```
  ___  ____  ____  ____  ____ (R)
 /__    /   ____/   /   ____/
___/   /   /___/   /   /___/   14.1   Copyright 1985-2015 StataCorp LP
  Statistics/Data Analysis             StataCorp
                                       4905 Lakeway Drive
      MP - Parallel Edition            College Station, Texas 77845 USA
                                       800-STATA-PC        http://www.stata.com
                                       979-696-4600        stata@stata.com
                                       979-696-4601 (fax)

Single-user 8-core Stata perpetual license:
       Serial number:  10699393
         Licensed to:  Wirinratch K
                       TU

Notes:
      1.  Unicode is supported; see help unicode_advice.
      2.  More than 2 billion observations are allowed; see help obs_advice.
      3.  Maximum number of variables is set to 5000; see help set_maxvar.

Checking for updates...
(contacting http://www.stata.com)
bad serial number
unable to check for update; verify Internet settings are correct.

1 . use "/Users/mien/Downloads/assign5-1.dta"

2 . do "/var/folders/gd/lj8knfw94978yk_mksbpsmvr0000gn/T//SD02154.000000"

3 . gmm (dr-{alpha}-{beta}*r) ((dr-{alpha}-{beta}*r)*r) ((dr-{alpha}-{beta}*r)^2-{sigm
> -{sigma2}*r^(2*{gamma}))*r)
to avoid a singular initial weight matrix in a model with 4 moment equations you mus
equations or use winitial(unadjusted, independent) or winitial(identity)
r(498);

end of do-file

r(498);

4 . tsset time
         time variable:  time, 1 to 1335
                 delta:  1 unit

5 . gen dr=f.r-r
(1 missing value generated)

6 . do "/var/folders/gd/lj8knfw94978yk_mksbpsmvr0000gn/T//SD02154.000000"

7 . gmm (dr-{alpha}-{beta}*r) ((dr-{alpha}-{beta}*r)*r) ((dr-{alpha}-{beta}*r)^2-{sigm
> -{sigma2}*r^(2*{gamma}))*r)
to avoid a singular initial weight matrix in a model with 4 moment equations you mus
```

```
equations or use winitial(unadjusted, independent) or winitial(identity)
r(498);

end of do-file

r(498);

8 . do "/var/folders/gd/lj8knfw94978yk_mksbpsmvr0000gn/T//SD02154.000000"

9 . gmm (dr-{alpha}-{beta}*r) ((dr-{alpha}-{beta}*r)*r) ((dr-{alpha}-{beta}*r)^2-{sigm
> -{sigma2}*r^(2*{gamma}))*r) winitial(identity)
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
numerical derivatives are approximate
flat or discontinuous region encountered
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  8.321e-06  (backed up)
Iteration 2:   GMM criterion Q(b) =  6.043e-06  (not concave)
Iteration 3:   GMM criterion Q(b) =  1.604e-06
Iteration 4:   GMM criterion Q(b) =  1.662e-09
Iteration 5:   GMM criterion Q(b) =  1.344e-13

Step 2
Iteration 0:   GMM criterion Q(b) =  3.899e-10
Iteration 1:   GMM criterion Q(b) =  4.098e-18

note: model is exactly identified

GMM estimation

Number of parameters =   4
Number of moments    =   4
Initial weight matrix: Identity                  Number of obs   =      1,334
GMM weight matrix:     Robust
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/alpha	-.0023725	.0011574	-2.05	0.040	-.0046409	-.0001041
/beta	.0004291	.0002873	1.49	0.135	-.000134	.0009922
/sigma2	.0005043	.000324	1.56	0.120	-.0001307	.0011393
/gamma	.0985177	.1823933	0.54	0.589	-.2589666	.456002

```
Instruments for equation 1: _cons
Instruments for equation 2: _cons
Instruments for equation 3: _cons
Instruments for equation 4: _cons
```

