(R)
Statistics/Data Analysis

User: Mark R. Beissinger
Project: The Revolutionary City

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------------------------------------------------------------------------------------------------------------------------
      name:  <unnamed>
       log:  C:\Users\mbeissin\Desktop\Stata files for book\Robustnesstestfiles\Logfiles\robustnesstestschapter2.l
> og
  log type:  text
 opened on:  26 Jan 2022, 09:13:52

 1 . * ================================================================================
 2 . * ROBUSTNESS CHECKS FOR STATISTICAL RESULTS APPEARING IN CHAPTER 2
 3 . * Stata do-file
 4 . * Robustness tests for results reported in Chapter 2
 5 . * Author: Mark R. Beissinger
 6 . * Date:  January 2022
 7 . * Princeton, NJ
 8 . * ================================================================================
 9 . * BEFORE RUNNING, YOU MUST SET THE DEFAULT PATH FOR WHERE THE DATA
10 . *   FILES RESIDE
11 . * ================================================================================
12 . * The following datafile used in Chapter 2 was used in these tests:
13 . *     Panel data for revolutionary episodes--revspredictbycntryyr.dta
14 . * ================================================================================
15 . * Before running, ensure the following packages for Stata are downloaded:
16 . *       firthlogit from http://fmwww.bc.edu/RePEc/bocode/f
17 . *       relogit from https://gking.harvard.edu/relogit
18 . * ================================================================================
19 . * The following output is produced from these robustness tests:
20 . *               Robustnesstestfiles\Logfiles\robustnesstestschapter2.log
21 . * ================================================================================
22 .
23 . * ============================================================
24 . * ROBUSTNESS CHECKS:  LAND CONCENTRATION IN SOCIAL REVOLUTIONS
25 . * ============================================================
26 . clear

27 . use revspredictbycntryyr.dta

28 . xtcloglog leftistny landgini c.time1##c.time1##c.time1, vce(robust) eform nolog

   Calculating robust standard errors:

   Random-effects complementary log-log model      Number of obs     =      6,634
   Group variable: cowcode                         Number of groups  =        136

   Random effects u_i ~ Gaussian                   Obs per group:
                                                                 min =          6
                                                                 avg =       48.8
                                                                 max =        113

   Integration method: mvaghermite                 Integration pts.  =         12

                                                   Wald chi2(4)      =      40.24
   Log pseudolikelihood  = -297.37087              Prob > chi2       =     0.0000

                                          (Std. Err. adjusted for 136 clusters in cowcode)
   ------------------------------------------------------------------------------------------
                           |               Robust
                leftistny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
   -------------------------+----------------------------------------------------------------
                 landgini |   1.024279   .0092834     2.65   0.008     1.006245    1.042637
                    time1 |   .8319341   .0392147    -3.90   0.000     .7585183    .9124557
                          |
           c.time1#c.time1 |    1.00421   .0011778     3.58   0.000     1.001904    1.006521
                          |
   c.time1#c.time1#c.time1 |   .9999722   7.73e-06    -3.60   0.000      .999957    .9999873
                          |
                    _cons |   .0137406   .0114856    -5.13   0.000     .0026699    .0707157
   -------------------------+----------------------------------------------------------------
                 /lnsig2u |  -.6667943   .5993686                     -1.841535    .5079465
   -------------------------+----------------------------------------------------------------
                  sigma_u |   .7164856   .2147195                      .3982133    1.289137
                      rho |   .2378516   .1086524                      .0879252    .5025615
   ------------------------------------------------------------------------------------------

29 . * Positive and statistically significant,
30 . * Quadrature test
31 . quadchk, nooutput

   Refitting model intpoints() =  8
   Refitting model intpoints() = 16

                           Quadrature check

                 Fitted       Comparison     Comparison
               quadrature     quadrature     quadrature
               12 points      8 points       16 points
   ---------------------------------------------------------
   Log          -297.37087     -297.37072     -297.37087
   likelihood                   .00015121      1.556e-07   Difference
                               -5.085e-07     -5.233e-10   Relative difference
   ---------------------------------------------------------
   leftistny:    .02398906      .02398906      .02398905
   landgini                   -1.738e-14     -7.067e-09   Difference
                              -7.244e-13     -2.946e-07   Relative difference
   ---------------------------------------------------------
   leftistny:   -.18400206     -.18400206     -.18400212
      time1                   -3.406e-14     -6.002e-08   Difference
                               1.851e-13      3.262e-07   Relative difference
   ---------------------------------------------------------
   leftistny:    .00420104      .00420104      .00420105
   c.time1#c.~1                1.760e-15      1.681e-09   Difference
                               4.189e-13      4.001e-07   Relative difference
```

```
-------------------------------------------------------
leftistny:   -.00002781     -.00002781     -.00002781
c.time1#c.~1                -1.464e-17     -1.186e-11   Difference
                             5.263e-13      4.264e-07   Relative difference
-------------------------------------------------------
leftistny:   -4.2874026     -4.2874026     -4.2873989
   _cons                     5.724e-12      3.732e-06   Difference
                            -1.335e-12     -8.704e-07   Relative difference
-------------------------------------------------------
lnsig2u:     -.66679429     -.66679429     -.66680643
   _cons                    -1.873e-11     -.00001214   Difference
                             2.809e-11      .00001821   Relative difference
-------------------------------------------------------

. * --Passed:  all coefficients change by less than .01
.
. * Different estimation frameworks
. * Pooled sample
. cloglog leftistny landgini time1 timesq timecub, vce(cluster cowcode) nolog eform

Complementary log-log regression                Number of obs     =      6,634
                                                Zero outcomes     =      6,580
                                                Nonzero outcomes  =         54

                                                Wald chi2(4)      =      32.75
Log pseudolikelihood = -299.00319               Prob > chi2       =     0.0000

                              (Std. Err. adjusted for 136 clusters in cowcode)
------------------------------------------------------------------------------
             |               Robust
   leftistny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    landgini |   1.022244   .0088758     2.53   0.011     1.004995    1.039789
       time1 |   .8244227   .0393671    -4.04   0.000     .7507652    .9053068
      timesq |   1.004435   .0011689     3.80   0.000     1.002146    1.006729
     timecub |   .9999707   7.67e-06    -3.82   0.000     .9999557    .9999857
       _cons |   .0211572   .0176554    -4.62   0.000     .0041223    .1085863
------------------------------------------------------------------------------

. * Positive and statistically significant
. * Rare events framework
. relogit leftistny landgini time1 timesq timecub, cluster(cowcode) pc(.0081)
(11,755 missing values generated)


Corrected logit estimates                           Number of obs =     6634

------------------------------------------------------------------------------
             |               Robust
   leftistny |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    landgini |   .0219778   .0087268     2.52   0.012     .0048736    .0390819
       time1 |  -.2008958   .0488978    -4.11   0.000    -.2967337   -.1050578
      timesq |    .004463   .0011775     3.79   0.000     .0021551    .0067709
     timecub |   -.000029   7.73e-06    -3.75   0.000    -.0000442   -.0000138
       _cons |  -3.572716   .8543145    -4.18   0.000    -5.247142    -1.89829
------------------------------------------------------------------------------

. * Note: pc parameter set to proportion of positive leftistny in sample analyzed (.0081)
. * Positive and statistically significant
. * Robustness tests: Firth method
. firthlogit leftistny landgini time1 timesq timecub, or nolog

                                                Number of obs     =      6,634
                                                Wald chi2(4)      =      18.56
Penalized log likelihood = -267.38541           Prob > chi2       =     0.0010

------------------------------------------------------------------------------
   leftistny | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    landgini |   1.022217   .0096102     2.34   0.019     1.003554    1.041227
       time1 |   .8191266   .0573934    -2.85   0.004     .7140197    .9397056
      timesq |   1.004451   .0014651     3.04   0.002     1.001584    1.007327
     timecub |   .9999711   9.06e-06    -3.19   0.001     .9999534    .9999889
       _cons |   .0274417   .0334611    -2.95   0.003     .0025148    .2994516
------------------------------------------------------------------------------

