmi bmi_sq hepatitis measles polio dip
> ed une_hiv l_eduspend i.year, fe robust

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.9930                         Obs per group: min =         1
       between = 0.8894                                        avg =       6.4
       overall = 0.8957                                        max =        14

                                                F(27,41)           =   2109.61
corr(u_i, Xb)  = 0.4731                         Prob > F           =    0.0000
```

(Std. Err. adjusted for **42** clusters in country_num)

life_expect	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
adult_mortality	**-.0399996**	**.0012339**	**-32.42**	**0.000**	**-.0424915**	**-.0375078**
infant_mort	**-63.49632**	**9.978248**	**-6.36**	**0.000**	**-83.6478**	**-43.34484**
alcohol	**.0341795**	**.0400463**	**0.85**	**0.398**	**-.0466955**	**.1150546**
bmi	**13.32217**	**2.823492**	**4.72**	**0.000**	**7.620016**	**19.02433**
bmi_sq	**-.2918242**	**.0605632**	**-4.82**	**0.000**	**-.414134**	**-.1695145**
hepatitis	**-.0038827**	**.0016147**	**-2.40**	**0.021**	**-.0071437**	**-.0006217**
measles	**.0201558**	**.0063174**	**3.19**	**0.003**	**.0073975**	**.0329142**
polio	**-.0081613**	**.0044665**	**-1.83**	**0.075**	**-.0171817**	**.000859**
diphtheria	**-.0032554**	**.0050742**	**-0.64**	**0.525**	**-.013503**	**.0069922**
basic_water	**.0072662**	**.0182135**	**0.40**	**0.692**	**-.0295167**	**.0440492**
l_gnicap	**-.0912969**	**.3962248**	**-0.23**	**0.819**	**-.8914892**	**.7088954**
l_gghed	**-.0874152**	**.0598879**	**-1.46**	**0.152**	**-.2083612**	**.0335308**
une_hiv	**.207707**	**.0764843**	**2.72**	**0.010**	**.0532438**	**.3621701**
l_eduspend	**.0425651**	**.0914035**	**0.47**	**0.644**	**-.142028**	**.2271583**
year						
2001	**.1519666**	**.087625**	**1.73**	**0.090**	**-.0249956**	**.3289289**
2002	**.255415**	**.1150077**	**2.22**	**0.032**	**.0231523**	**.4876777**
2003	**.4023288**	**.123148**	**3.27**	**0.002**	**.1536263**	**.6510313**
2004	**.5831959**	**.1394179**	**4.18**	**0.000**	**.3016357**	**.8647561**
2005	**.762942**	**.1716232**	**4.45**	**0.000**	**.4163419**	**1.109542**
2006	**.8312936**	**.2085416**	**3.99**	**0.000**	**.4101353**	**1.252452**
2007	**1.01052**	**.2962838**	**3.41**	**0.001**	**.4121624**	**1.608877**
2008	**1.152435**	**.3295406**	**3.50**	**0.001**	**.4869143**	**1.817956**
2009	**1.30749**	**.3536897**	**3.70**	**0.001**	**.5931992**	**2.021781**
2010	**1.492785**	**.3986191**	**3.74**	**0.001**	**.6877574**	**2.297813**
2011	**1.690684**	**.4265375**	**3.96**	**0.000**	**.8292742**	**2.552094**
2012	**1.861419**	**.4619008**	**4.03**	**0.000**	**.9285913**	**2.794246**
2013	**2.017235**	**.4921813**	**4.10**	**0.000**	**1.023255**	**3.011215**
_cons	**-78.62125**	**33.95116**	**-2.32**	**0.026**	**-147.187**	**-10.05548**
sigma_u	**2.3166934**					
sigma_e	**.19983013**					
rho	**.99261474**	(fraction of variance due to u_i)				

```
26 . xtreg life_expect adult_mortality infant_mort  alcohol bmi bmi_sq hepatitis measles polio dip
>  l_gghed une_hiv l_eduspend i.year, fe robust

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.9931                         Obs per group: min =         1
       between = 0.8135                                        avg =       6.4
       overall = 0.8487                                        max =        14

                                                F(28,41)           =   2226.42
corr(u_i, Xb)  = 0.1851                         Prob > F           =    0.0000
```

(Std. Err. adjusted for **42** clusters in country_num)

life_expect	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
adult_mortality	**-.03991**	**.0012308**	**-32.43**	**0.000**	**-.0423956**	**-.0374245**
infant_mort	**-65.32539**	**9.678923**	**-6.75**	**0.000**	**-84.87238**	**-45.77841**
alcohol	**.0381287**	**.038258**	**1.00**	**0.325**	**-.0391348**	**.1153923**
bmi	**14.55957**	**3.655643**	**3.98**	**0.000**	**7.176851**	**21.94229**
bmi_sq	**-.3162097**	**.0763179**	**-4.14**	**0.000**	**-.4703368**	**-.1620826**
hepatitis	**-.0040046**	**.0016537**	**-2.42**	**0.020**	**-.0073443**	**-.0006648**
measles	**.0205418**	**.0062153**	**3.31**	**0.002**	**.0079897**	**.0330938**
polio	**-.0083448**	**.0045069**	**-1.85**	**0.071**	**-.0174467**	**.0007571**
diphtheria	**-.0025623**	**.0048892**	**-0.52**	**0.603**	**-.0124362**	**.0073117**
basic_water	**.0088157**	**.0181154**	**0.49**	**0.629**	**-.027769**	**.0454005**
l_gnicap	**-.1617748**	**.3774395**	**-0.43**	**0.670**	**-.9240293**	**.6004797**
l_pop	**-.9520289**	**1.614278**	**-0.59**	**0.559**	**-4.212129**	**2.308071**

l_gghed	-.0900836	.0602917	-1.49	0.143	-.2118451	.031678
une_hiv	.2124983	.0778879	2.73	0.009	.0552005	.3697962
l_eduspend	.0402915	.0940582	0.43	0.671	-.1496629	.2302459
year						
2001	.1514652	.0879553	1.72	0.093	-.0261641	.3290946
2002	.2503207	.1127998	2.22	0.032	.0225169	.4781245
2003	.415523	.1192642	3.48	0.001	.174664	.656382
2004	.6037264	.1349678	4.47	0.000	.3311533	.8762996
2005	.7884132	.167849	4.70	0.000	.4494354	1.127391
2006	.8683762	.2045305	4.25	0.000	.4553184	1.281434
2007	1.061928	.2989526	3.55	0.001	.4581812	1.665675
2008	1.215103	.339797	3.58	0.001	.5288687	1.901336
2009	1.382453	.3626619	3.81	0.000	.6500426	2.114864
2010	1.579587	.4114378	3.84	0.000	.7486712	2.410502
2011	1.790719	.4474224	4.00	0.000	.8871311	2.694307
2012	1.983299	.4915132	4.04	0.000	.9906678	2.97593
2013	2.153903	.5267115	4.09	0.000	1.090188	3.217619
_cons	-85.19469	36.15617	-2.36	0.023	-158.2136	-12.17583
sigma_u	2.6216484					
sigma_e	.19982565					
rho	.99422386	(fraction of variance due to u_i)				