```
10 .
   end of do-file

11 . est store unrestricted

12 . gmm (dr-{alpha}) ((dr-{alpha})*r) ((dr-{alpha})^2-{sigma2}) (((dr-{alpha})^2-{sigm
   note: 1 missing value returned for equation 1 at initial values
   note: 1 missing value returned for equation 2 at initial values
   note: 1 missing value returned for equation 3 at initial values
   note: 1 missing value returned for equation 4 at initial values

   Step 1
   Iteration 0:   GMM criterion Q(b) =  .00001173
   Iteration 1:   GMM criterion Q(b) =  4.045e-08
   Iteration 2:   GMM criterion Q(b) =  4.044e-08

   Step 2
   Iteration 0:   GMM criterion Q(b) =  .00798141
   Iteration 1:   GMM criterion Q(b) =  .00552368
   Iteration 2:   GMM criterion Q(b) =  .00552368

   GMM estimation

   Number of parameters =   2
   Number of moments    =   4
   Initial weight matrix: Identity                   Number of obs   =      1,334
   GMM weight matrix:     Robust

------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      /alpha |  -.0008137   .0006821    -1.19   0.233    -.0021507    .0005232
     /sigma2 |   .0004277   .0002902     1.47   0.141    -.0001412    .0009965
------------------------------------------------------------------------------

   Instruments for equation 1: _cons
   Instruments for equation 2: _cons
   Instruments for equation 3: _cons
   Instruments for equation 4: _cons

13 . estat overid

     Test of overidentifying restriction:

     Hansen's J chi2(2) = 7.36859 (p = 0.0251)

14 . "Since p< 0.05 so we reject Ho. Merton is not appropiate"
   "Since p< 0.05 so we reject Ho. Merton is not appropiate is not a valid command name
   r(199);

15 . est store merton
```

```
16 . gmm (dr-{alpha}-{beta}*r) ((dr-{alpha}-{beta}*r)*r) ((dr-{alpha}-{beta}*r)^2-{sigm
> winitial(identity)
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  3.336e-10
Iteration 2:   GMM criterion Q(b) =  3.273e-10

Step 2
Iteration 0:   GMM criterion Q(b) =  .00063051
Iteration 1:   GMM criterion Q(b) =  .00020488
Iteration 2:   GMM criterion Q(b) =  .00020488

GMM estimation

Number of parameters =   3
Number of moments    =   4
Initial weight matrix: Identity                   Number of obs   =      1,334
GMM weight matrix:     Robust
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/alpha	-.0026994	.0009734	-2.77	0.006	-.0046072	-.0007915
/beta	.0005368	.0001999	2.69	0.007	.000145	.0009286
/sigma2	.0005887	.0002977	1.98	0.048	5.20e-06	.0011722

```
Instruments for equation 1: _cons
Instruments for equation 2: _cons
Instruments for equation 3: _cons
Instruments for equation 4: _cons

17 . estat overid

  Test of overidentifying restriction:

  Hansen's J chi2(1) = .273315 (p = 0.6011)

18 . print ("p > 0.05 which means Ho is not rejected. Vasicek is appropriated")
0.05whichmeansHoisnotrejected.Vasicekisappropriated")" invalid name
r(198);

19 . est store vasicek

20 . gmm (dr-{alpha}-{beta}*r) ((dr-{alpha}-{beta}*r)*r) ((dr-{alpha}-{beta}*r)^2-{sigm
> *r) winitial(identity)
```

```
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  3.349e-09
Iteration 2:   GMM criterion Q(b) =  3.343e-09

Step 2
Iteration 0:   GMM criterion Q(b) =  .00651703
Iteration 1:   GMM criterion Q(b) =  .00164197
Iteration 2:   GMM criterion Q(b) =  .00164196

GMM estimation

Number of parameters =   3
Number of moments    =   4
Initial weight matrix: Identity                   Number of obs   =      1,334
GMM weight matrix:     Robust
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/alpha	-.0010252	.0007112	-1.44	0.149	-.0024191	.0003686
/beta	.0002288	.0002532	0.90	0.366	-.0002675	.000725
/sigma2	.0000917	.0000646	1.42	0.156	-.000035	.0002183