. * Positive and statistically significant
. * Robustness tests:  population averaged model with AR 1
. xtcloglog leftistny landgini time1 timesq timecub, pa corr(ar 1) force vce(robust) nolog eform

GEE population-averaged model                   Number of obs     =      6,634
Group and time vars:          cowcode year      Number of groups  =        136
Link:                              cloglog      Obs per group:
Family:                           binomial                   min =          6
Correlation:                         AR(1)                   avg =       48.8
                                                             max =        113
                                                Wald chi2(4)      =      32.46
Scale parameter:                          1     Prob > chi2       =     0.0000
```

(Std. Err. adjusted for clustering on cowcode)

leftistny	exp(b)	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
landgini	1.02222	.0088751	2.53	0.011	1.004973	1.039764
time1	.8242582	.0395415	-4.03	0.000	.7502902	.9055185
timesq	1.004438	.0011716	3.80	0.000	1.002144	1.006737
timecub	.9999707	7.68e-06	-3.81	0.000	.9999556	.9999857
_cons	.0212838	.0178341	-4.59	0.000	.0041192	.1099732

```
47 . * Positive and statistically significant
48 .
49 . * OTHER REVOLUTIONS
50 . * All rural revolutions
51 . xtcloglog ruralrevny landgini c.time1##c.time1##c.time1, vce(robust) eform nolog

Calculating robust standard errors:

Random-effects complementary log-log model      Number of obs     =      6,634
Group variable: cowcode                         Number of groups  =        136

Random effects u_i ~ Gaussian                   Obs per group:
                                                              min =          6
                                                              avg =       48.8
                                                              max =        113

Integration method: mvaghermite                 Integration pts.  =         12

                                                Wald chi2(4)      =      16.14
Log pseudolikelihood  = -331.98538              Prob > chi2       =     0.0028
```

(Std. Err. adjusted for 136 clusters in cowcode)

ruralrevny	exp(b)	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
landgini	1.000618	.0098303	0.06	0.950	.981535	1.020072
time1	.8516633	.0538208	-2.54	0.011	.7524477	.9639612
c.time1#c.time1	1.003367	.00119	2.83	0.005	1.001037	1.005702
c.time1#c.time1#c.time1	.9999796	6.85e-06	-2.98	0.003	.9999662	.999993
cons	.0385846	.0472417	-2.66	0.008	.0035013	.4252037
/lnsig2u	.3628224	.3394869			-.3025597	1.028204
sigma_u	1.198908	.2035068			.8596071	1.672137
rho	.4663316	.0844869			.3099699	.6296007

```
52 . * Positive but statistically insignificant
53 . quadchk, nooutput

Refitting model intpoints() =  8
Refitting model intpoints() = 16
```

Quadrature check

	Fitted quadrature 12 points	Comparison quadrature 8 points	Comparison quadrature 16 points	
Log likelihood	-331.98538	-331.97649	-331.98473	
		.00889468	.00065509	Difference
		-.00002679	-1.973e-06	Relative difference
ruralrevny: landgini	.00061759	.00064651	.0006192	
		.00002892	1.606e-06	Difference
		.04682867	.00260119	Relative difference
ruralrevny: time1	-.16056401	-.16078345	-.16057292	
		-.00021944	-8.909e-06	Difference
		.00136668	.00005548	Relative difference
ruralrevny: c.time1#c.~1	.00336104	.00336406	.00336115	
		3.018e-06	1.107e-07	Difference
		.0008979	.00003292	Relative difference
ruralrevny: c.time1#c.~1	-.00002042	-.00002043	-.00002042	
		-1.356e-08	-4.647e-10	Difference
		.00066392	.00002276	Relative difference
ruralrevny: _cons	-3.2549028	-3.2552955	-3.2549235	
		-.00039272	-.00002073	Difference
		.00012066	6.369e-06	Relative difference
lnsig2u: _cons	.3628224	.36832523	.36305426	
		.00550283	.00023186	Difference
		.01516674	.00063905	Relative difference

```
54 . * --Passed:  all coefficients change by less than .01
55 .
56 . * All urban revolutions
57 . xtcloglog urbanrevny landgini c.time1##c.time1##c.time1, vce(robust) eform nolog

   Calculating robust standard errors:

   Random-effects complementary log-log model      Number of obs     =      6,634
   Group variable: cowcode                         Number of groups  =        136

   Random effects u_i ~ Gaussian                   Obs per group:
                                                                 min =          6
                                                                 avg =       48.8
                                                                 max =        113

   Integration method: mvaghermite                 Integration pts.  =         12

                                                   Wald chi2(4)      =       7.57
   Log pseudolikelihood  = -402.29342              Prob > chi2       =     0.1086

                                          (Std. Err. adjusted for 136 clusters in cowcode)
   ------------------------------------------------------------------------------------------
                          |               Robust
                urbanrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
   -----------------------+------------------------------------------------------------------
                  landgini |   1.009869   .0107501     0.92   0.356     .9890176     1.03116
                     time1 |   .9183099   .0418747    -1.87   0.062     .8397978    1.004162
                           |
           c.time1#c.time1 |   1.001392   .0009214     1.51   0.131     .9995872    1.003199
                           |
   c.time1#c.time1#c.time1 |   .9999928   5.33e-06    -1.35   0.177     .9999824    1.000003
                           |
                    _cons |   .0263944   .0282959    -3.39   0.001     .0032284    .2157923
   -----------------------+------------------------------------------------------------------
                  /lnsig2u |  -.9410171   .6191312                     -2.154492    .2724577
   -----------------------+------------------------------------------------------------------
                   sigma_u |   .6246845   .1933808                      .3405321    1.145944
                       rho |    .191744   .0959519                       .065854    .4439262
   ------------------------------------------------------------------------------------------

58 . * Positive but statistically insignificant
59 . quadchk, nooutput

   Refitting model intpoints() =  8
   Refitting model intpoints() = 16

                            Quadrature check

                  Fitted       Comparison     Comparison
                quadrature     quadrature     quadrature
                12 points      8 points       16 points
   ---------------------------------------------------------
   Log          -402.29342     -402.29335     -402.29342
   likelihood                   .00006433     -1.181e-07   Difference
                               -1.599e-07      2.935e-10   Relative difference
   ---------------------------------------------------------
   urbanrevny:   .00982073      .00982073      .00982073
   landgini                    -1.882e-15      1.132e-09   Difference
                               -1.917e-13      1.153e-07   Relative difference
   ---------------------------------------------------------
   urbanrevny:  -.08522033     -.08522033     -.08522035
      time1                    -2.980e-14     -1.867e-08   Difference
                                3.496e-13      2.191e-07   Relative difference
   ---------------------------------------------------------
   urbanrevny:   .00139054      .00139054      .00139054
   c.time1#c.~1                 1.182e-15      4.353e-10   Difference
                                8.497e-13      3.131e-07   Relative difference
   ---------------------------------------------------------
   urbanrevny:  -7.200e-06     -7.200e-06     -7.200e-06
   c.time1#c.~1                -7.971e-18     -2.554e-12   Difference
                                1.107e-12      3.547e-07   Relative difference
   ---------------------------------------------------------
   urbanrevny:  -3.6346044     -3.6346044     -3.6346037
      _cons                     2.487e-12      6.991e-07   Difference
                               -6.844e-13     -1.923e-07   Relative difference
   ---------------------------------------------------------
   lnsig2u:     -.94101715     -.94101715     -.94102104
      _cons                    -1.619e-11     -3.894e-06   Difference
                                1.720e-11      4.138e-06   Relative difference
   ---------------------------------------------------------

60 . * --Passed:  all coefficients change by less than .01
61 .
62 . * All urban civic revolutions
63 . xtcloglog urbancivicny landgini c.time1##c.time1##c.time1, vce(robust) eform nolog

   Calculating robust standard errors:

   Random-effects complementary log-log model      Number of obs     =      6,634
   Group variable: cowcode                         Number of groups  =        136