```
27 .
28 .
29 . xtreg life_expect adult_mortality infant_mort age14mort alcohol hepatitis measles polio dipht
>  che_gdp une_pop une_hiv une_edu_spend i.year, robust fe
```

Fixed-effects (within) regression Number of obs = 267
Group variable: **country_num** Number of groups = 42

R-sq: within = 0.9951 Obs per group: min = 1
between = 0.9358 avg = 6.4
overall = 0.9482 max = 14

F(28,41) = 4564.14
corr(u_i, Xb) = 0.2465 Prob > F = 0.0000

(Std. Err. adjusted for 42 clusters in country_num)

life_expect	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
adult_mortality	-.0365178	.0009802	-37.26	0.000	-.0384973	-.0345383
infant_mort	-30.75295	15.65084	-1.96	0.056	-62.36046	.8545507
age14mort	-252.2193	46.75801	-5.39	0.000	-346.6491	-157.7896
alcohol	.0314425	.031085	1.01	0.318	-.0313349	.0942198
hepatitis	-.0010099	.0014976	-0.67	0.504	-.0040344	.0020145
measles	.0081758	.004726	1.73	0.091	-.0013686	.0177202
polio	.0032194	.0043517	0.74	0.464	-.0055691	.0120079
diphtheria	-.0070542	.00418	-1.69	0.099	-.0154959	.0013875
basic_water	.0153145	.0147805	1.04	0.306	-.0145354	.0451645
gni_capita	.0001275	.0000539	2.37	0.023	.0000186	.0002364
gghed	-.1073636	.0646814	-1.66	0.105	-.2379903	.0232632
che_gdp	.0006338	.0314154	0.02	0.984	-.062811	.0640786
une_pop	.0000345	.0000184	1.88	0.068	-2.64e-06	.0000716
une_hiv	-.0837742	.0469499	-1.78	0.082	-.1785914	.011043
une_edu_spend	.0226591	.0232493	0.97	0.335	-.0242939	.0696121
year						
2001	.2217857	.0930556	2.38	0.022	.033856	.4097153
2002	.1519915	.0945934	1.61	0.116	-.0390438	.3430269
2003	.2409026	.0778974	3.09	0.004	.0835857	.3982195
2004	.2669289	.0934462	2.86	0.007	.0782105	.4556473
2005	.3384905	.1152476	2.94	0.005	.1057432	.5712377
2006	.3601548	.129645	2.78	0.008	.0983314	.6219782
2007	.4021395	.172565	2.33	0.025	.0536375	.7506415
2008	.4261891	.1746778	2.44	0.019	.0734202	.7789581
2009	.5249715	.189969	2.76	0.009	.1413215	.9086216

2010	.6215336	.2105529	2.95	0.005	.1963134	1.046754
2011	.714624	.2314517	3.09	0.004	.2471979	1.18205
2012	.7754893	.2482414	3.12	0.003	.2741556	1.276823
2013	.8476785	.2624512	3.23	0.002	.3176475	1.37771
_cons	72.04681	1.691047	42.60	0.000	68.63167	75.46195
sigma_u	1.5134321					
sigma_e	.16887077					
rho	.98770271	(fraction of variance due to u_i)				

30 . xtreg life_expect adult_mortality infant_mort age14mort alcohol hepatitis measles polio dipht
> che_gdp une_hiv une_edu_spend i.year, robust fe

Fixed-effects (within) regression — Number of obs = 267
Group variable: country_num — Number of groups = 42

R-sq: within = 0.9948 — Obs per group: min = 1
between = 0.9454 — avg = 6.4
overall = 0.9555 — max = 14

F(27,41) = 9362.89
corr(u_i, Xb) = 0.2128 — Prob > F = 0.0000

(Std. Err. adjusted for 42 clusters in country_num)

life_expect	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
adult_mortality	-.0370267	.0011392	-32.50	0.000	-.0393274	-.034726
infant_mort	-34.81881	14.42988	-2.41	0.020	-63.96056	-5.677073
age14mort	-238.988	46.70151	-5.12	0.000	-333.3036	-144.6724
alcohol	.0357368	.0284365	1.26	0.216	-.0216919	.0931656
hepatitis	-.0011986	.0016468	-0.73	0.471	-.0045243	.0021271
measles	.0082475	.004706	1.75	0.087	-.0012564	.0177515
polio	.0029021	.0043695	0.66	0.510	-.0059224	.0117265
diphtheria	-.0059525	.0043555	-1.37	0.179	-.0147486	.0028435
basic_water	.0196755	.0148924	1.32	0.194	-.0104003	.0497513
gni_capita	.0001203	.0000527	2.28	0.028	.0000138	.0002268
gghed	-.0928061	.0594191	-1.56	0.126	-.2128053	.0271932
che_gdp	-.0166583	.0274149	-0.61	0.547	-.0720238	.0387072
une_hiv	-.0763845	.040552	-1.88	0.067	-.1582809	.0055118
une_edu_spend	.0135982	.0249613	0.54	0.589	-.0368122	.0640086
year						
2001	.2145936	.0868022	2.47	0.018	.039293	.3898942
2002	.1587484	.0926332	1.71	0.094	-.0283281	.3458249
2003	.2607017	.0842879	3.09	0.004	.0904789	.4309245
2004	.2922253	.1055784	2.77	0.008	.0790053	.5054452
2005	.3772281	.1340041	2.82	0.007	.1066014	.6478548
2006	.3974355	.148532	2.68	0.011	.097469	.6974021
2007	.4375627	.1911963	2.29	0.027	.0514339	.8236914
2008	.4747231	.1986614	2.39	0.022	.0735182	.875928
2009	.5775718	.2148151	2.69	0.010	.143744	1.0114
2010	.6851089	.2399133	2.86	0.007	.2005941	1.169624
2011	.7851512	.2649631	2.96	0.005	.2500474	1.320255
2012	.8582758	.2823652	3.04	0.004	.2880278	1.428524
2013	.9418968	.2998587	3.14	0.003	.3363199	1.547474
_cons	72.61901	1.584825	45.82	0.000	69.4184	75.81963
sigma_u	1.3988928					
sigma_e	.17270685					
rho	.98498655	(fraction of variance due to u_i)				

```
31 . xtreg infant_mort hepatitis measles polio diphtheria basic_water gni_capita gghed une_hiv une

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.9003                         Obs per group: min =         1
       between = 0.0166                                        avg =       6.4
       overall = 0.0027                                        max =        14

                                                F(22,41)           =     57.98
corr(u_i, Xb)  = -0.4183                        Prob > F           =    0.0000

                                (Std. Err. adjusted for 42 clusters in country_num)
------------------------------------------------------------------------------
             |               Robust
 infant_mort |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   hepatitis |   .0000506   .0000295     1.71   0.095    -9.11e-06    .0001102
     measles |  -.0000263   .0000573    -0.46   0.648    -.0001419    .0000893
       polio |  -4.46e-06   .0000536    -0.08   0.934    -.0001127    .0001038
  diphtheria |  -.0001576   .0000693    -2.27   0.028    -.0002976   -.0000177
 basic_water |  -.0005077   .0002686    -1.89   0.066    -.0010502    .0000347
  gni_capita |   2.74e-06   4.64e-07     5.91   0.000     1.80e-06    3.68e-06
       gghed |   .0014483   .0007323     1.98   0.055    -.0000305    .0029272
     une_hiv |   .0002619   .0006039     0.43   0.667    -.0009578    .0014815
une_edu_spend|  -.0005956   .0005048    -1.18   0.245     -.001615    .0004238
             |
        year |
        2001 |  -.0001044   .0011956    -0.09   0.931    -.0025189    .0023101
        2002 |  -.0008706    .001898    -0.46   0.649    -.0047037    .0029626
        2003 |  -.0008665   .0018923    -0.46   0.649     -.004688     .002955
        2004 |  -.0026991   .0020596    -1.31   0.197    -.0068586    .0014604
        2005 |  -.0046894   .0020585    -2.28   0.028    -.0088465   -.0005322
        2006 |  -.0080416   .0021817    -3.69   0.001    -.0124477   -.0036355
        2007 |  -.0090215   .0024304    -3.71   0.001    -.0139298   -.0041132
        2008 |  -.0118759   .0026445    -4.49   0.000    -.0172166   -.0065353
        2009 |  -.0143989    .002812    -5.12   0.000    -.0200778   -.0087199
        2010 |  -.0169447   .0030644    -5.53   0.000    -.0231335    -.010756
        2011 |  -.0195103   .0032362    -6.03   0.000     -.026046   -.0129746
        2012 |  -.0213016   .0034217    -6.23   0.000    -.0282118   -.0143914
        2013 |  -.0234352   .0036741    -6.38   0.000    -.0308553   -.0160151
             |
       _cons |   .1090844   .0168722     6.47   0.000     .0750103    .1431584
-------------+----------------------------------------------------------------
     sigma_u |  .02490208
     sigma_e |  .00267863
         rho |  .98856181   (fraction of variance due to u_i)
------------------------------------------------------------------------------