```
Instruments for equation 1: _cons
Instruments for equation 2: _cons
Instruments for equation 3: _cons
Instruments for equation 4: _cons

21 . estat overid

  Test of overidentifying restriction:

  Hansen's J chi2(1) = 2.19038 (p = 0.1389)

22 . p>0.05. Fail to reject Ho. CIR_SR is appropiated.
command p is unrecognized
r(199);

23 . est store CIR_SR

24 . gmm (dr) ((dr)*r) ((dr)^2-{sigma2}*r^2) (((dr)^2-{sigma2}*r^2)*r) winitial(identit
note: no parameters in equation 1
note: no parameters in equation 2
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
```

```
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  5.688e-06
Iteration 2:   GMM criterion Q(b) =  5.688e-06

Step 2
Iteration 0:   GMM criterion Q(b) =  .00932249
Iteration 1:   GMM criterion Q(b) =  .00344401
Iteration 2:   GMM criterion Q(b) =  .00344401

GMM estimation

Number of parameters =   1
Number of moments    =   4
Initial weight matrix: Identity                   Number of obs   =      1,334
GMM weight matrix:     Robust
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/sigma2	.0000162	7.20e-06	2.25	0.025	2.08e-06	.0000303

```
Instruments for equation 1: _cons
Instruments for equation 2: _cons
Instruments for equation 3: _cons
Instruments for equation 4: _cons

25 . estat overid

  Test of overidentifying restriction:

  Hansen's J chi2(3) = 4.59432 (p = 0.2040)

26 . p>0.05. Fail to reject Ho. Dothan is appropiated.
command p is unrecognized
r(199);

27 . est store Dothan

28 . gmm (dr-{beta}*r) ((dr-{beta}*r)*r) ((dr-{beta}*r)^2-{sigma2}*r^(2)) (((dr-{beta}*
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  8.547e-08
```

```
Iteration 2:   GMM criterion Q(b) =  8.547e-08

Step 2
Iteration 0:   GMM criterion Q(b) =   .0082543
Iteration 1:   GMM criterion Q(b) =  .00342544
Iteration 2:   GMM criterion Q(b) =  .00342542

GMM estimation

Number of parameters =   2
Number of moments    =   4
Initial weight matrix: Identity                  Number of obs   =      1,334
GMM weight matrix:     Robust
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/beta	.0000248	.0001265	0.20	0.844	-.000223	.0002727
/sigma2	.0000154	8.33e-06	1.84	0.065	-9.60e-07	.0000317

```
Instruments for equation 1: _cons
Instruments for equation 2: _cons
Instruments for equation 3: _cons
Instruments for equation 4: _cons

29 . estat overid

  Test of overidentifying restriction:

  Hansen's J chi2(2) = 4.56951 (p = 0.1018)

30 . p>0.05. Fail to reject Ho. GBM is appropiated
command p is unrecognized
r(199);

31 . est store GMB

32 . gmm (dr-{alpha}-{beta}*r) ((dr-{alpha}-{beta}*r)*r) ((dr-{alpha}-{beta}*r)^2-{sigm
> }*r^(2))*r) winitial(identity)
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  1.062e-08
Iteration 2:   GMM criterion Q(b) =  1.061e-08

Step 2
Iteration 0:   GMM criterion Q(b) =   .0202404
```

```
Iteration 1:   GMM criterion Q(b) =  .00259237
Iteration 2:   GMM criterion Q(b) =  .00259234