   Random effects u_i ~ Gaussian                   Obs per group:
                                                                 min =          6
                                                                 avg =       48.8
                                                                 max =        113

   Integration method: mvaghermite                 Integration pts.  =         12

                                                   Wald chi2(4)      =      16.20
   Log pseudolikelihood  =  -138.2233              Prob > chi2       =     0.0028
```

(Std. Err. adjusted for 136 clusters in cowcode)

urbancivicny	exp(b)	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
landgini	.9676593	.015354	-2.07	0.038	.9380291	.9982254
time1	.7963398	.0794787	-2.28	0.023	.6548536	.9683951
c.time1#c.time1	1.004106	.0018531	2.22	0.026	1.000481	1.007745
c.time1#c.time1#c.time1	.9999803	.00001	-1.97	0.049	.9999606	.9999999
cons	.1615449	.3298948	-0.89	0.372	.0029514	8.842037
/lnsig2u	-.4767304	.6654802			-1.781048	.8275869
sigma_u	.7879149	.2621709			.4104407	1.512545
rho	.2739983	.1323795			.0928984	.5817318

```
64 . * Negative and statistically significant
65 . quadchk, nooutput

   Refitting model intpoints() =  8
   Refitting model intpoints() = 16
```

Quadrature check

	Fitted quadrature 12 points	Comparison quadrature 8 points	Comparison quadrature 16 points	
Log likelihood	-138.2233	-138.22326	-138.2233	
		.00003833	-5.176e-07	Difference
		-2.773e-07	3.745e-09	Relative difference
urbancivicny:-.03287525		-.03287525	-.03287529	
landgini		-1.768e-13	-4.065e-08	Difference
		5.377e-12	1.237e-06	Relative difference
urbancivicny:-.22772934		-.22772934	-.22772922	
time1		4.818e-13	1.206e-07	Difference
		-2.116e-12	-5.297e-07	Relative difference
urbancivicny: .00409765		.00409765	.00409765	
c.time1#c.~1		-5.732e-15	-1.424e-09	Difference
		-1.399e-12	-3.476e-07	Relative difference
urbancivicny:-.00001973		-.00001973	-.00001973	
c.time1#c.~1		2.584e-17	6.255e-12	Difference
		-1.310e-12	-3.170e-07	Relative difference
urbancivicny:-1.8229719		-1.8229719	-1.8229684	
_cons		1.806e-11	3.473e-06	Difference
		-9.907e-12	-1.905e-06	Relative difference
lnsig2u: -.47673039		-.47673039	-.47674616	
_cons		-7.273e-11	-.00001578	Difference
		1.526e-10	.00003309	Relative difference

```
66 . * --Passed:  all coefficients change by less than .01
67 .
68 . * ============================================================
69 . * ROBUSTNESS CHECKS:  RAPID POPULATION GROWTH AND YOUTH BULGES
70 . *   IN REVOLUTIONARY EPISODES
71 . * ============================================================
72 . * POST-COLD WAR PERIOD (1985-2014) VS. 1900-84 PERIOD
73 . * Aged 15-24
74 . xtcloglog revny  i.postcoldwar##c.youthpercl time1 timesq timecub, vce(robust) nolog eform

   Calculating robust standard errors:

   Random-effects complementary log-log model      Number of obs     =     10,158
   Group variable: cowcode                         Number of groups  =        160

   Random effects u_i ~ Gaussian                   Obs per group:
                                                                 min =         23
                                                                 avg =       63.5
                                                                 max =         64

   Integration method: mvaghermite                 Integration pts.  =         12

                                                   Wald chi2(6)      =      31.99
   Log pseudolikelihood  = -1002.0783              Prob > chi2       =     0.0000
```

(Std. Err. adjusted for 160 clusters in cowcode)

revny	exp(b)	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
1.postcoldwar	26.00467	24.96717	3.39	0.001	3.961047	170.7233
youthpercl	1.0863	.0239722	3.75	0.000	1.040317	1.134316
postcoldwar#c.youthpercl						
1	.9411777	.0255423	-2.23	0.025	.8924239	.9925949
time1	4.006113	1.335309	4.16	0.000	2.084503	7.699169
timesq	.9828127	.0040581	-4.20	0.000	.9748911	.9907987
timecub	1.000069	.0000164	4.20	0.000	1.000037	1.000101
_cons	3.90e-19	3.45e-18	-4.80	0.000	1.17e-26	1.30e-11

```
-------------------------+------------------------------------------------------------------
                /lnsig2u |  -.8621403   .3037035                      -1.457388   -.2668924
-------------------------+------------------------------------------------------------------
                 sigma_u |   .6498133   .0986753                       .4825387    .8750746
                     rho |   .2042662   .0493644                       .1239996      .31765
-------------------------+------------------------------------------------------------------

. * Interaction is statistically significant, with postcoldwar being negative and
. *   before the post-Cold War era being positive
. * Quadrature test
. quadchk, nooutput

Refitting model intpoints() =  8
Refitting model intpoints() = 16

                        Quadrature check

             Fitted       Comparison     Comparison
           quadrature     quadrature     quadrature
           12 points      8 points       16 points
-----------------------------------------------------
Log        -1002.0783     -1002.0778     -1002.0783
likelihood                 .00047485      4.950e-06   Difference
                          -4.739e-07     -4.939e-09   Relative difference
-----------------------------------------------------
revny:       3.2582763      3.2582846      3.2582759
1.postcold~r                8.298e-06     -3.342e-07   Difference
                            2.547e-06     -1.026e-07   Relative difference
-----------------------------------------------------
revny:       .08277784      .08277711      .08277786
youthpercl                 -7.288e-07      1.307e-08   Difference
                           -8.804e-06      1.579e-07   Relative difference
-----------------------------------------------------
revny:      -.06062335     -.06062359     -.06062334
1.postcold~l               -2.373e-07      9.731e-09   Difference
                            3.914e-06     -1.605e-07   Relative difference
-----------------------------------------------------
revny:       1.3878214      1.3878216      1.3878214
   time1                    1.835e-07     -2.034e-08   Difference
                            1.322e-07     -1.466e-08   Relative difference
-----------------------------------------------------
revny:       -.0173367      -.0173367      -.0173367
  timesq                   -1.167e-10      2.024e-10   Difference
                            6.733e-09     -1.167e-08   Relative difference
-----------------------------------------------------
revny:        .0000689       .0000689       .0000689
 timecub                   -9.081e-12     -5.803e-13   Difference
                           -1.318e-07     -8.422e-09   Relative difference
-----------------------------------------------------
revny:      -42.387475     -42.387499     -42.387473
   _cons                   -.00002429      1.651e-06   Difference
                            5.731e-07     -3.895e-08   Relative difference
-----------------------------------------------------
lnsig2u:    -.86214025     -.86197908     -.86214546
    cons                    .00016117     -5.210e-06   Difference
                           -.00018694      6.043e-06   Relative difference
-----------------------------------------------------

. * --Passed:  all coefficients change by less than .01
. *  Aged 15-24, controlling for population size, level of development, and economic growth
. * Model with controls
. xtcloglog revny lnpopl gdppcthl gdppcgrow1yrl i.postcoldwar##c.youthpercl time1 timesq timecub, vce(robust) nolo
> g eform

Calculating robust standard errors:

Random-effects complementary log-log model      Number of obs     =      9,697
Group variable: cowcode                         Number of groups  =        160

Random effects u_i ~ Gaussian                   Obs per group:
                                                              min =         22
                                                              avg =       60.6
                                                              max =         64

Integration method: mvaghermite                 Integration pts.  =         12

                                                Wald chi2(9)      =     107.12
Log pseudolikelihood  = -959.90247              Prob > chi2       =     0.0000