32 . save "C:\Users\pddes\Desktop\final.dta", replace
   file C:\Users\pddes\Desktop\final.dta saved

33 . save "C:\Users\pddes\Desktop\final.dta", replace
   file C:\Users\pddes\Desktop\final.dta saved

34 . kdensity e, normal
   e ambiguous abbreviation
   r(111);

35 . kdensity u_hat, normal
```

```
36 . predict y_hat
(option xb assumed; fitted values)
(515 missing values generated)

37 . twoway (scatter y_hat u_hat)

38 . graph save Graph "C:\Users\pddes\Desktop\y_hat vs u_hat.gph"
(file C:\Users\pddes\Desktop\y_hat vs u_hat.gph saved)

39 . xttest3

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (42)  =    8.4e+29
Prob>chi2 =     0.0000


40 . twoway (scatter y_hat u_hat)

41 . swilk u_hat

                    Shapiro-Wilk W test for normal data

    Variable |    Obs       W           V         z       Prob>z
-------------+-------------------------------------------------
       u_hat |    267    0.97308      5.173     3.836    0.00006

42 . save "C:\Users\pddes\Desktop\final.dta", replace
file C:\Users\pddes\Desktop\final.dta saved

43 . xtreg life_expect age14mort alcohol hepatitis basic_water gni_capita une_pop une_hiv une_edu_

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.8733                         Obs per group: min =         1
       between = 0.4903                                        avg =       6.4
       overall = 0.4897                                        max =        14

                                                F(21,204)          =     66.96
corr(u_i, Xb)  = -0.6006                        Prob > F           =    0.0000

------------------------------------------------------------------------------
  life_expect |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
    age14mort |  -521.1193    66.2409    -7.87   0.000    -651.7238   -390.5147
      alcohol |   .1453943   .1070524     1.36   0.176    -.0656768    .3564653
    hepatitis |  -.0007034   .0067572    -0.10   0.917    -.0140263    .0126195
  basic_water |   .0485439   .0342063     1.42   0.157    -.0188993     .115987
   gni_capita |   .0004223   .0001173     3.60   0.000     .0001911    .0006535
      une_pop |   .0002648   .0000478     5.54   0.000     .0001705     .000359
      une_hiv |  -.8044653   .1083309    -7.43   0.000    -1.018057   -.5908735
une_edu_spend |   .1153768   .0822383     1.40   0.162    -.0467692    .2775228
              |
         year |
         2001 |   .0826378   .5783217     0.14   0.887    -1.057616    1.222892
         2002 |  -.3051062   .5432424    -0.56   0.575    -1.376196    .7659837
         2003 |  -.5860711   .5483439    -1.07   0.286    -1.667219    .4950772
         2004 |  -.4892818    .538428    -0.91   0.365    -1.550879    .5723157
         2005 |   -.650733   .5611459    -1.16   0.248    -1.757123    .4556564
         2006 |  -.3033338   .5729201    -0.53   0.597    -1.432938    .8262705
         2007 |  -.1201569   .6017989    -0.20   0.842      -1.3067    1.066386
         2008 |   .1508737   .6210465     0.24   0.808    -1.073619    1.375367
         2009 |   .3789615   .6480804     0.58   0.559    -.8988332    1.656756
         2010 |   .4391853   .6712048     0.65   0.514    -.8842029    1.762574
         2011 |   .5700295   .7123749     0.80   0.425    -.8345322    1.974591
         2012 |   .5065503   .7549557     0.67   0.503    -.9819664    1.995067
         2013 |   .5756738   .7835072     0.73   0.463    -.9691367    2.120484
              |
```

_cons	57.27026	2.399477	23.87	0.000	52.5393	62.00121
sigma_u	5.749982					
sigma_e	.84030216					
rho	.97908969	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 204) = 45.34 Prob > F = 0.0000

```
44 . xtreg life_expect age14mort alcohol hepatitis basic_water gni_capita une_pop une_hiv  i.year,
```

Fixed-effects (within) regression Number of obs = 425
Group variable: country_num Number of groups = 43

R-sq: within = 0.8874 Obs per group: min = 4
between = 0.7957 avg = 9.9
overall = 0.8249 max = 14

F(20,362) = 142.64
corr(u_i, Xb) = -0.6778 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-848.0856	53.4852	-15.86	0.000	-953.2663	-742.9049
alcohol	.2467883	.0903949	2.73	0.007	.0690231	.4245535
hepatitis	.0024188	.005693	0.42	0.671	-.0087767	.0136144
basic_water	.0468845	.0280922	1.67	0.096	-.0083599	.102129
gni_capita	.0006397	.0000809	7.91	0.000	.0004807	.0007988
une_pop	-.0000501	.0000282	-1.78	0.076	-.0001056	5.29e-06
une_hiv	-.860788	.0624442	-13.78	0.000	-.9835869	-.737989
year						
2001	-.5732023	.5478237	-1.05	0.296	-1.650519	.5041142
2002	-1.050215	.4893419	-2.15	0.033	-2.012525	-.0879048
2003	-1.242794	.4816208	-2.58	0.010	-2.18992	-.2956679
2004	-1.324214	.4802879	-2.76	0.006	-2.268719	-.3797091
2005	-1.232357	.4804965	-2.56	0.011	-2.177272	-.2874415
2006	-1.086973	.4905234	-2.22	0.027	-2.051606	-.1223394
2007	-.8871022	.4999985	-1.77	0.077	-1.870369	.0961643
2008	-.6534753	.5122485	-1.28	0.203	-1.660832	.3538813
2009	-.3330185	.524952	-0.63	0.526	-1.365357	.6993199
2010	-.2087604	.5416201	-0.39	0.700	-1.273877	.8563567
2011	-.1364592	.5628321	-0.24	0.809	-1.24329	.9703721
2012	-.1118519	.5842899	-0.19	0.848	-1.260881	1.037177
2013	-.0911271	.6027677	-0.15	0.880	-1.276493	1.094239
_cons	66.07152	1.941943	34.02	0.000	62.25261	69.89042
sigma_u	3.5227109					
sigma_e	.99785498					
rho	.9257218	(fraction of variance due to u_i)				

F test that all u_i=0: F(42, 362) = 41.25 Prob > F = 0.0000

```
45 . xtreg life_expect age14mort alcohol polio basic_water gni_capita une_pop une_hiv  i.year, fe
```

Fixed-effects (within) regression Number of obs = 616
Group variable: country_num Number of groups = 44

R-sq: within = 0.8674 Obs per group: min = 14
between = 0.5722 avg = 14.0
overall = 0.6223 max = 14

F(20,552) = 180.48
corr(u_i, Xb) = -0.4743 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-462.1454	32.22912	-14.34	0.000	-525.4522	-398.8387
alcohol	.1950256	.0819654	2.38	0.018	.0340234	.3560279
polio	-.0050149	.0074623	-0.67	0.502	-.0196728	.009643
basic_water	.0917951	.0216829	4.23	0.000	.0492041	.1343861
gni_capita	.0000889	.0000345	2.57	0.010	.000021	.0001567
une_pop	-.0000221	.0000195	-1.14	0.257	-.0000604	.0000162
une_hiv	-.9509871	.0682836	-13.93	0.000	-1.085115	-.8168596
year						
2001	.089351	.2697708	0.33	0.741	-.440552	.619254
2002	-.099711	.2738765	-0.36	0.716	-.6376786	.4382565
2003	-.2289553	.2802248	-0.82	0.414	-.7793927	.3214822
2004	-.1226326	.2878773	-0.43	0.670	-.6881015	.4428363
2005	.1089626	.2982679	0.37	0.715	-.4769165	.6948416
2006	.4111726	.3117001	1.32	0.188	-.2010908	1.023436
2007	.8635796	.3256098	2.65	0.008	.2239937	1.503165
2008	1.357405	.3386275	4.01	0.000	.6922492	2.022561
2009	1.809259	.3530786	5.12	0.000	1.115717	2.502801
2010	2.209851	.3629071	6.09	0.000	1.497003	2.922699
2011	2.55938	.3757928	6.81	0.000	1.821221	3.297539
2012	2.842113	.3904774	7.28	0.000	2.07511	3.609117
2013	3.069928	.4019378	7.64	0.000	2.280413	3.859442
_cons	59.87135	1.519092	39.41	0.000	56.88744	62.85526
sigma_u	4.5217196					
sigma_e	1.2601959					
rho	.92792545	(fraction of variance due to u_i)				

F test that all u_i=0: F(43, 552) = 51.80 Prob > F = 0.0000