GMM estimation

Number of parameters =   3
Number of moments    =   4
Initial weight matrix: Identity                  Number of obs   =      1,334
GMM weight matrix:     Robust
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/alpha	-.0008979	.0008413	-1.07	0.286	-.0025469	.000751
/beta	.0002882	.0002774	1.04	0.299	-.0002555	.0008319
/sigma2	8.91e-06	.0000103	0.87	0.387	-.0000113	.0000291

```
Instruments for equation 1: _cons
Instruments for equation 2: _cons
Instruments for equation 3: _cons
Instruments for equation 4: _cons

33 . estat overid

  Test of overidentifying restriction:

  Hansen's J chi2(1) = 3.45819 (p = 0.0629)

34 . p>0.05. Fail to reject Ho. Brennan&Schwartz is appropiated
command p is unrecognized
r(199);

35 . est store Brennan&Schwartz
& invalid name
r(7);

36 . est store brennan

37 . gmm (dr) ((dr)*r) ((dr)^2-{sigma2}*r^(2*1.5)) (((dr)^2-{sigma2}*r^(2*1.5))*r)winit
note: no parameters in equation 1
note: no parameters in equation 2
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  5.694e-06
Iteration 2:   GMM criterion Q(b) =  5.694e-06
```

```
Step 2
Iteration 0:   GMM criterion Q(b) =  .01561186
Iteration 1:   GMM criterion Q(b) =   .0038055
Iteration 2:   GMM criterion Q(b) =   .0038055

GMM estimation

Number of parameters =   1
Number of moments    =   4
Initial weight matrix: Identity                  Number of obs   =      1,334
GMM weight matrix:     Robust
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/sigma2	2.70e-06	1.26e-06	2.15	0.032	2.35e-07	5.16e-06

```
Instruments for equation 1: _cons
Instruments for equation 2: _cons
Instruments for equation 3: _cons
Instruments for equation 4: _cons

38 . estat overid

  Test of overidentifying restriction:

  Hansen's J chi2(3) = 5.07654 (p = 0.1663)

39 . p>0.05. Fail to reject Ho. CIR_VR is appropiated
command p is unrecognized
r(199);

40 . est store CIR_VR

41 . gmm (dr-{beta}*r) ((dr-{beta}*r)*r) ((dr-{beta}*r)^2-{sigma2}*r^(2*{gamma})) (((dr
> tial(identity)
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
numerical derivatives are approximate
flat or discontinuous region encountered
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  8.627e-06  (backed up)
Iteration 2:   GMM criterion Q(b) =  6.127e-06  (not concave)
Iteration 3:   GMM criterion Q(b) =  5.400e-06  (backed up)
Iteration 4:   GMM criterion Q(b) =  5.310e-06

Step 2
```

```
Iteration 0:   GMM criterion Q(b) =  .01290193
Iteration 1:   GMM criterion Q(b) =  .01075751
Iteration 2:   GMM criterion Q(b) =  .00760436
Iteration 3:   GMM criterion Q(b) =  .00678694
Iteration 4:   GMM criterion Q(b) =  .00326882
Iteration 5:   GMM criterion Q(b) =  .00316225
Iteration 6:   GMM criterion Q(b) =  .00313882
Iteration 7:   GMM criterion Q(b) =   .0031388

GMM estimation

Number of parameters =   3
Number of moments    =   4
Initial weight matrix: Identity                   Number of obs   =      1,334
GMM weight matrix:     Robust
```

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/beta	-.0000453	.0001702	-0.27	0.790	-.0003789	.0002883
/sigma2	.0000881	.0001436	0.61	0.539	-.0001933	.0003696
/gamma	.5717551	.3668112	1.56	0.119	-.1471817	1.290692

```
Instruments for equation 1: _cons
Instruments for equation 2: _cons
Instruments for equation 3: _cons
Instruments for equation 4: _cons

42 . estat overid

  Test of overidentifying restriction:

  Hansen's J chi2(1) = 4.18715 (p = 0.0407)