                                          (Std. Err. adjusted for 160 clusters in cowcode)
------------------------------------------------------------------------------------------
                         |               Robust
                   revny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------------+----------------------------------------------------------------
                  lnpopl |   1.335808   .0570155     6.78   0.000     1.228606    1.452363
               gdppcthl |   .8749771   .0258218    -4.53   0.000     .8258031    .9270792
          gdppcgrow1yrl |   .9856823   .0092206    -1.54   0.123      .967775    1.003921
          1.postcoldwar |   57.10356   59.08916     3.91   0.000     7.513871    433.9729
             youthpercl |   1.046084   .0266998     1.77   0.078     .9950407    1.099746
                        |
postcoldwar#c.youthpercl |
                      1  |   .9162825   .0265834    -3.01   0.003     .8656336    .9698948
                        |
                   time1 |   4.147817   1.389246     4.25   0.000     2.151409    7.996799
                  timesq |   .9824341   .0040508    -4.30   0.000     .9745266    .9904057
                 timecub |    1.00007   .0000163     4.31   0.000     1.000038    1.000102
                   _cons |   6.74e-20   5.99e-19    -4.97   0.000     1.83e-27    2.48e-12
-------------------------+----------------------------------------------------------------
                /lnsig2u |  -2.668915   1.069756                     -4.765599   -.5722313
-------------------------+----------------------------------------------------------------
                 sigma_u |    .263301   .1408339                      .0922918    .7511757
```

```
                     rho |   .0404416    .041513                      .0051515    .2554161
------------------------------------------------------------------------------------------

83 . * Interactions are statistically significant, with postcoldwar being negative and
84 . *   1900-1984 being positive; 1900-1984 interaction was significant at the
85 . *       .10 level only
86 . * Quadrature test
87 . quadchk, nooutput

Refitting model intpoints() =  8
Refitting model intpoints() = 16

                         Quadrature check

              Fitted       Comparison     Comparison
            quadrature     quadrature     quadrature
            12 points      8 points       16 points
-------------------------------------------------------
Log          -959.90247     -959.90247     -959.90247
likelihood                   3.932e-08     -2.160e-12   Difference
                            -4.097e-11      2.250e-15   Relative difference
-------------------------------------------------------
revny:        .28953608      .28953608      .28953608
  lnpopl                    -2.323e-10      4.207e-11   Difference
                            -8.025e-10      1.453e-10   Relative difference
-------------------------------------------------------
revny:       -.13355755     -.13355755     -.13355755
gdppcthl                     8.123e-10      2.021e-10   Difference
                            -6.082e-09     -1.513e-09   Relative difference
-------------------------------------------------------
revny:       -.01442118     -.01442118     -.01442118
gdppcgrow1~l                -2.413e-10     -6.305e-11   Difference
                             1.673e-08      4.372e-09   Relative difference
-------------------------------------------------------
revny:        4.0448665      4.0448665      4.0448665
1.postcold~r                -7.414e-09     -2.146e-09   Difference
                            -1.833e-09     -5.307e-10   Relative difference
-------------------------------------------------------
revny:        .04505363      .04505363      .04505363
youthpercl                  -2.030e-10     -6.825e-11   Difference
                            -4.506e-09     -1.515e-09   Relative difference
-------------------------------------------------------
revny:       -.08743058     -.08743058     -.08743058
1.postcold~l                 2.388e-10      6.899e-11   Difference
                            -2.732e-09     -7.891e-10   Relative difference
-------------------------------------------------------
revny:        1.4225823      1.4225823      1.4225823
   time1                    -8.744e-10     -2.120e-10   Difference
                            -6.146e-10     -1.491e-10   Relative difference
-------------------------------------------------------
revny:       -.01772201     -.01772201     -.01772201
  timesq                     1.196e-11      2.995e-12   Difference
                            -6.746e-10     -1.690e-10   Relative difference
-------------------------------------------------------
revny:        .00007021      .00007021      .00007021
 timecub                   -5.335e-14     -1.378e-14   Difference
                            -7.598e-10     -1.963e-10   Relative difference
-------------------------------------------------------
revny:       -44.143693     -44.143693     -44.143693
   _cons                     5.069e-08      1.219e-08   Difference
                            -1.148e-09     -2.762e-10   Relative difference
-------------------------------------------------------
lnsig2u:     -2.6689151     -2.6689159     -2.6689154
   _cons                    -7.811e-07     -2.753e-07   Difference
                             2.927e-07      1.031e-07   Relative difference
-------------------------------------------------------

88 . * --Passed:  all coefficients change by less than .01
89 . * DIFFERENT ESTIMATION FRAMEWORKS
90 . * Pooled
91 . cloglog revny lnpopl gdppcthl gdppcgrow1yrl i.postcoldwar##c.youthpercl time1 timesq timecub, vce(cluster cowcod
   > e) nolog eform

Complementary log-log regression                Number of obs     =      9,697
                                                Zero outcomes     =      9,486
                                                Nonzero outcomes  =        211

                                                Wald chi2(9)      =     114.81
Log pseudolikelihood = -960.32837               Prob > chi2       =     0.0000

                                      (Std. Err. adjusted for 160 clusters in cowcode)
------------------------------------------------------------------------------------------
                     |               Robust
                revny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------+--------------------------------------------------------------------
                lnpopl |    1.33607   .0541862     7.14   0.000     1.233978    1.446608
             gdppcthl |    .8760214   .0259076    -4.48   0.000     .8266871    .9282998
         gdppcgrow1yrl |    .9853216   .0093948    -1.55   0.121      .967079    1.003908
         1.postcoldwar |    56.35421   57.99744     3.92   0.000     7.497298    423.5922
            youthpercl |    1.045636   .0264337     1.77   0.078     .9950894     1.09875
                       |
postcoldwar#c.youthpercl |
                     1 |    .9166704   .0264344    -3.02   0.003     .8662969     .969973
                       |
                 time1 |    4.142497    1.38662     4.25   0.000     2.149508    7.983351
                timesq |     .982452   .0040479    -4.30   0.000     .9745503    .9904177
               timecub |     1.00007   .0000163     4.31   0.000     1.000038    1.000102
                 _cons |    7.24e-20   6.43e-19    -4.96   0.000     2.00e-27    2.63e-12
------------------------------------------------------------------------------------------
```

```
 92 . * Interactions are statistically significant, with postcoldwar being negative and
 93 . *   1900-1984 being positive; 1900-1984 interaction was significant at the
 94 . *       .10 level only
 95 . * Rare events
 96 . * Note: pc parameter set to proportion of positive revny in sample analyzed (.0218)
 97 . generate postxyouthpercl = postcoldwar * youthpercl
   (8,231 missing values generated)

 98 . relogit revny lnpopl gdppcthl gdppcgrow1yrl postcoldwar youthpercl postxyouthpercl time1 timesq timecub, cluster
   > (cowcode) pc(.0218)
   (8,692 missing values generated)


   Corrected logit estimates                           Number of obs =     9697

   ------------------------------------------------------------------------------
                |               Robust
          revny |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
   -------------+----------------------------------------------------------------
         lnpopl |    .294552   .0421586     6.99   0.000     .2119227    .3771813
       gdppcthl |  -.1317457   .0300247    -4.39   0.000     -.190593   -.0728984
  gdppcgrow1yrl |   -.015372   .0098192    -1.57   0.117    -.0346173    .0038734
     postcoldwar |   4.025301   1.042696     3.86   0.000     1.981655    6.068947
      youthpercl |   .0437626   .0255574     1.71   0.087     -.006329    .0938542
postxyouthpercl |  -.0867631   .0292008    -2.97   0.003    -.1439955   -.0295306
           time1 |   1.429236   .3416544     4.18   0.000      .759606    2.098867
          timesq |  -.0178188   .0042068    -4.24   0.000    -.0260639   -.0095737
         timecub |   .0000706   .0000166     4.25   0.000      .000038    .0001032
           _cons |   -44.2178   9.066418    -4.88   0.000    -61.98765   -26.44795
   ------------------------------------------------------------------------------