```
46 . xtreg life_expect age14mort alcohol measles basic_water gni_capita une_pop une_hiv une_edu_sp

Fixed-effects (within) regression               Number of obs      =       363
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.9000                         Obs per group: min =         1
       between = 0.5274                                        avg =       8.6
       overall = 0.5559                                        max =        14

                                                F(21,300)          =    128.59
corr(u_i, Xb)  = -0.5672                        Prob > F           =    0.0000
```

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-468.186	35.43852	-13.21	0.000	-537.9256	-398.4464
alcohol	.0285212	.0967413	0.29	0.768	-.1618563	.2188988
measles	.0026247	.0094927	0.28	0.782	-.016056	.0213054
basic_water	.0352543	.0238714	1.48	0.141	-.0117222	.0822308
gni_capita	.0004634	.0001071	4.33	0.000	.0002527	.0006741
une_pop	.0002005	.0000331	6.06	0.000	.0001354	.0002656
une_hiv	-.9680717	.0957904	-10.11	0.000	-1.156578	-.7795654
une_edu_spend	-.0592183	.0761059	-0.78	0.437	-.2089873	.0905506
year						
2001	-.2129352	.2913405	-0.73	0.465	-.786265	.3603946
2002	-.3651011	.3055485	-1.19	0.233	-.9663909	.2361887
2003	-.6951224	.3212004	-2.16	0.031	-1.327214	-.0630311
2004	-.7033469	.3218462	-2.19	0.030	-1.336709	-.0699848
2005	-.7251212	.3364522	-2.16	0.032	-1.387227	-.0630159
2006	-.550118	.3563801	-1.54	0.124	-1.251439	.1512034
2007	-.1751059	.4001347	-0.44	0.662	-.9625321	.6123203
2008	.173634	.399789	0.43	0.664	-.613112	.9603799
2009	.3306239	.4281561	0.77	0.441	-.5119458	1.173194
2010	.662667	.4348132	1.52	0.129	-.1930033	1.518337
2011	.7898003	.4603682	1.72	0.087	-.1161597	1.69576
2012	.7655009	.4920658	1.56	0.121	-.2028369	1.733839
2013	.8680828	.5103608	1.70	0.090	-.1362578	1.872423

_cons	59.98307	1.776603	33.76	0.000	56.48689	63.47925
sigma_u	5.7193095					
sigma_e	1.0150849					
rho	.96946147	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 300) = 48.32 Prob > F = 0.0000

47 . xtreg life_expect age14mort alcohol measles basic_water gni_capita une_pop une_hiv une_edu_sp

Fixed-effects (within) regression Number of obs = 363
Group variable: country_num Number of groups = 42

R-sq: within = 0.9000 Obs per group: min = 1
between = 0.5274 avg = 8.6
overall = 0.5559 max = 14

F(21,300) = 128.59
corr(u_i, Xb) = -0.5672 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-468.186	35.43852	-13.21	0.000	-537.9256	-398.4464
alcohol	.0285212	.0967413	0.29	0.768	-.1618563	.2188988
measles	.0026247	.0094927	0.28	0.782	-.016056	.0213054
basic_water	.0352543	.0238714	1.48	0.141	-.0117222	.0822308
gni_capita	.0004634	.0001071	4.33	0.000	.0002527	.0006741
une_pop	.0002005	.0000331	6.06	0.000	.0001354	.0002656
une_hiv	-.9680717	.0957904	-10.11	0.000	-1.156578	-.7795654
une_edu_spend	-.0592183	.0761059	-0.78	0.437	-.2089873	.0905506
year						
2001	-.2129352	.2913405	-0.73	0.465	-.786265	.3603946
2002	-.3651011	.3055485	-1.19	0.233	-.9663909	.2361887
2003	-.6951224	.3212004	-2.16	0.031	-1.327214	-.0630311
2004	-.7033469	.3218462	-2.19	0.030	-1.336709	-.0699848
2005	-.7251212	.3364522	-2.16	0.032	-1.387227	-.0630159
2006	-.550118	.3563801	-1.54	0.124	-1.251439	.1512034
2007	-.1751059	.4001347	-0.44	0.662	-.9625321	.6123203
2008	.173634	.399789	0.43	0.664	-.613112	.9603799
2009	.3306239	.4281561	0.77	0.441	-.5119458	1.173194
2010	.662667	.4348132	1.52	0.129	-.1930033	1.518337
2011	.7898003	.4603682	1.72	0.087	-.1161597	1.69576
2012	.7655009	.4920658	1.56	0.121	-.2028369	1.733839
2013	.8680828	.5103608	1.70	0.090	-.1362578	1.872423
_cons	59.98307	1.776603	33.76	0.000	56.48689	63.47925
sigma_u	5.7193095					
sigma_e	1.0150849					
rho	.96946147	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 300) = 48.32 Prob > F = 0.0000

48 . xtreg life_expect age14mort alcohol measles basic_water gni_capita une_pop une_hiv i.year, fe

Fixed-effects (within) regression Number of obs = 616
Group variable: country_num Number of groups = 44

R-sq: within = 0.8678 Obs per group: min = 14
between = 0.5899 avg = 14.0
overall = 0.6370 max = 14

F(20,552) = 181.16
corr(u_i, Xb) = -0.4724 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-442.6183	32.49019	-13.62	0.000	-506.4379	-378.7988
alcohol	.1776163	.081656	2.18	0.030	.0172217	.3380108
measles	.0119832	.0079854	1.50	0.134	-.0037023	.0276686
basic_water	.0956862	.0217717	4.39	0.000	.0529207	.1384516
gni_capita	.0000931	.0000346	2.69	0.007	.0000251	.0001611
une_pop	-.000026	.0000196	-1.33	0.184	-.0000645	.0000124
une_hiv	-.9510588	.0681582	-13.95	0.000	-1.08494	-.8171777
year						
2001	.0863461	.2693394	0.32	0.749	-.4427094	.6154016
2002	-.1309235	.2726417	-0.48	0.631	-.6664657	.4046188
2003	-.2951869	.2791219	-1.06	0.291	-.8434579	.2530841
2004	-.2014531	.2871579	-0.70	0.483	-.765509	.3626029
2005	.0180497	.2964524	0.06	0.951	-.5642631	.6003626
2006	.3089217	.3104566	1.00	0.320	-.3008992	.9187425
2007	.7409039	.3241098	2.29	0.023	.1042644	1.377543
2008	1.23475	.3361871	3.67	0.000	.5743871	1.895112
2009	1.664394	.3520425	4.73	0.000	.9728876	2.355901
2010	2.065287	.3637117	5.68	0.000	1.350858	2.779715
2011	2.421619	.3770986	6.42	0.000	1.680896	3.162343
2012	2.685742	.3922408	6.85	0.000	1.915275	3.456209
2013	2.93771	.4030491	7.29	0.000	2.146012	3.729407
_cons	58.40084	1.580011	36.96	0.000	55.29727	61.50441
sigma_u	4.4202285					
sigma_e	1.2581476					
rho	.92505522	(fraction of variance due to u_i)				

F test that all u_i=0: F(43, 552) = 49.29 Prob > F = 0.0000

```
49 . xtreg life_expect age14mort alcohol polio hepatitis basic_water gni_capita une_pop une_hiv un
> r, fe

Fixed-effects (within) regression               Number of obs      =       267
Group variable: country_num                     Number of groups   =        42

R-sq:  within  = 0.8752                         Obs per group: min =         1
       between = 0.5013                                        avg =       6.4
       overall = 0.5029                                        max =        14