43 .  p>0.05. Ho is rejected. CEV is not appropiated
command p is unrecognized
r(199);

44 . est store CEV

45 . est table unrestricted merton vasicek CIR_SR dothan GBM brennan CIR_VR CEV, star(0
estimation result dothan not found
r(111);

46 .  est table unrestricted merton vasicek CIR_SR Dothan GBM brennan CIR_VR CEV, star(
estimation result GBM not found
r(111);

47 . est table unrestricted merton vasicek CIR_SR Dothan GMB brennan CIR_VR CEV, star(0
```

Variable	unrestricted	Mertn	Vasicek	CIR_SR	Do
alpha					
_cons	**-.00237253****	**-.00081372**	**-.00269937*****	**-.00102525**	
beta					
_cons	**.00042912**		**.00053681*****	**.00022877**	
sigma2					
_cons	**.00050427**	**.00042766**	**.00058872****	**.00009168**	**.000**
gamma					
_cons	**.09851773**				

Variable	CIR_VR	CEV
alpha		
_cons		
beta		
_cons		**-.00004534**
sigma2		
_cons	**2.698e-06****	**.00008815**
gamma		
_cons		**.57175507**

legend: * p<.1; ** p<.05; *** p<.01

```
48 . gmm (dr-{alpha}-{beta}*r) ((dr-{alpha}-{beta}*r)*r) ((dr-{alpha}-{beta}*r)^2-{sigm
> -{sigma2}*r^(2*{gamma}))*r) winitial(identity)
note: 1 missing value returned for equation 1 at initial values
note: 1 missing value returned for equation 2 at initial values
note: 1 missing value returned for equation 3 at initial values
note: 1 missing value returned for equation 4 at initial values

Step 1
numerical derivatives are approximate
flat or discontinuous region encountered
Iteration 0:   GMM criterion Q(b) =  .00001173
Iteration 1:   GMM criterion Q(b) =  8.321e-06  (backed up)
Iteration 2:   GMM criterion Q(b) =  6.043e-06  (not concave)
Iteration 3:   GMM criterion Q(b) =  1.604e-06
Iteration 4:   GMM criterion Q(b) =  1.662e-09
Iteration 5:   GMM criterion Q(b) =  1.344e-13

Step 2
```

Iteration 1: GMM criterion Q(b) = **4.098e-18**

note: model is exactly identified

GMM estimation

Number of parameters = **4**
Number of moments = **4**
Initial weight matrix: **Identity** Number of obs = **1,334**
GMM weight matrix: **Robust**

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
/alpha	**-.0023725**	**.0011574**	**-2.05**	**0.040**	**-.0046409**	**-.0001041**
/beta	**.0004291**	**.0002873**	**1.49**	**0.135**	**-.000134**	**.0009922**
/sigma2	**.0005043**	**.000324**	**1.56**	**0.120**	**-.0001307**	**.0011393**
/gamma	**.0985177**	**.1823933**	**0.54**	**0.589**	**-.2589666**	**.456002**

Instruments for equation **1: _cons**
Instruments for equation **2: _cons**
Instruments for equation **3: _cons**
Instruments for equation **4: _cons**

```
49 . *test unrestricted vs Merton

50 . test (_b[/beta]=0) (_b[/gamma]=0)

    ( 1)  [beta]_cons = 0
    ( 2)  [gamma]_cons = 0

              chi2(  2) =    7.92
            Prob > chi2 =    0.0191

51 . *test unrestricted vs Vasicek

52 . test (_b[/gamma]=0)

    ( 1)  [gamma]_cons = 0

              chi2(  1) =    0.29
            Prob > chi2 =    0.5891

53 . *test unrestricted vs CIR SR

54 . test (_b[/gamma]=0.5)

    ( 1)  [gamma]_cons = .5

              chi2(  1) =    4.85
```

```
55 . *test unrestricted vs Dothan

56 . test (_b[/alpha]=0) (_b[/beta]=0) (_b[/gamma]=1)