 99 . * Interactions are statistically significant, with postcoldwar being negative and
100 . *   1900-1984 being positive; 1900-1984 interaction was significant at the
101 . *       .10 level only
102 . * Firth method
103 . * Note: DOES NOT CONVERGE (likely due to multicollinearity--converges when timecub variable is dropped)
104 . firthlogit revny lnpopl gdppcthl gdppcgrow1yrl postcoldwar youthpercl postxyouthpercl time1 timesq, or nolog

                                               Number of obs     =      9,697
                                               Wald chi2(8)      =      84.62
   Penalized log likelihood = -930.01165       Prob > chi2       =     0.0000

   ------------------------------------------------------------------------------
            revny | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
   ---------------+--------------------------------------------------------------
           lnpopl |   1.339529    .057314     6.83   0.000     1.231777    1.456707
         gdppcthl |   .8777959    .024335    -4.70   0.000     .8313728    .9268112
    gdppcgrow1yrl |   .9855097   .0114679    -1.25   0.210     .9632874    1.008245
       postcoldwar |   18.17178   17.97034     2.93   0.003     2.615967    126.2301
        youthpercl |   1.038895    .027955     1.42   0.156     .9855241    1.095157
   postxyouthpercl |    .922274   .0265524    -2.81   0.005     .8716732    .9758121
           time1 |   .9875705   .0403068    -0.31   0.759     .9116479    1.069816
          timesq |   1.000053   .0002372     0.22   0.823     .9995884    1.000518
           _cons |   .0012112   .0021233    -3.83   0.000      .000039     .037623
   ------------------------------------------------------------------------------

105 . * 1900-1984 interaction was positive but not significant; postcoldwar interaction was negative and
106 . *   statistically signficant
107 .
108 . *  Youth bulges, as measured by populaton aged 0-15
109 . xtcloglog revny i.postcoldwar##c.percunder15l time1 timesq timecub, vce(robust) nolog eform

   Calculating robust standard errors:

   Random-effects complementary log-log model      Number of obs     =      9,717
   Group variable: cowcode                         Number of groups  =        161

   Random effects u_i ~ Gaussian                   Obs per group:
                                                                 min =         19
                                                                 avg =       60.4
                                                                 max =         61

   Integration method: mvaghermite                 Integration pts.  =         12

                                                   Wald chi2(6)      =      19.27
   Log pseudolikelihood  = -951.59337              Prob > chi2       =     0.0037

                                          (Std. Err. adjusted for 161 clusters in cowcode)
   ------------------------------------------------------------------------------
                                |               Robust
                          revny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
   -----------------------------+------------------------------------------------------------------
                1.postcoldwar |   6.016896   3.420297     3.16   0.002     1.974731    18.33315
                 percunder15l |   1.015498   .0114184     1.37   0.171     .9933637    1.038126
                              |
   postcoldwar#c.percunder15l |
                            1 |   .9888268   .0106249    -1.05   0.296     .9682201    1.009872
                              |
                        time1 |   4.741684   2.083615     3.54   0.000      2.00398    11.21946
                       timesq |   .9807884   .0053995    -3.52   0.000     .9702626    .9914285
                      timecub |   1.000077   .0000222     3.48   0.001     1.000034    1.000121
                        _cons |   2.78e-20   3.16e-19    -3.95   0.000     5.65e-30    1.37e-10
   -----------------------------+------------------------------------------------------------------
                     /lnsig2u |  -.7399333   .3001174                     -1.328153    -.151714
   -----------------------------+------------------------------------------------------------------
                     sigma u |   .6907574   .1036542                      .5147488    .9269487
                         rho |   .2248482   .0523079                       .138733    .3431215
   ------------------------------------------------------------------------------
```

```
110 . * Post-cold war period is negative but statistically insignificant; 1900-1984
111 . *       interaction is positive and statistically insignificant
112 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                          Quadrature check

                 Fitted       Comparison     Comparison
               quadrature     quadrature     quadrature
               12 points      8 points       16 points
    ----------------------------------------------------
    Log          -951.59337     -951.59263     -951.59336
    likelihood                   .00073356      9.327e-06   Difference
                                -7.709e-07     -9.802e-09   Relative difference
    ----------------------------------------------------
    revny:         1.7945715      1.7946112      1.7945708
    1.postcold~r                  .0000397      -7.421e-07   Difference
                                  .00002212     -4.135e-07   Relative difference
    ----------------------------------------------------
    revny:         .01537957       .0153797      .01537956
    percunder15l                  1.271e-07     -1.079e-08   Difference
                                  8.266e-06     -7.014e-07   Relative difference
    ----------------------------------------------------
    revny:       -.01123611     -.01123707     -.01123609
    1.postco~15l                 -9.638e-07      1.848e-08   Difference
                                  .00008578     -1.645e-06   Relative difference
    ----------------------------------------------------
    revny:         1.5563924      1.5563925      1.5563925
       time1                      2.901e-08      3.010e-08   Difference
                                  1.864e-08      1.934e-08   Relative difference
    ----------------------------------------------------
    revny:         -.0193985      -.0193985      -.0193985
      timesq                      7.511e-10     -3.686e-10   Difference
                                 -3.872e-08      1.900e-08   Relative difference
    ----------------------------------------------------
    revny:         .00007727      .00007727      .00007727
     timecub                    -1.295e-11      1.500e-12   Difference
                                -1.676e-07      1.941e-08   Relative difference
    ----------------------------------------------------
    revny:         -45.02979     -45.029858     -45.029789
       _cons                    -.00006769      1.171e-06   Difference
                                 1.503e-06     -2.600e-08   Relative difference
    ----------------------------------------------------
    lnsig2u:     -.73993333     -.73969243     -.73993803
       _cons                      .0002409     -4.695e-06   Difference
                                 -.00032558      6.345e-06   Relative difference
    ----------------------------------------------------

113 . * --Passed:  all coefficients change by less than .01
114 . *  Aged 0-15, controlling for population size, level of development, and economic growth
115 . xtcloglog revny lnpopl gdppcthl gdppcgrow1yrl i.postcoldwar##c.percunder15l time1 timesq timecub, vce(robust) no
    > log eform

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =      9,258
    Group variable: cowcode                         Number of groups  =        161

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         19
                                                                  avg =       57.5
                                                                  max =         61

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(9)      =      98.61
    Log pseudolikelihood  = -910.10653              Prob > chi2       =     0.0000

                                             (Std. Err. adjusted for 161 clusters in cowcode)
    ------------------------------------------------------------------------------------------
                            |               Robust
                      revny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    ------------------------+-----------------------------------------------------------------
                     lnpopl |   1.322972   .0606087     6.11   0.000     1.209358    1.447259
                   gdppcthl |   .8823885   .0225504    -4.90   0.000     .8392792    .9277121
                gdppcgrow1yrl |   .9846503   .0106758    -1.43   0.154     .9639469    1.005798
                1.postcoldwar |   18.46467   14.18956     3.79   0.000     4.094663    83.26548
                 percunder15l |   1.012962   .0095412     1.37   0.172     .9944332    1.031836
                              |
    postcoldwar#c.percunder15l |
                            1 |     .96118   .0156036    -2.44   0.015     .9310789    .9922542
                              |
                        time1 |   5.385673   2.374694     3.82   0.000     2.269454    12.78082
                       timesq |   .9792211   .0053862    -3.82   0.000     .9687211     .989835
                      timecub |   1.000084   .0000221     3.78   0.000      1.00004    1.000127
                         cons |   2.01e-22   2.30e-21    -4.36   0.000     3.49e-32    1.15e-12
    ------------------------+-----------------------------------------------------------------
                    /lnsig2u |  -2.631574   1.102252                     -4.791948   -.4712008
    ------------------------+-----------------------------------------------------------------
                     sigma_u |   .2682631   .1478467                      .0910839    .7900963
                         rho |   .0419157   .0442651                      .0050182    .2750996
    ------------------------------------------------------------------------------------------
```