                                                F(22,203)          =     64.72
corr(u_i, Xb)  = -0.5752                        Prob > F           =    0.0000
```

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-509.3515	66.23685	-7.69	0.000	-639.9519	-378.7511
alcohol	.1460017	.1065026	1.37	0.172	-.0639914	.3559948
polio	.0194884	.0110436	1.76	0.079	-.0022865	.0412633
hepatitis	-.0041055	.0069934	-0.59	0.558	-.0178946	.0096836
basic_water	.0455071	.0340739	1.34	0.183	-.021677	.1126912
gni_capita	.0003996	.0001174	3.40	0.001	.0001681	.000631
une_pop	.0002562	.0000478	5.36	0.000	.0001619	.0003505
une_hiv	-.7887883	.1081394	-7.29	0.000	-1.002009	-.5755678
une_edu_spend	.1131132	.0818255	1.38	0.168	-.0482236	.2744501
year						
2001	.0119559	.5767407	0.02	0.983	-1.125215	1.149126
2002	-.3709585	.5417361	-0.68	0.494	-1.43911	.6971928
2003	-.6418827	.5464406	-1.17	0.242	-1.71931	.4355445
2004	-.536195	.5363189	-1.00	0.319	-1.593665	.5212751
2005	-.7123314	.5593509	-1.27	0.204	-1.815214	.3905514
2006	-.35759	.570803	-0.63	0.532	-1.483053	.7678731
2007	-.1621309	.599177	-0.27	0.787	-1.343539	1.019278
2008	.1236797	.6180454	0.20	0.842	-1.094932	1.342291
2009	.3482588	.6449829	0.54	0.590	-.9234661	1.619984
2010	.4290129	.6677786	0.64	0.521	-.8876587	1.745685
2011	.5907908	.7088097	0.83	0.406	-.8067827	1.988364

2012	.4897152	.7511346	0.65	0.515	-.991311	1.970741
2013	.5988203	.779589	0.77	0.443	-.9383101	2.135951
_cons	56.2119	2.461327	22.84	0.000	51.35885	61.06494
sigma_u	5.5373728					
sigma_e	.83598162					
rho	.97771572	(fraction of variance due to u_i)				

F test that all u_i=0: F(41, 203) = 45.48 Prob > F = 0.0000

50 . xtreg life_expect age14mort alcohol polio hepatitis basic_water gni_capita une_pop une_hiv i.

Fixed-effects (within) regression Number of obs = 425
Group variable: country_num Number of groups = 43

R-sq: within = 0.8879 Obs per group: min = 4
between = 0.7999 avg = 9.9
overall = 0.8276 max = 14

F(21,361) = 136.10
corr(u_i, Xb) = -0.6805 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-840.3669	53.82733	-15.61	0.000	-946.2214	-734.5124
alcohol	.2416985	.0904332	2.67	0.008	.0638564	.4195407
polio	.0117736	.0097009	1.21	0.226	-.0073037	.0308509
hepatitis	-.0009724	.0063384	-0.15	0.878	-.0134373	.0114925
basic_water	.049438	.0281526	1.76	0.080	-.0059257	.1048017
gni_capita	.0006354	.0000809	7.85	0.000	.0004763	.0007945
une_pop	-.0000488	.0000282	-1.73	0.085	-.0001042	6.68e-06
une_hiv	-.859348	.0624147	-13.77	0.000	-.9820901	-.7366058
year						
2001	-.6177023	.5486926	-1.13	0.261	-1.696738	.4613329
2002	-1.064984	.4891739	-2.18	0.030	-2.026973	-.1029958
2003	-1.25769	.4814629	-2.61	0.009	-2.204514	-.3108657
2004	-1.323932	.4799745	-2.76	0.006	-2.267829	-.3800351
2005	-1.233179	.4801834	-2.57	0.011	-2.177487	-.2888707
2006	-1.091957	.4902204	-2.23	0.027	-2.056003	-.1279102
2007	-.8965847	.4997333	-1.79	0.074	-1.879339	.0861693
2008	-.6665705	.5120279	-1.30	0.194	-1.673503	.3403616
2009	-.3513877	.5248276	-0.67	0.504	-1.383491	.6807158
2010	-.2219373	.5413755	-0.41	0.682	-1.286583	.8427086
2011	-.1421325	.5624842	-0.25	0.801	-1.24829	.9640249
2012	-.1308767	.584119	-0.22	0.823	-1.27958	1.017827
2013	-.0991922	.6024109	-0.16	0.869	-1.283868	1.085483
_cons	65.17386	2.07684	31.38	0.000	61.08963	69.25808
sigma_u	3.4999125					
sigma_e	.99720372					
rho	.92491468	(fraction of variance due to u_i)				

F test that all u_i=0: F(42, 361) = 40.21 Prob > F = 0.0000

51 . parmtest i.year
unrecognized command: parmtest
r(199);

```
52 . testparm i.year

 ( 1)  2001.year = 0
 ( 2)  2002.year = 0
 ( 3)  2003.year = 0
 ( 4)  2004.year = 0
 ( 5)  2005.year = 0
 ( 6)  2006.year = 0
 ( 7)  2007.year = 0
 ( 8)  2008.year = 0
 ( 9)  2009.year = 0
 (10)  2010.year = 0
 (11)  2011.year = 0
 (12)  2012.year = 0
 (13)  2013.year = 0

       F( 13,   361) =    2.32
            Prob > F =    0.0057

53 . gen alcohol_sq= alcohol*alcohol

54 . xtreg life_expect age14mort alcohol alcohol_sq hepatitis basic_water gni_capita une_pop une_h

Fixed-effects (within) regression               Number of obs      =       425
Group variable: country_num                     Number of groups   =        43

R-sq:  within  = 0.8903                         Obs per group: min =         4
       between = 0.7722                                        avg =       9.9
       overall = 0.8141                                        max =        14

                                                F(21,361)          =    139.47
corr(u_i, Xb)  = -0.6530                        Prob > F           =    0.0000

------------------------------------------------------------------------------
 life_expect |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  age14mort |  -832.7397    53.1069   -15.68   0.000    -937.1774   -728.3019
    alcohol |   .7849215   .1965492     3.99   0.000     .3983964    1.171447
 alcohol_sq |   -.053206   .0173086    -3.07   0.002    -.0872444   -.0191676
  hepatitis |   .0018473   .0056308     0.33   0.743     -.009226    .0129206
basic_water |   .0415247   .0278247     1.49   0.136    -.0131941    .0962436
 gni_capita |   .0006374     .00008     7.97   0.000     .0004802    .0007947
    une_pop |  -.0000669   .0000284    -2.36   0.019    -.0001228   -.0000111
    une_hiv |  -.8342168   .0623303   -13.38   0.000    -.9567928   -.7116407
            |
       year |
       2001 |  -.6933059   .5429479    -1.28   0.202    -1.761044    .3744322
       2002 |  -1.135458   .4845235    -2.34   0.020    -2.088302   -.1826153
       2003 |  -1.300602    .476468    -2.73   0.007    -2.237604   -.3636008
       2004 |  -1.310352   .4748005    -2.76   0.006    -2.244075   -.3766302
       2005 |   -1.18332   .4752531    -2.49   0.013    -2.117932   -.2487075
       2006 |  -1.037382   .4851655    -2.14   0.033    -1.991488   -.0832764
       2007 |  -.8422719   .4944788    -1.70   0.089    -1.814693    .1301488
       2008 |  -.5889895   .5068075    -1.16   0.246    -1.585655    .4076764
       2009 |   -.262643   .5194356    -0.51   0.613    -1.284143    .7588568
       2010 |  -.1171599   .5362365    -0.22   0.827      -1.1717    .9373797
       2011 |  -.0297271   .5574589    -0.05   0.958    -1.126002    1.066548
       2012 |    -.04427   .5780065    -0.08   0.939    -1.180953    1.092413
       2013 |    .001232   .5966111     0.00   0.998    -1.172038    1.174502
            |
      _cons |   65.66742   1.924165    34.13   0.000     61.88344     69.4514
-------------+----------------------------------------------------------------
     sigma_u |  3.6376748
     sigma_e |  .98640978
         rho |  .93150598   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(42, 361) =    41.61                 Prob > F = 0.0000
```

```
55 . xtreg life_expect age14mort alcohol alcohol_sq hepatitis basic_water gni_capita une_pop une_h

