Notes:
1. Unicode is supported; see help unicode_advice.
2. Maximum number of variables is set to 5000; see help set_maxvar.

```
 1 . import excel "C:\Users\Omar\Downloads\Stata.xlsx", sheet("NRI ALL") firstrow

 2 . xtset FirmID YearID
       panel variable:  FirmID (unbalanced)
        time variable:  YearID, 12 to 18, but with gaps
                delta:  1 unit

 3 .
 4 .
 5 .
 6 . winsor2 ROA, suffix(_w) cuts(1 99) by( FirmID YearID)

 7 .
 8 . winsor2 SIZE, suffix(_w) cuts(1 99) by( FirmID YearID)

 9 .
10 . winsor2 LEV, suffix(_w) cuts(1 99) by( FirmID YearID)

11 . xtreg ROA_w NRI SIZE_w LEV_w i.YearID, fe
note: 18.YearID omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       2,457
Group variable: FirmID                          Number of groups   =         391

R-sq:                                           Obs per group:
     within  = 0.2178                                         min =           2
     between = 0.0036                                         avg =         6.3
     overall = 0.0593                                         max =           7

                                                F(8,2058)          =       71.63
corr(u_i, Xb)  = -0.6252                        Prob > F           =      0.0000

------------------------------------------------------------------------------
       ROA_w |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         NRI |  -2.423221   .2753584    -8.80   0.000    -2.963231    -1.88321
      SIZE_w |   5.389893   .8091499     6.66   0.000     3.803055    6.976731
       LEV_w |  -7.141705    1.57112    -4.55   0.000    -10.22286   -4.060554
             |
      YearID |
          13 |   15.08518   1.570872     9.60   0.000     12.00452    18.16584
          14 |  -13.19055   2.555337    -5.16   0.000    -18.20187   -8.179238
          15 |  -1.365042   2.168364    -0.63   0.529    -5.617458    2.887373
          16 |  -20.33318   2.935385    -6.93   0.000    -26.08981   -14.57654
          17 |  -1.006911   1.001067    -1.01   0.315    -2.970121    .9562996
```

18	**0**	(omitted)				
_cons	**64.99346**	**7.463844**	**8.71**	**0.000**	**50.35598**	**79.63093**
sigma_u	**12.084397**					
sigma_e	**12.943232**					
rho	**.46572491**	(fraction of variance due to u_i)				

F test that all u_i=0: F(**390, 2058**) = **2.38** Prob > F = **0.0000**

12 . estimates store fe1

13 . xtreg ROA_w NRI SIZE_w LEV_w i.YearID, re
note: 18.YearID omitted because of collinearity

Random-effects GLS regression — Number of obs = **2,457**
Group variable: **FirmID** — Number of groups = **391**

R-sq:
within = **0.2043**
between = **0.0834**
overall = **0.1732**

Obs per group:
min = **2**
avg = **6.3**
max = **7**

Wald chi2(**8**) = **563.64**
corr(u_i, X) = **0** (assumed) — Prob > chi2 = **0.0000**

ROA_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
NRI	**-.9482678**	**.1450966**	**-6.54**	**0.000**	**-1.232652**	**-.6638837**
SIZE_w	**.6374119**	**.2090023**	**3.05**	**0.002**	**.2277749**	**1.047049**
LEV_w	**-10.36023**	**1.176684**	**-8.80**	**0.000**	**-12.66649**	**-8.053975**
YearID						
13	**7.588106**	**1.010693**	**7.51**	**0.000**	**5.607184**	**9.569029**
14	**-.5251057**	**1.614005**	**-0.33**	**0.745**	**-3.688497**	**2.638286**
15	**9.514381**	**1.316742**	**7.23**	**0.000**	**6.933614**	**12.09515**
16	**-4.756828**	**1.515132**	**-3.14**	**0.002**	**-7.726432**	**-1.787224**
17	**.0866091**	**.9742195**	**0.09**	**0.929**	**-1.822826**	**1.996044**
18	**0**	(omitted)				
_cons	**54.05801**	**7.211704**	**7.50**	**0.000**	**39.92333**	**68.19269**
sigma_u	**5.5849499**					
sigma_e	**12.943232**					
rho	**.15696375**	(fraction of variance due to u_i)				