```
116 . * 1900-1984 interaction was positive but not significant; postcoldwar interaction was negative and
117 . *   statistically signficant
118 . * Quadrature test
119 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                  Fitted       Comparison     Comparison
                quadrature     quadrature     quadrature
                12 points      8 points       16 points
    ------------------------------------------------------
    Log          -910.10653     -910.10653     -910.10653
    likelihood                   3.955e-08     -2.046e-12   Difference
                                -4.346e-11      2.248e-15   Relative difference
    ------------------------------------------------------
    revny:        .27988037      .27988037      .27988037
      lnpopl                     2.491e-10      4.150e-10   Difference
                                 8.900e-10      1.483e-09   Relative difference
    ------------------------------------------------------
    revny:       -.12512282     -.12512282     -.12512282
    gdppcthl                     1.547e-10      1.737e-10   Difference
                                -1.236e-09     -1.389e-09   Relative difference
    ------------------------------------------------------
    revny:       -.01546872     -.01546872     -.01546872
    gdppcgrow1~l                -1.852e-11     -1.771e-11   Difference
                                 1.197e-09      1.145e-09   Relative difference
    ------------------------------------------------------
    revny:        2.9158593      2.9158593      2.9158593
    1.postcold~r                -1.010e-09     -1.099e-09   Difference
                                -3.463e-10     -3.770e-10   Relative difference
    ------------------------------------------------------
    revny:        .01287871      .01287871      .01287871
    percunder15l                 3.287e-11      3.758e-11   Difference
                                 2.552e-09      2.918e-09   Relative difference
    ------------------------------------------------------
    revny:        -.0395936      -.0395936      -.0395936
    1.postco~15l                 2.891e-11      3.168e-11   Difference
                                -7.301e-10     -8.002e-10   Relative difference
    ------------------------------------------------------
    revny:        1.6837423      1.6837423      1.6837423
       time1                    -4.982e-10     -5.765e-10   Difference
                                -2.959e-10     -3.424e-10   Relative difference
    ------------------------------------------------------
    revny:        -.0209978      -.0209978      -.0209978
      timesq                     6.086e-12      7.028e-12   Difference
                                -2.898e-10     -3.347e-10   Relative difference
    ------------------------------------------------------
    revny:        .00008354      .00008354      .00008354
     timecub                   -2.468e-14     -2.858e-14   Difference
                               -2.954e-10     -3.421e-10   Relative difference
    ------------------------------------------------------
    revny:       -49.960817     -49.960817     -49.960817
       _cons                    1.480e-08      1.566e-08   Difference
                               -2.963e-10     -3.135e-10   Relative difference
    ------------------------------------------------------
    lnsig2u:     -2.6315744     -2.6315746     -2.6315747
       _cons                   -1.528e-07     -2.430e-07   Difference
                                5.806e-08      9.236e-08   Relative difference
    ------------------------------------------------------

120 . * --Passed:  all coefficients change by less than .01
121 . * DIFFERENT ESTIMATION FRAMEWORKS
122 . * Pooled
123 . cloglog revny lnpopl gdppcthl gdppcgrow1yrl i.postcoldwar##c.percunder15l time1 timesq timecub, vce(cluster cowc
    > ode) nolog eform

    Complementary log-log regression                Number of obs     =      9,258
                                                    Zero outcomes     =      9,059
                                                    Nonzero outcomes  =        199

                                                    Wald chi2(9)      =     107.23
    Log pseudolikelihood = -910.52307               Prob > chi2       =     0.0000

                                                 (Std. Err. adjusted for 161 clusters in cowcode)
    ------------------------------------------------------------------------------------------------
                                |               Robust
                          revny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    ----------------------------+-------------------------------------------------------------------
                         lnpopl |   1.326382    .058239     6.43   0.000      1.21701    1.445584
                       gdppcthl |    .883415   .0224489    -4.88   0.000     .8404937    .9285282
                  gdppcgrow1yrl |   .9845338   .0108857    -1.41   0.159     .9634276    1.006102
                  1.postcoldwar |   18.32807   13.96297     3.82   0.000     4.117577    81.58153
                   percunder15l |   1.013196   .0093183     1.43   0.154     .9950965    1.031626
                                |
    postcoldwar#c.percunder15l |
                              1 |   .9613844   .0153884    -2.46   0.014     .9316918    .9920232
                                |
                          time1 |   5.365306   2.356154     3.83   0.000     2.268781     12.6881
                         timesq |   .9792664   .0053649    -3.82   0.000     .9688078     .989838
                        timecub |   1.000083    .000022     3.78   0.000      1.00004    1.000127
                          _cons |   2.22e-22   2.54e-21    -4.37   0.000     4.26e-32    1.16e-12
    ------------------------------------------------------------------------------------------------
```

```
. * 1900-1984 interaction was positive but not significant; postcoldwar interaction was negative and
. *   statistically signficant
. * Rare events
. * Note: pc parameter set to proportion of positive revny in sample analyzed (.0215)
. generate postxyouthund15l = postcoldwar * youthpercl
(8,231 missing values generated)

. relogit revny lnpopl gdppcthl gdppcgrow1yrl postcoldwar percunder15l postxyouthund15l time1 timesq timecub, clus
> ter(cowcode) pc(.0215)
(9,172 missing values generated)


Corrected logit estimates                           Number of obs =     9217

------------------------------------------------------------------------------
             |               Robust
       revny |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |   .2908089   .0450181     6.46   0.000     .2025749    .3790428
    gdppcthl |  -.1399427   .0278479    -5.03   0.000    -.1945236   -.0853618
gdppcgrow1yrl |  -.0148991    .011104    -1.34   0.180    -.0366625    .0068642
  postcoldwar |   3.258982   .8696588     3.75   0.000     1.554482    4.963482
 percunder15l |   .0071447   .0090703     0.79   0.431    -.0106328    .0249222
postxyouthund15l |  -.0612208   .0234856    -2.61   0.009    -.1072517   -.0151899
        time1 |   1.717319   .4484156     3.83   0.000     .8384403    2.596197
       timesq |   -.021454   .0055883    -3.84   0.000     -.032407   -.0105011
      timecub |   .0000856   .0000224     3.81   0.000     .0000416    .0001296
        _cons |  -50.54151   11.66242    -4.33   0.000    -73.39943   -27.68359
------------------------------------------------------------------------------

. * 1900-1984 interaction was positive but not significant; postcoldwar interaction was negative and
. *   statistically signficant
. * Firth method
. * Note: DOES NOT CONVERGE (likely due to multicollinearity--converges when timecub variable is dropped)
. firthlogit revny lnpopl gdppcthl gdppcgrow1yrl postcoldwar percunder15l postxyouthund15l time1 timesq, or nolog

                                            Number of obs     =      9,217
                                            Wald chi2(8)      =      78.79
Penalized log likelihood = -874.30668       Prob > chi2       =     0.0000

------------------------------------------------------------------------------
       revny | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |    1.33813   .0595892     6.54   0.000     1.226289    1.460171
    gdppcthl |   .8726667   .0241408    -4.92   0.000     .8266115    .9212879
gdppcgrow1yrl |   .9880553    .012174    -0.98   0.329     .9644804    1.012206
  postcoldwar |   9.735981   6.789594     3.26   0.001     2.481853    38.19296
 percunder15l |   1.008156    .008471     0.97   0.334     .9916891    1.024896
postxyouthund15l |   .9411633   .0187916    -3.04   0.002     .9050437    .9787244
        time1 |   1.009554   .0458227     0.21   0.834     .9236224    1.103481
       timesq |   .9999208   .0002762    -0.29   0.774     .9993796    1.000462
        _cons |    .001221    .002245    -3.65   0.000     .0000332     .044856
------------------------------------------------------------------------------

. * 1900-1984 interaction was positive but not significant; postcoldwar interaction was negative and
. *   statistically signficant
. drop postxyouthpercl postxyouthund15l

. 
. * RURAL VS. URBAN REVS
. * Rural revs
. xtcloglog ruralrevny lnpopl youthpercl time1 timesq timecub, vce(robust) nolog eform

Calculating robust standard errors:

Random-effects complementary log-log model      Number of obs     =     10,158
Group variable: cowcode                         Number of groups  =        160

Random effects u_i ~ Gaussian                   Obs per group:
                                                              min =         23
                                                              avg =       63.5
                                                              max =         64

Integration method: mvaghermite                 Integration pts.  =         12

                                                Wald chi2(5)      =      60.43
Log pseudolikelihood  = -503.01771              Prob > chi2       =     0.0000

                              (Std. Err. adjusted for 160 clusters in cowcode)
------------------------------------------------------------------------------
             |               Robust
  ruralrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |   1.506057   .1081311     5.70   0.000     1.308361    1.733627
  youthpercl |   1.138634   .0323397     4.57   0.000     1.076982    1.203816
       time1 |   2.367812   1.053431     1.94   0.053     .9900355    5.662963
      timesq |   .9892069   .0055371    -1.94   0.053     .9784137    1.000119
     timecub |   1.000044   .0000228     1.91   0.057     .9999988    1.000088
       _cons |   1.30e-15   1.53e-14    -2.91   0.004     1.27e-25    .0000134
-------------+----------------------------------------------------------------
    /lnsig2u |  -1.672339   .7164332                     -3.076522    -.268156
-------------+----------------------------------------------------------------
     sigma_u |   .4333673   .1552394                      .2147542    .8745218
         rho |   .1024734   .0658922                      .0272726    .3173761
------------------------------------------------------------------------------
```

```
142 . * --youthpercl is positive and statistically significant
143 . * Quadrature test
144 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                 Fitted       Comparison     Comparison
               quadrature     quadrature     quadrature
               12 points      8 points       16 points
    ------------------------------------------------------------
    Log          -503.01771     -503.01771     -503.01771
    likelihood                   2.035e-06     -4.943e-10   Difference
                                -4.046e-09      9.827e-13   Relative difference
    ------------------------------------------------------------
    ruralrevny:    .4094953       .4094953       .4094953
      lnpopl                    -3.043e-12      4.378e-10   Difference
                                -7.432e-12      1.069e-09   Relative difference
    ------------------------------------------------------------
    ruralrevny:   .12982951      .12982951      .12982951
    youthpercl                   9.997e-12      8.438e-11   Difference
                                 7.700e-11      6.499e-10   Relative difference
    ------------------------------------------------------------
    ruralrevny:   .86196635      .86196635      .86196635
       time1                     1.079e-11      1.306e-10   Difference
                                 1.251e-11      1.516e-10   Relative difference
    ------------------------------------------------------------
    ruralrevny:  -.01085178     -.01085178     -.01085178
      timesq                    -2.316e-13     -2.611e-12   Difference
                                 2.135e-11      2.406e-10   Relative difference
    ------------------------------------------------------------
    ruralrevny:   .00004352      .00004352      .00004352
     timecub                     1.346e-15      1.418e-14   Difference
                                 3.093e-11      3.257e-10   Relative difference
    ------------------------------------------------------------
    ruralrevny:  -34.275271     -34.275271     -34.275271
       _cons                    -6.573e-12     -4.656e-09   Difference
                                 1.918e-13      1.359e-10   Relative difference
    ------------------------------------------------------------
    lnsig2u:     -1.6723392     -1.6723392     -1.6723393
       _cons                    -3.737e-09     -3.415e-08   Difference
                                 2.235e-09      2.042e-08   Relative difference
    ------------------------------------------------------------

145 . * --Passed:  all coefficients change by less than .01
146 . * Urban revs
147 . xtcloglog urbanrevny lnpopl youthpercl time1 timesq timecub, vce(robust) nolog eform

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     10,158
    Group variable: cowcode                         Number of groups  =        160

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         23
                                                                  avg =       63.5
                                                                  max =         64

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(5)      =      20.99
    Log pseudolikelihood  =  -615.1768              Prob > chi2       =     0.0008

                                (Std. Err. adjusted for 160 clusters in cowcode)
    ------------------------------------------------------------------------------
                 |               Robust
      urbanrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    -------------+----------------------------------------------------------------
          lnpopl |   1.233117   .0962903     2.68   0.007     1.058124     1.43705
       youthpercl |   1.001744   .0150869     0.12   0.908     .9726067    1.031755
           time1 |   1.205096   .4194008     0.54   0.592     .6092341    2.383741
           timesq |   .9978153   .0042148    -0.52   0.605     .9895886     1.00611
         timecub |   1.000009   .0000167     0.54   0.592     .9999762    1.000042
           _cons |   4.59e-06   .0000431    -1.31   0.191     4.66e-14     452.769
    -------------+----------------------------------------------------------------
        /lnsig2u |   -.672866   .3569806                     -1.372535    .0268031
    -------------+----------------------------------------------------------------
         sigma_u |   .7143138   .1274981                      .5034517    1.013492
             rho |   .2367526   .0645067                      .1335145    .3844039
    ------------------------------------------------------------------------------

148 . * youthpercl is negative and statistically insignificant
149 . * Quadrature test
150 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check
```

	Fitted quadrature 12 points	Comparison quadrature 8 points	Comparison quadrature 16 points	
Log likelihood	-615.1768	-615.17638	-615.1768	
		.00041791	2.254e-06	Difference
		-6.793e-07	-3.664e-09	Relative difference
urbanrevny: lnpopl	.20954525	.20952829	.20954535	
		-.00001696	9.620e-08	Difference
		-.00008093	4.591e-07	Relative difference
urbanrevny: youthpercl	.0017429	.00174236	.00174291	
		-5.429e-07	9.076e-09	Difference
		-.00031152	5.207e-06	Relative difference
urbanrevny: time1	.18655934	.18655928	.18655935	
		-6.415e-08	1.237e-08	Difference
		-3.438e-07	6.632e-08	Relative difference
urbanrevny: timesq	-.00218709	-.00218708	-.00218709	
		7.148e-09	-1.775e-10	Difference
		-3.268e-06	8.115e-08	Relative difference
urbanrevny: timecub	8.959e-06	8.959e-06	8.959e-06	
		-3.859e-11	6.972e-13	Difference
		-4.308e-06	7.782e-08	Relative difference
urbanrevny: cons	-12.291414	-12.291265	-12.291413	
		.00014927	1.168e-06	Difference
		-.00001214	-9.506e-08	Relative difference
lnsig2u: _cons	-.67286595	-.67282027	-.67287486	
		.00004568	-8.907e-06	Difference
		-.00006789	.00001324	Relative difference

```
151 . * --Passed:  all coefficients change by less than .01
152 .
153 . * ====================================================================
154 . * ROBUSTNESS CHECKS:  URBANIZATION MAKING URBAN REVOLTS MORE LIKELY AND
155 . *    RURAL REVOLTS LESS LIKELY
156 . * ====================================================================
157 . * Urban revolts
158 . xtcloglog urbanrevny lnpopl gdppcthl polityl polityl2 percurbanl time1 timesq timecub, vce(robust) nolog eform

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     10,575
    Group variable: cowcode                         Number of groups  =        157

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         21
                                                                  avg =       67.4
                                                                  max =        114

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(8)      =     114.20
    Log pseudolikelihood  = -714.20385              Prob > chi2       =     0.0000

                                  (Std. Err. adjusted for 157 clusters in cowcode)
    ------------------------------------------------------------------------------
                 |               Robust
      urbanrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    -------------+----------------------------------------------------------------
          lnpopl |   1.303179   .0701204     4.92   0.000     1.172745    1.448121
        gdppcthl |   .9959911   .0305131    -0.13   0.896     .9379466    1.057628
         polityl |   .9252607    .016227    -4.43   0.000     .8939968    .9576179
        polityl2 |   .9830536   .0041064    -4.09   0.000      .975038     .991135
      percurbanl |   1.011543   .0057127     2.03   0.042     1.000408    1.022801
           time1 |   1.021388    .027638     0.78   0.434     .9686296    1.077019
           timesq |   .9992464   .0005074    -1.48   0.138     .9982525    1.000241
         timecub |   1.000005   2.73e-06     1.87   0.062     .9999997     1.00001
           _cons |   .0017428   .0010932   -10.13   0.000     .0005097    .0059593
    -------------+----------------------------------------------------------------
        /lnsig2u |  -2.690368   1.834572                     -6.286063     .905327
    -------------+----------------------------------------------------------------
         sigma_u |   .2604918   .2389455                      .0431518    1.572495
             rho |   .0396172   .0698012                      .0011307    .6005187
    ------------------------------------------------------------------------------