Fixed-effects (within) regression               Number of obs      =       425
Group variable: country_num                     Number of groups   =        43

R-sq:  within  = 0.8903                         Obs per group: min =         4
       between = 0.7722                                        avg =       9.9
       overall = 0.8141                                        max =        14

                                                F(21,361)          =    139.47
corr(u_i, Xb)  = -0.6530                        Prob > F           =    0.0000
```

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-832.7397	53.1069	-15.68	0.000	-937.1774	-728.3019
alcohol	.7849215	.1965492	3.99	0.000	.3983964	1.171447
alcohol_sq	-.053206	.0173086	-3.07	0.002	-.0872444	-.0191676
hepatitis	.0018473	.0056308	0.33	0.743	-.009226	.0129206
basic_water	.0415247	.0278247	1.49	0.136	-.0131941	.0962436
gni_capita	.0006374	.00008	7.97	0.000	.0004802	.0007947
une_pop	-.0000669	.0000284	-2.36	0.019	-.0001228	-.0000111
une_hiv	-.8342168	.0623303	-13.38	0.000	-.9567928	-.7116407
year						
2001	-.6933059	.5429479	-1.28	0.202	-1.761044	.3744322
2002	-1.135458	.4845235	-2.34	0.020	-2.088302	-.1826153
2003	-1.300602	.476468	-2.73	0.007	-2.237604	-.3636008
2004	-1.310352	.4748005	-2.76	0.006	-2.244075	-.3766302
2005	-1.18332	.4752531	-2.49	0.013	-2.117932	-.2487075
2006	-1.037382	.4851655	-2.14	0.033	-1.991488	-.0832764
2007	-.8422719	.4944788	-1.70	0.089	-1.814693	.1301488
2008	-.5889895	.5068075	-1.16	0.246	-1.585655	.4076764
2009	-.262643	.5194356	-0.51	0.613	-1.284143	.7588568
2010	-.1171599	.5362365	-0.22	0.827	-1.1717	.9373797
2011	-.0297271	.5574589	-0.05	0.958	-1.126002	1.066548
2012	-.04427	.5780065	-0.08	0.939	-1.180953	1.092413
2013	.001232	.5966111	0.00	0.998	-1.172038	1.174502
_cons	65.66742	1.924165	34.13	0.000	61.88344	69.4514
sigma_u	3.6376748					
sigma_e	.98640978					
rho	.93150598	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(42, 361) =    41.61                 Prob > F = 0.0000

56 .
57 . xtreg life_expect age14mort alcohol alcohol_sq basic_water gni_capita une_pop une_hiv i.year,

Fixed-effects (within) regression               Number of obs      =       616
Group variable: country_num                     Number of groups   =        44

R-sq:  within  = 0.8706                         Obs per group: min =        14
       between = 0.5834                                        avg =      14.0
       overall = 0.6343                                        max =        14

                                                F(20,552)          =    185.64
corr(u_i, Xb)  = -0.4458                        Prob > F           =    0.0000
```

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-445.5385	30.93055	-14.40	0.000	-506.2945	-384.7826
alcohol	.8455796	.1922152	4.40	0.000	.4680168	1.223142
alcohol_sq	-.0666518	.0177165	-3.76	0.000	-.1014517	-.0318518
basic_water	.0900169	.0214207	4.20	0.000	.0479409	.132093
gni_capita	.0001006	.0000343	2.94	0.003	.0000333	.0001679
une_pop	-.0000399	.0000198	-2.02	0.044	-.0000788	-1.04e-06
une_hiv	-.92474	.0678239	-13.63	0.000	-1.057965	-.7915156
year						

2001	.1152562	.2665758	0.43	0.666	-.4083709	.6388833
2002	-.0982047	.2696035	-0.36	0.716	-.6277789	.4313695
2003	-.2248377	.2748051	-0.82	0.414	-.7646294	.3149539
2004	-.0749154	.2825933	-0.27	0.791	-.6300052	.4801744
2005	.1654099	.2917259	0.57	0.571	-.4076187	.7384386
2006	.4622394	.3046883	1.52	0.130	-.1362509	1.06073
2007	.902607	.3167854	2.85	0.005	.2803548	1.524859
2008	1.413276	.3295173	4.29	0.000	.7660145	2.060537
2009	1.85061	.3429535	5.40	0.000	1.176957	2.524264
2010	2.281013	.3546083	6.43	0.000	1.584466	2.977559
2011	2.646168	.3686484	7.18	0.000	1.922042	3.370293
2012	2.86848	.3811526	7.53	0.000	2.119793	3.617167
2013	3.111373	.3941661	7.89	0.000	2.337124	3.885621
_cons	58.68823	1.405933	41.74	0.000	55.9266	61.44987
sigma_u	4.3746263					
sigma_e	1.2448529					
rho	.92509027	(fraction of variance due to u_i)				

F test that all u_i=0: F(43, 552) = 59.60 Prob > F = 0.0000

58 . xtreg life_expect age14mort alcohol alcohol_sq basic_water gni_capita une_pop une_hiv i.year,

Fixed-effects (within) regression Number of obs = 616
Group variable: country_num Number of groups = 44

R-sq: within = 0.8706 Obs per group: min = 14
between = 0.5834 avg = 14.0
overall = 0.6343 max = 14

F(20,43) = 49.10
corr(u_i, Xb) = -0.4458 Prob > F = 0.0000

(Std. Err. adjusted for 44 clusters in country_num)