14 . estimates store re1

15 . hausman fe1 re1, sigmamore

	——— Coefficients ———			
	(b) fe1	(B) re1	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
NRI	**-2.423221**	**-.9482678**	**-1.474953**	**.2376698**
SIZE_w	**5.389893**	**.6374119**	**4.752481**	**.7911219**
LEV_w	**-7.141705**	**-10.36023**	**3.218529**	**1.067592**
YearID				
13	**15.08518**	**7.588106**	**7.497074**	**1.225577**
14	**-13.19055**	**-.5251057**	**-12.66545**	**2.018084**
15	**-1.365042**	**9.514381**	**-10.87942**	**1.753427**
16	**-20.33318**	**-4.756828**	**-15.57635**	**2.552657**
17	**-1.006911**	**.0866091**	**-1.09352**	**.2751994**

```
              |
                            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)
                          =       57.23
                Prob>chi2 =      0.0000

16 .
17 . * (2) IMD Overall — moderation

18 . xtreg ROA_w c.NRI##c.SIZE_w LEV_w i.YearID, fe
note: 18.YearID omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       2,457
Group variable: FirmID                          Number of groups   =         391

R-sq:                                           Obs per group:
     within  = 0.2179                                         min =           2
     between = 0.0036                                         avg =         6.3
     overall = 0.0594                                         max =           7

                                                F(9,2057)          =       63.67
corr(u_i, Xb)  = -0.6251                        Prob > F           =      0.0000

------------------------------------------------------------------------------
       ROA_w |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         NRI |  -2.604636   .4962389    -5.25   0.000    -3.577819   -1.631453
      SIZE_w |   4.796632   1.573929     3.05   0.002     1.709972    7.883293
             |
c.NRI#c.SIZE_w |   .0114304   .0260088     0.44   0.660     -.039576    .0624367
             |
       LEV_w |  -7.151506   1.571587    -4.55   0.000    -10.23357   -4.069439
             |
      YearID |
          13 |   15.25473   1.617853     9.43   0.000     12.08193    18.42753
          14 |  -13.31753   2.572118    -5.18   0.000    -18.36176   -8.273307
          15 |  -1.398839   2.170152    -0.64   0.519    -5.654762    2.857085
          16 |  -20.34201   2.936029    -6.93   0.000    -26.09991   -14.58412
          17 |  -.9636258   1.006096    -0.96   0.338    -2.936699    1.009447
          18 |           0  (omitted)
             |
       _cons |   74.38755   22.64161     3.29   0.001     29.98469    118.7904
-------------+----------------------------------------------------------------
     sigma_u |  12.082685
     sigma_e |   12.94577
         rho |  .46555681   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(390, 2057) = 2.38                     Prob > F = 0.0000
```

```
19 . estimates store fe2

20 . xtreg ROA_w c.NRI##c.SIZE_w LEV_w i.YearID, re
note: 18.YearID omitted because of collinearity

Random-effects GLS regression                   Number of obs     =      2,457
Group variable: FirmID                          Number of groups  =        391

R-sq:                                           Obs per group:
     within  = 0.2043                                         min =          2
     between = 0.0841                                         avg =        6.3
     overall = 0.1734                                         max =          7

                                                Wald chi2(9)      =     563.37
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
```

ROA_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
NRI	-1.204898	.4403443	-2.74	0.006	-2.067956	-.3418386
SIZE_w	-.2094945	1.375834	-0.15	0.879	-2.906079	2.48709
c.NRI#c.SIZE_w	.0162664	.0262094	0.62	0.535	-.0351031	.0676359
LEV_w	-10.37693	1.175413	-8.83	0.000	-12.6807	-8.073161
YearID						
13	7.822321	1.082807	7.22	0.000	5.700059	9.944583
14	-.6920834	1.640415	-0.42	0.673	-3.907238	2.523071
15	9.476738	1.319357	7.18	0.000	6.890845	12.06263
16	-4.755701	1.515049	-3.14	0.002	-7.725142	-1.786259
17	.1460137	.9799045	0.15	0.882	-1.774564	2.066591
18	0	(omitted)				
_cons	67.38149	22.69743	2.97	0.003	22.89535	111.8676
sigma_u	5.5360472					
sigma_e	12.94577					
rho	.15459897	(fraction of variance due to u_i)				

```
21 . estimates store re2

22 . hausman fe2 re2, sigmamore

Note: the rank of the differenced variance matrix (8) does not equal the number of coefficients b
        Examine the output of your estimators for anything unexpected and possibly consider scali
```

	——— Coefficients ———			
	(b) fe2	(B) re2	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
NRI	-2.604636	-1.204898	-1.399739	.2414393
SIZE_w	4.796632	-.2094945	5.006127	.8025707
c.NRI#c.SIZE_w	.0114304	.0162664	-.004836	.0024192
LEV_w	-7.151506	-10.37693	3.225423	1.071399
YearID				
13	15.25473	7.822321	7.432411	1.228066
14	-13.31753	-.6920834	-12.62545	2.021012
15	-1.398839	9.476738	-10.87558	1.755709
16	-20.34201	-4.755701	-15.58631	2.55596
17	-.9636258	.1460137	-1.10964	.2764872