    ( 1)  [alpha]_cons = 0
    ( 2)  [beta]_cons = 0
    ( 3)  [gamma]_cons = 1

              chi2(  3) =   34.04
            Prob > chi2 =    0.0000

57 . *test unrestricted vs GBM

58 . test (_b[/alpha]=0) (_b[/gamma]=1)

    ( 1)  [alpha]_cons = 0
    ( 2)  [gamma]_cons = 1

              chi2(  2) =   27.48
            Prob > chi2 =    0.0000

59 . *test unrestricted vs Brennan& Schwartz

60 . test (_b[/gamma]=1)

    ( 1)  [gamma]_cons = 1

              chi2(  1) =   24.43
            Prob > chi2 =    0.0000

61 . *test unrestricted vs CIR VR

62 . test (_b[/alpha]=0) (_b[/beta]=0) (_b[/gamma]=1.5)

    ( 1)  [alpha]_cons = 0
    ( 2)  [beta]_cons = 0
    ( 3)  [gamma]_cons = 1.5

              chi2(  3) =   95.71
            Prob > chi2 =    0.0000

63 . *test unrestricted vs CEV

64 .  test (_b[/alpha]=0)

    ( 1)  [alpha]_cons = 0

              chi2(  1) =    4.20
            Prob > chi2 =    0.0404
```

```
file /Users/mien/Downloads/assign5-1.dta saved

66 . tsset
        time variable:  time, 1 to 1335
                delta:  1 unit

67 . reg y x
variable y not found
r(111);

68 . use "/Users/mien/Downloads/assign5-2.dta"

69 . tsset
time variable not set, use tsset varname ...
r(111);

70 . tsset t
        time variable:  t, 1 to 500
                delta:  1 unit

71 . reg y x
```

Source	SS	df	MS	Number of obs	=	500
				F(1, 498)	=	449.66
Model	132481.702	1	132481.702	Prob > F	=	0.0000
Residual	146722.774	498	294.624043	R-squared	=	0.4745
				Adj R-squared	=	0.4734
Total	279204.475	499	559.528007	Root MSE	=	17.165

y	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
x	5.431333	.2561312	21.21	0.000	4.928102	5.934564
_cons	-33.31333	2.673868	-12.46	0.000	-38.56678	-28.05988

```
72 . predict u, residual

73 . corr
(obs=500)
```

	t	y	x	z1	z2	z3	z4	
t	1.0000							
y	0.0681	1.0000						
x	0.0517	0.6888	1.0000					
z1	0.0661	0.2002	0.7215	1.0000				
z2	0.0062	0.1203	0.2352	0.1937	1.0000			
z3	0.0387	0.9214	0.5487	0.0918	0.0933	1.0000		
z4	0.0143	0.1887	0.6954	0.4738	0.1607	0.0828	1.0000	
u	0.0447	0.7249	-0.0000	-0.4095	-0.0575	0.7496	-0.4006	1.00

```
74 . ivregress gmm y (x=z1 z2 z3 z4)

Instrumental variables (GMM) regression          Number of obs   =        500
                                                 Wald chi2(1)    =     415.07
                                                 Prob > chi2     =     0.0000
                                                 R-squared       =     0.4710
GMM weight matrix: Robust                        Root MSE        =     17.187

------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |    5.262505   .2583042    20.37   0.000     4.756238    5.768772
       _cons |   -30.33032   2.737777   -11.08   0.000    -35.69627   -24.96438
------------------------------------------------------------------------------
Instrumented:  x
Instruments:   z1 z2 z3 z4

75 . estat overid

  Test of overidentifying restriction:

  Hansen's J chi2(3) = 163.488 (p = 0.0000)

76 . *reject Ho so gmm is not appropiated

77 . *b. we found that all of the instrumental variables are correlated with u so none

78 . *c. OLS is more appropiated

79 .
```