life_expect	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-445.5385	118.8206	-3.75	0.001	-685.1632	-205.9139
alcohol	.8455796	.2313777	3.65	0.001	.378962	1.312197
alcohol_sq	-.0666518	.0277833	-2.40	0.021	-.1226821	-.0106214
basic_water	.0900169	.0555641	1.62	0.113	-.0220387	.2020726
gni_capita	.0001006	.0000871	1.16	0.254	-.0000749	.0002762
une_pop	-.0000399	.000056	-0.71	0.480	-.0001527	.0000729
une_hiv	-.92474	.2117995	-4.37	0.000	-1.351874	-.4976057
year						
2001	.1152562	.3183459	0.36	0.719	-.5267495	.7572618
2002	-.0982047	.3739048	-0.26	0.794	-.8522555	.6558462
2003	-.2248377	.444648	-0.51	0.616	-1.121556	.6718805
2004	-.0749154	.5004077	-0.15	0.882	-1.084084	.934253
2005	.1654099	.5366058	0.31	0.759	-.9167589	1.247579
2006	.4622394	.5773605	0.80	0.428	-.702119	1.626598
2007	.902607	.6106811	1.48	0.147	-.3289487	2.134163
2008	1.413276	.6658621	2.12	0.040	.0704369	2.756115
2009	1.85061	.7087079	2.61	0.012	.4213647	3.279856
2010	2.281013	.743756	3.07	0.004	.7810856	3.780939
2011	2.646168	.7904651	3.35	0.002	1.052043	4.240293
2012	2.86848	.8504983	3.37	0.002	1.153286	4.583673
2013	3.111373	.9017022	3.45	0.001	1.292917	4.929828
_cons	58.68823	3.889366	15.09	0.000	50.84458	66.53189
sigma_u	4.3746263					
sigma_e	1.2448529					
rho	.92509027	(fraction of variance due to u_i)				

```
59 . xtreg life_expect age14mort alcohol alcohol_sq basic_water gni_capita une_pop une_hiv i.year,

Fixed-effects (within) regression               Number of obs      =       616
Group variable: country_num                     Number of groups   =        44

R-sq:  within  = 0.8706                         Obs per group: min =        14
       between = 0.5834                                        avg =      14.0
       overall = 0.6343                                        max =        14

                                                F(20,552)          =    185.64
corr(u_i, Xb)  = -0.4458                        Prob > F           =    0.0000

------------------------------------------------------------------------------
 life_expect |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  age14mort |  -445.5385   30.93055   -14.40   0.000    -506.2945   -384.7826
    alcohol |   .8455796   .1922152     4.40   0.000     .4680168    1.223142
 alcohol_sq |  -.0666518   .0177165    -3.76   0.000    -.1014517   -.0318518
basic_water |   .0900169   .0214207     4.20   0.000     .0479409     .132093
 gni_capita |   .0001006   .0000343     2.94   0.003     .0000333    .0001679
    une_pop |  -.0000399   .0000198    -2.02   0.044    -.0000788   -1.04e-06
    une_hiv |    -.92474   .0678239   -13.63   0.000    -1.057965   -.7915156
            |
       year |
       2001 |   .1152562   .2665758     0.43   0.666    -.4083709    .6388833
       2002 |  -.0982047   .2696035    -0.36   0.716    -.6277789    .4313695
       2003 |  -.2248377   .2748051    -0.82   0.414    -.7646294    .3149539
       2004 |  -.0749154   .2825933    -0.27   0.791    -.6300052    .4801744
       2005 |   .1654099   .2917259     0.57   0.571    -.4076187    .7384386
       2006 |   .4622394   .3046883     1.52   0.130    -.1362509     1.06073
       2007 |    .902607   .3167854     2.85   0.005     .2803548    1.524859
       2008 |   1.413276   .3295173     4.29   0.000     .7660145    2.060537
       2009 |    1.85061   .3429535     5.40   0.000     1.176957    2.524264
       2010 |   2.281013   .3546083     6.43   0.000     1.584466    2.977559
       2011 |   2.646168   .3686484     7.18   0.000     1.922042    3.370293
       2012 |    2.86848   .3811526     7.53   0.000     2.119793    3.617167
       2013 |   3.111373   .3941661     7.89   0.000     2.337124    3.885621
            |
      _cons |   58.68823   1.405933    41.74   0.000      55.9266    61.44987
-------------+----------------------------------------------------------------
     sigma_u |  4.3746263
     sigma_e |  1.2448529
         rho |   .92509027   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(43, 552) =    59.60                 Prob > F = 0.0000

60 . predict reduced_model_y_hat
(option xb assumed; fitted values)
(166 missing values generated)

61 .
62 . predict reduced_model_u_hat, e
(166 missing values generated)

63 . twowayplot( reduced_model_y_hat, reduced_model_u_hat)
unrecognized command:  twowayplot
r(199);

64 . twoway(scatter reduced_model_y_hat reduced_model_u_hat)
```

```
65 . twoway(scatter reduced_model_u_hat  reduced_model_y_hat )

66 . xttest3

   Modified Wald test for groupwise heteroskedasticity
   in fixed effect regression model

   H0: sigma(i)^2 = sigma^2 for all i

   chi2 (44)  =   61932.10
   Prob>chi2 =      0.0000


67 . vif, uncentered

    Variable |       VIF       1/VIF
-------------+----------------------
     age14mort |      3.89    0.257229
       alcohol |     27.54    0.036312
     alcohol_sq |     19.21    0.052045
    basic_water |     12.15    0.082281
     gni_capita |      2.62    0.382339
        une_pop |      2.04    0.489385
        une_hiv |      1.91    0.524326
           year |
           2001 |      1.75    0.569897
           2002 |      1.74    0.574852
           2003 |      1.73    0.579098
           2004 |      1.71    0.583685
           2005 |      1.70    0.587317
           2006 |      1.69    0.590737
           2007 |      1.69    0.591900
           2008 |      1.69    0.592538
           2009 |      1.69    0.591639
           2010 |      1.69    0.590736
           2011 |      1.70    0.589120
           2012 |      1.71    0.583674
           2013 |      1.72    0.580103
-------------+----------------------
    Mean VIF |      4.58

68 . save "C:\Users\pddes\Desktop\final.dta", replace
   file C:\Users\pddes\Desktop\final.dta saved

69 . save "C:\Users\pddes\Desktop\final.dta", replace
   file C:\Users\pddes\Desktop\final.dta saved

70 . xtreg life_expect age14mort alcohol alcohol_sq basic_water gni_capita une_pop une_hiv i.year,

   Fixed-effects (within) regression               Number of obs      =       616
   Group variable: country_num                     Number of groups   =        44

   R-sq:  within  = 0.8706                         Obs per group: min =        14
          between = 0.5834                                        avg =      14.0
          overall = 0.6343                                        max =        14

                                                   F(20,552)          =    185.64
   corr(u_i, Xb)  = -0.4458                        Prob > F           =    0.0000

------------------------------------------------------------------------------
 life_expect |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     age14mort |  -445.5385   30.93055   -14.40   0.000    -506.2945   -384.7826
       alcohol |   .8455796   .1922152     4.40   0.000     .4680168    1.223142
     alcohol_sq |  -.0666518   .0177165    -3.76   0.000    -.1014517   -.0318518
    basic_water |   .0900169   .0214207     4.20   0.000     .0479409     .132093
     gni_capita |   .0001006   .0000343     2.94   0.003     .0000333    .0001679
        une_pop |  -.0000399   .0000198    -2.02   0.044    -.0000788   -1.04e-06
        une_hiv |    -.92474   .0678239   -13.63   0.000    -1.057965   -.7915156
                |
           year |
           2001 |   .1152562   .2665758     0.43   0.666    -.4083709    .6388833
```

2002	-.0982047	.2696035	-0.36	0.716	-.6277789	.4313695
2003	-.2248377	.2748051	-0.82	0.414	-.7646294	.3149539
2004	-.0749154	.2825933	-0.27	0.791	-.6300052	.4801744
2005	.1654099	.2917259	0.57	0.571	-.4076187	.7384386
2006	.4622394	.3046883	1.52	0.130	-.1362509	1.06073
2007	.902607	.3167854	2.85	0.005	.2803548	1.524859
2008	1.413276	.3295173	4.29	0.000	.7660145	2.060537
2009	1.85061	.3429535	5.40	0.000	1.176957	2.524264
2010	2.281013	.3546083	6.43	0.000	1.584466	2.977559
2011	2.646168	.3686484	7.18	0.000	1.922042	3.370293
2012	2.86848	.3811526	7.53	0.000	2.119793	3.617167
2013	3.111373	.3941661	7.89	0.000	2.337124	3.885621
_cons	58.68823	1.405933	41.74	0.000	55.9266	61.44987
sigma_u	4.3746263					
sigma_e	1.2448529					
rho	.92509027	(fraction of variance due to u_i)				

F test that all u_i=0: F(43, 552) = 59.60 Prob > F = 0.0000

71 . estimates store fe2

72 . xtreg life_expect age14mort alcohol alcohol_sq basic_water gni_capita une_pop une_hiv i.year,

Fixed-effects (within) regression Number of obs = 616
Group variable: country_num Number of groups = 44

R-sq: within = 0.8706 Obs per group: min = 14
between = 0.5834 avg = 14.0
overall = 0.6343 max = 14

F(20,552) = 185.64
corr(u_i, Xb) = -0.4458 Prob > F = 0.0000

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	-445.5385	30.93055	-14.40	0.000	-506.2945	-384.7826
alcohol	.8455796	.1922152	4.40	0.000	.4680168	1.223142
alcohol_sq	-.0666518	.0177165	-3.76	0.000	-.1014517	-.0318518
basic_water	.0900169	.0214207	4.20	0.000	.0479409	.132093
gni_capita	.0001006	.0000343	2.94	0.003	.0000333	.0001679
une_pop	-.0000399	.0000198	-2.02	0.044	-.0000788	-1.04e-06
une_hiv	-.92474	.0678239	-13.63	0.000	-1.057965	-.7915156
year						
2001	.1152562	.2665758	0.43	0.666	-.4083709	.6388833
2002	-.0982047	.2696035	-0.36	0.716	-.6277789	.4313695
2003	-.2248377	.2748051	-0.82	0.414	-.7646294	.3149539
2004	-.0749154	.2825933	-0.27	0.791	-.6300052	.4801744
2005	.1654099	.2917259	0.57	0.571	-.4076187	.7384386
2006	.4622394	.3046883	1.52	0.130	-.1362509	1.06073
2007	.902607	.3167854	2.85	0.005	.2803548	1.524859
2008	1.413276	.3295173	4.29	0.000	.7660145	2.060537
2009	1.85061	.3429535	5.40	0.000	1.176957	2.524264
2010	2.281013	.3546083	6.43	0.000	1.584466	2.977559
2011	2.646168	.3686484	7.18	0.000	1.922042	3.370293
2012	2.86848	.3811526	7.53	0.000	2.119793	3.617167
2013	3.111373	.3941661	7.89	0.000	2.337124	3.885621
_cons	58.68823	1.405933	41.74	0.000	55.9266	61.44987
sigma_u	4.3746263					
sigma_e	1.2448529					
rho	.92509027	(fraction of variance due to u_i)				