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)
                          =       61.57
                Prob>chi2 =      0.0000
```

```
23 . * (1) NRI — baseline

24 .
25 . xtreg ROA_w NRI SIZE_w LEV_w i.YearID, fe
note: 18.YearID omitted because of collinearity

Fixed-effects (within) regression               Number of obs     =      2,457
Group variable: FirmID                          Number of groups  =        391

R-sq:                                           Obs per group:
     within  = 0.2178                                         min =          2
     between = 0.0036                                         avg =        6.3
     overall = 0.0593                                         max =          7

                                                F(8,2058)         =      71.63
corr(u_i, Xb)  = -0.6252                        Prob > F          =     0.0000

------------------------------------------------------------------------------
       ROA_w |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         NRI |  -2.423221   .2753584    -8.80   0.000    -2.963231    -1.88321
      SIZE_w |   5.389893   .8091499     6.66   0.000     3.803055    6.976731
       LEV_w |  -7.141705    1.57112    -4.55   0.000    -10.22286   -4.060554
             |
      YearID |
          13 |   15.08518   1.570872     9.60   0.000     12.00452    18.16584
          14 |  -13.19055   2.555337    -5.16   0.000    -18.20187   -8.179238
          15 |  -1.365042   2.168364    -0.63   0.529    -5.617458    2.887373
          16 |  -20.33318   2.935385    -6.93   0.000    -26.08981   -14.57654
          17 |  -1.006911   1.001067    -1.01   0.315    -2.970121    .9562996
          18 |           0  (omitted)
             |
       _cons |   64.99346   7.463844     8.71   0.000     50.35598    79.63093
-------------+----------------------------------------------------------------
     sigma_u |  12.084397
     sigma_e |  12.943232
         rho |  .46572491   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(390, 2058) = 2.38                     Prob > F = 0.0000

26 .
27 . estimates store fe1

28 .
29 . xtreg ROA_w NRI SIZE_w LEV_w i.YearID, re
note: 18.YearID omitted because of collinearity

Random-effects GLS regression                   Number of obs     =      2,457
Group variable: FirmID                          Number of groups  =        391

R-sq:                                           Obs per group:
     within  = 0.2043                                         min =          2
     between = 0.0834                                         avg =        6.3
     overall = 0.1732                                         max =          7
```

corr(u_i, X) = **0** (assumed)

Wald chi2(**8**) = **563.64**
Prob > chi2 = **0.0000**

ROA_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
NRI	**-.9482678**	**.1450966**	**-6.54**	**0.000**	**-1.232652**	**-.6638837**
SIZE_w	**.6374119**	**.2090023**	**3.05**	**0.002**	**.2277749**	**1.047049**
LEV_w	**-10.36023**	**1.176684**	**-8.80**	**0.000**	**-12.66649**	**-8.053975**
YearID						
13	**7.588106**	**1.010693**	**7.51**	**0.000**	**5.607184**	**9.569029**
14	**-.5251057**	**1.614005**	**-0.33**	**0.745**	**-3.688497**	**2.638286**
15	**9.514381**	**1.316742**	**7.23**	**0.000**	**6.933614**	**12.09515**
16	**-4.756828**	**1.515132**	**-3.14**	**0.002**	**-7.726432**	**-1.787224**
17	**.0866091**	**.9742195**	**0.09**	**0.929**	**-1.822826**	**1.996044**
18	**0**	(omitted)				
_cons	**54.05801**	**7.211704**	**7.50**	**0.000**	**39.92333**	**68.19269**
sigma_u	**5.5849499**					
sigma_e	**12.943232**					
rho	**.15696375**	(fraction of variance due to u_i)				

```
30 .
31 . estimates store re1

32 .
33 . hausman fe1 re1, sigmamore
```

	(b) fe1	(B) re1	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
NRI	**-2.423221**	**-.9482678**	**-1.474953**	**.2376698**
SIZE_w	**5.389893**	**.6374119**	**4.752481**	**.7911219**
LEV_w	**-7.141705**	**-10.36023**	**3.218529**	**1.067592**
YearID				
13	**15.08518**	**7.588106**	**7.497074**	**1.225577**
14	**-13.19055**	**-.5251057**	**-12.66545**	**2.018084**
15	**-1.365042**	**9.514381**	**-10.87942**	**1.753427**
16	**-20.33318**	**-4.756828**	**-15.57635**	**2.552657**
17	**-1.006911**	**.0866091**	**-1.09352**	**.2751994**

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)
= **57.23**
Prob>chi2 = **0.0000**

```
34 .
35 .
36 .
37 . * (2) NRI — moderation

38 .
39 . xtreg ROA_w c.NRI##c.SIZE_w LEV_w i.YearID, fe
note: 18.YearID omitted because of collinearity

Fixed-effects (within) regression               Number of obs     =      2,457
Group variable: FirmID                          Number of groups  =        391

R-sq:                                           Obs per group:
     within  = 0.2179                                         min =          2
     between = 0.0036                                         avg =        6.3
     overall = 0.0594                                         max =          7

                                                F(9,2057)         =      63.67
corr(u_i, Xb)  = -0.6251                        Prob > F          =     0.0000

------------------------------------------------------------------------------
       ROA_w |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         NRI |  -2.604636   .4962389    -5.25   0.000    -3.577819   -1.631453
      SIZE_w |   4.796632   1.573929     3.05   0.002     1.709972    7.883293
             |
c.NRI#c.SIZE_w |   .0114304   .0260088     0.44   0.660    -.039576    .0624367
             |
       LEV_w |  -7.151506   1.571587    -4.55   0.000    -10.23357   -4.069439
             |
      YearID |
          13 |   15.25473   1.617853     9.43   0.000     12.08193    18.42753
          14 |  -13.31753   2.572118    -5.18   0.000    -18.36176   -8.273307
          15 |  -1.398839   2.170152    -0.64   0.519    -5.654762    2.857085
          16 |  -20.34201   2.936029    -6.93   0.000    -26.09991   -14.58412
          17 |  -.9636258   1.006096    -0.96   0.338    -2.936699    1.009447
          18 |           0  (omitted)
             |
       _cons |   74.38755   22.64161     3.29   0.001     29.98469    118.7904
-------------+----------------------------------------------------------------
     sigma_u |  12.082685
     sigma_e |   12.94577
         rho |  .46555681   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(390, 2057) = 2.38                     Prob > F = 0.0000

40 .
41 . estimates store fe2

42 .
43 . xtreg ROA_w c.NRI##c.SIZE_w LEV_w i.YearID, re
note: 18.YearID omitted because of collinearity

Random-effects GLS regression                   Number of obs     =      2,457
Group variable: FirmID                          Number of groups  =        391

R-sq:                                           Obs per group:
     within  = 0.2043                                         min =          2
     between = 0.0841                                         avg =        6.3
     overall = 0.1734                                         max =          7

                                                Wald chi2(9)      =     563.37
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000
```

ROA_w	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
NRI	-1.204898	.4403443	-2.74	0.006	-2.067956	-.3418386
SIZE_w	-.2094945	1.375834	-0.15	0.879	-2.906079	2.48709
c.NRI#c.SIZE_w	.0162664	.0262094	0.62	0.535	-.0351031	.0676359
LEV_w	-10.37693	1.175413	-8.83	0.000	-12.6807	-8.073161
YearID						
13	7.822321	1.082807	7.22	0.000	5.700059	9.944583
14	-.6920834	1.640415	-0.42	0.673	-3.907238	2.523071
15	9.476738	1.319357	7.18	0.000	6.890845	12.06263
16	-4.755701	1.515049	-3.14	0.002	-7.725142	-1.786259
17	.1460137	.9799045	0.15	0.882	-1.774564	2.066591
18	0	(omitted)				
_cons	67.38149	22.69743	2.97	0.003	22.89535	111.8676
sigma_u	5.5360472					
sigma_e	12.94577					
rho	.15459897	(fraction of variance due to u_i)				

```
44 .
45 . estimates store re2

46 .
47 . hausman fe2 re2, sigmamore

Note: the rank of the differenced variance matrix (8) does not equal the number of coefficients b
        Examine the output of your estimators for anything unexpected and possibly consider scali
```

	——— Coefficients ———			
	(b) fe2	(B) re2	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
NRI	-2.604636	-1.204898	-1.399739	.2414393
SIZE_w	4.796632	-.2094945	5.006127	.8025707
c.NRI# c.SIZE_w	.0114304	.0162664	-.004836	.0024192
LEV_w	-7.151506	-10.37693	3.225423	1.071399
YearID				
13	15.25473	7.822321	7.432411	1.228066
14	-13.31753	-.6920834	-12.62545	2.021012
15	-1.398839	9.476738	-10.87558	1.755709
16	-20.34201	-4.755701	-15.58631	2.55596
17	-.9636258	.1460137	-1.10964	.2764872

```
                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)
                       =       61.57
             Prob>chi2 =      0.0000

48 .
```