F test that all u_i=0: F(43, 552) = 59.60 Prob > F = 0.0000

```
73 .
74 . xtreg life_expect age14mort alcohol alcohol_sq basic_water gni_capita une_pop une_hiv i.year,

Random-effects GLS regression                   Number of obs      =       616
Group variable: country_num                     Number of groups   =        44

R-sq:  within  = 0.8669                         Obs per group: min =        14
       between = 0.6860                                        avg =      14.0
       overall = 0.7280                                        max =        14

                                                Wald chi2(20)      =   3604.29
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

life_expect	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age14mort	-491.546	30.14853	-16.30	0.000	-550.636	-432.4559
alcohol	.7274377	.177235	4.10	0.000	.3800635	1.074812
alcohol_sq	-.0598745	.0165441	-3.62	0.000	-.0923003	-.0274487
basic_water	.0750399	.017166	4.37	0.000	.041395	.1086847
gni_capita	.0001012	.0000336	3.01	0.003	.0000354	.000167
une_pop	-.0000243	.0000124	-1.96	0.050	-.0000487	2.37e-08
une_hiv	-.6904768	.0463074	-14.91	0.000	-.7812377	-.5997159
year						
2001	.0812008	.2748335	0.30	0.768	-.457463	.6198646
2002	-.1497332	.2774427	-0.54	0.589	-.6935109	.3940445
2003	-.2895678	.2818182	-1.03	0.304	-.8419214	.2627858
2004	-.1523101	.2881661	-0.53	0.597	-.7171052	.412485
2005	.0824723	.2956941	0.28	0.780	-.4970775	.6620221
2006	.3761945	.3064469	1.23	0.220	-.2244304	.9768194
2007	.8064357	.3166808	2.55	0.011	.1857528	1.427119
2008	1.294632	.3274238	3.95	0.000	.6528935	1.936371
2009	1.713348	.3390389	5.05	0.000	1.048844	2.377852
2010	2.128781	.3489554	6.10	0.000	1.444841	2.812721
2011	2.47431	.3610096	6.85	0.000	1.766744	3.181876
2012	2.688188	.3721555	7.22	0.000	1.958777	3.4176
2013	2.915865	.3830864	7.61	0.000	2.16503	3.666701
_cons	58.85241	1.319657	44.60	0.000	56.26593	61.43889
sigma_u	2.6828983					
sigma_e	1.2448529					
rho	.8228476	(fraction of variance due to u_i)				

```
75 . estimates store re2

76 . hausman fe2 re2, sigmamore

Note: the rank of the differenced variance matrix (7) does not equal the number of coefficients
        what you expect, or there may be problems computing the test.  Examine the output of yo
        unexpected and possibly consider scaling your variables so that the coefficients are on
```

	Coefficients (b) fe2	(B) re2	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
age14mort	-445.5385	-491.546	46.00742	10.45948
alcohol	.8455796	.7274377	.1181418	.0889649
alcohol_sq	-.0666518	-.0598745	-.0067772	.0077709
basic_water	.0900169	.0750399	.0149771	.0139188
gni_capita	.0001006	.0001012	-5.29e-07	.0000111
une_pop	-.0000399	-.0000243	-.0000156	.0000162
une_hiv	-.92474	-.6904768	-.2342633	.0524601
2001bn.year	.1152562	.0812008	.0340554	.0103654
2002.year	-.0982047	-.1497332	.0515285	.0198594
2003.year	-.2248377	-.2895678	.06473	.0310094
2004.year	-.0749154	-.1523101	.0773947	.0443197
2005.year	.1654099	.0824723	.0829376	.0561413
2006.year	.4622394	.3761945	.0860449	.0700441
2007.year	.902607	.8064357	.0961713	.0808178

2008.year	**1.413276**	**1.294632**	**.1186434**	**.0914918**
2009.year	**1.85061**	**1.713348**	**.1372628**	**.1012289**
2010.year	**2.281013**	**2.128781**	**.1522318**	**.1099021**
2011.year	**2.646168**	**2.47431**	**.1718579**	**.1197049**
2012.year	**2.86848**	**2.688188**	**.1802911**	**.1270322**
2013.year	**3.111373**	**2.915865**	**.1955071**	**.1364597**

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(**7**) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= **42.59**
Prob>chi2 = **0.0000**
(V_b-V_B is not positive definite)

```
77 . xtreg life_expect age14mort alcohol alcohol_sq basic_water gni_capita une_pop une_hiv i.year,
```

Fixed-effects (within) regression — Number of obs = **616**
Group variable: **country_num** — Number of groups = **44**

R-sq: within = **0.8706** — Obs per group: min = **14**
between = **0.5834** — avg = **14.0**
overall = **0.6343** — max = **14**

F(**20,552**) = **185.64**
corr(u_i, Xb) = **-0.4458** — Prob > F = **0.0000**

life_expect	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
age14mort	**-445.5385**	**30.93055**	**-14.40**	**0.000**	**-506.2945**	**-384.7826**
alcohol	**.8455796**	**.1922152**	**4.40**	**0.000**	**.4680168**	**1.223142**
alcohol_sq	**-.0666518**	**.0177165**	**-3.76**	**0.000**	**-.1014517**	**-.0318518**
basic_water	**.0900169**	**.0214207**	**4.20**	**0.000**	**.0479409**	**.132093**
gni_capita	**.0001006**	**.0000343**	**2.94**	**0.003**	**.0000333**	**.0001679**
une_pop	**-.0000399**	**.0000198**	**-2.02**	**0.044**	**-.0000788**	**-1.04e-06**
une_hiv	**-.92474**	**.0678239**	**-13.63**	**0.000**	**-1.057965**	**-.7915156**
year						
2001	**.1152562**	**.2665758**	**0.43**	**0.666**	**-.4083709**	**.6388833**
2002	**-.0982047**	**.2696035**	**-0.36**	**0.716**	**-.6277789**	**.4313695**
2003	**-.2248377**	**.2748051**	**-0.82**	**0.414**	**-.7646294**	**.3149539**
2004	**-.0749154**	**.2825933**	**-0.27**	**0.791**	**-.6300052**	**.4801744**
2005	**.1654099**	**.2917259**	**0.57**	**0.571**	**-.4076187**	**.7384386**
2006	**.4622394**	**.3046883**	**1.52**	**0.130**	**-.1362509**	**1.06073**
2007	**.902607**	**.3167854**	**2.85**	**0.005**	**.2803548**	**1.524859**
2008	**1.413276**	**.3295173**	**4.29**	**0.000**	**.7660145**	**2.060537**
2009	**1.85061**	**.3429535**	**5.40**	**0.000**	**1.176957**	**2.524264**
2010	**2.281013**	**.3546083**	**6.43**	**0.000**	**1.584466**	**2.977559**
2011	**2.646168**	**.3686484**	**7.18**	**0.000**	**1.922042**	**3.370293**
2012	**2.86848**	**.3811526**	**7.53**	**0.000**	**2.119793**	**3.617167**
2013	**3.111373**	**.3941661**	**7.89**	**0.000**	**2.337124**	**3.885621**
_cons	**58.68823**	**1.405933**	**41.74**	**0.000**	**55.9266**	**61.44987**
sigma_u	**4.3746263**					
sigma_e	**1.2448529**					
rho	**.92509027**	(fraction of variance due to u_i)				

F test that all u_i=0: F(**43, 552**) = **59.60** — Prob > F = **0.0000**

```
78 . kdensity reduced_model_u_hat, normal

79 . save "C:\Users\pddes\Desktop\final.dta", replace
file C:\Users\pddes\Desktop\final.dta saved

80 .
```