159 . * percurbanl is positive and statistically significant
160 . * Quadrature test
161 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check
```

	Fitted quadrature 12 points	Comparison quadrature 8 points	Comparison quadrature 16 points	
Log likelihood	-714.20385	-714.20385	-714.20385	
		1.899e-08	-5.684e-13	Difference
		-2.659e-11	7.959e-16	Relative difference
urbanrevny: lnpopl	.26480691	.26480691	.26480691	
		-3.730e-09	-2.170e-09	Difference
		-1.409e-08	-8.196e-09	Relative difference
urbanrevny: gdppcthl	-.00401698	-.00401699	-.00401699	
		-1.974e-09	-1.213e-09	Difference
		4.914e-07	3.019e-07	Relative difference
urbanrevny: polityl	-.07767978	-.07767978	-.07767978	
		2.379e-10	7.476e-11	Difference
		-3.062e-09	-9.624e-10	Relative difference
urbanrevny: polityl2	-.01709164	-.01709164	-.01709164	
		1.955e-10	1.346e-10	Difference
		-1.144e-08	-7.874e-09	Relative difference
urbanrevny: percurbanl	.01147648	.01147649	.01147649	
		6.559e-10	4.061e-10	Difference
		5.715e-08	3.539e-08	Relative difference
urbanrevny: time1	.02116217	.02116217	.02116217	
		3.292e-09	2.100e-09	Difference
		1.556e-07	9.925e-08	Relative difference
urbanrevny: timesq	-.00075386	-.00075386	-.00075386	
		-6.310e-11	-4.062e-11	Difference
		8.370e-08	5.388e-08	Relative difference
urbanrevny: timecub	5.093e-06	5.093e-06	5.093e-06	
		3.044e-13	1.977e-13	Difference
		5.977e-08	3.881e-08	Relative difference
urbanrevny: _cons	-6.3522371	-6.352237	-6.352237	
		8.310e-08	4.995e-08	Difference
		-1.308e-08	-7.863e-09	Relative difference
lnsig2u: cons	-2.6903679	-2.6903715	-2.6903705	
		-3.579e-06	-2.569e-06	Difference
		1.330e-06	9.549e-07	Relative difference

```
162 . * --Passed:  all coefficients change by less than .01
163 . * Different estimation frameworks
164 . * Pooled sample
165 . cloglog urbanrevny lnpopl gdppcthl polityl polityl2 percurbanl time1 timesq timecub, vce(cluster cowcode) nolog
    > eform

Complementary log-log regression                Number of obs     =     10,575
                                                Zero outcomes     =     10,431
                                                Nonzero outcomes  =        144

                                                Wald chi2(8)      =     120.64
Log pseudolikelihood =  -714.4074               Prob > chi2       =     0.0000

                              (Std. Err. adjusted for 157 clusters in cowcode)
------------------------------------------------------------------------------
             |               Robust
  urbanrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |   1.301326   .0649629     5.28   0.000     1.180031    1.435088
    gdppcthl |   .9952521    .030307    -0.16   0.876     .9375893    1.056461
     polityl |   .9253193   .0162781    -4.41   0.000     .8939585    .9577802
    polityl2 |   .9831408   .0041167    -4.06   0.000     .9751053    .9912425
  percurbanl |   1.011776   .0055987     2.12   0.034     1.000862    1.022809
       time1 |   1.022672   .0274372     0.84   0.403     .9702853    1.077887
       timesq |   .9992223   .0005011    -1.55   0.121     .9982405    1.000205
      timecub |   1.000005   2.70e-06     1.93   0.054     .9999999    1.000011
        _cons |   .0017967   .0010808   -10.51   0.000     .0005526    .0058416
------------------------------------------------------------------------------

166 . * percurbanl is positive and statistically significant
167 . * Rare events framework
168 . * Note: pc parameter set to proportion of positive urbanrevny in sample analyzed (.0136)
169 . relogit urbanrevny lnpopl gdppcthl  polityl polityl2 percurbanl time1 timesq timecub, cluster(cowcode) pc(.0136)
    (7,814 missing values generated)


Corrected logit estimates                           Number of obs =    10575

------------------------------------------------------------------------------
             |               Robust
  urbanrevny |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |    .265415   .0509681     5.21   0.000     .1655194    .3653106
    gdppcthl |  -.0013864   .0305728    -0.05   0.964     -.061308    .0585353
     polityl |  -.0776722   .0177262    -4.38   0.000     -.112415   -.0429294
    polityl2 |  -.0169514   .0042176    -4.02   0.000    -.0252178   -.0086851
  percurbanl |    .011611   .0055849     2.08   0.038     .0006648    .0225572
       time1 |   .0208369    .027231     0.77   0.444     -.032535    .0742088
       timesq |   -.000766   .0005083    -1.51   0.132    -.0017622    .0002302
      timecub |   5.20e-06   2.74e-06     1.90   0.057    -1.60e-07    .0000106
        _cons |  -6.265282   .6127712   -10.22   0.000    -7.466292   -5.064273
------------------------------------------------------------------------------
```

```
170 . * percurbanl is positive and statistically significant
171 . * Firth method
172 . firthlogit urbanrevny lnpopl gdppcthl polityl polityl2 percurbanl time1 timesq timecub, or nolog

                                                Number of obs     =     10,575
                                                Wald chi2(8)      =      79.72
Penalized log likelihood = -662.10014           Prob > chi2       =     0.0000

------------------------------------------------------------------------------
  urbanrevny | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |    1.30394   .0735506     4.70   0.000     1.167467    1.456367
    gdppcthl |   .9985758   .0319753    -0.04   0.964     .9378314    1.063255
     polityl |   .9252468   .0148811    -4.83   0.000     .8965352    .9548779
    polityl2 |   .9831882   .0031937    -5.22   0.000     .9769485    .9894677
  percurbanl |   1.011678   .0055343     2.12   0.034     1.000889    1.022584
       time1 |   1.021089   .0324877     0.66   0.512     .9593588    1.086791
       timesq |   .9992339   .0005816    -1.32   0.188     .9980947    1.000374
     timecub |   1.000005   3.09e-06     1.68   0.093     .9999991    1.000011
        cons |   .0019019   .0014161    -8.41   0.000      .000442    .0081837
------------------------------------------------------------------------------

173 . * percurbanl is positive and statistically significant
174 .
175 . * Rural revolts
176 . xtcloglog ruralrevny lnpopl gdppcthl polityl polityl2 percurbanl time1 timesq timecub, vce(robust) nolog eform

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     10,575
    Group variable: cowcode                         Number of groups  =        157

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         21
                                                                  avg =       67.4
                                                                  max =        114

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(8)      =      87.64
    Log pseudolikelihood  = -525.11954              Prob > chi2       =     0.0000

                                (Std. Err. adjusted for 157 clusters in cowcode)
------------------------------------------------------------------------------
             |               Robust
  ruralrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |   1.410676   .1061684     4.57   0.000     1.217209    1.634892
    gdppcthl |   .7749647   .0793491    -2.49   0.013      .634055    .9471896
     polityl |   1.015294   .0199602     0.77   0.440     .9769171    1.055179
    polityl2 |   .9937666    .004154    -1.50   0.135     .9856582    1.001942
  percurbanl |   .9818983   .0088522    -2.03   0.043     .9647007    .9994024
       time1 |   .9728913   .0349782    -0.76   0.445     .9066949     1.04392
       timesq |   1.000728   .0007123     1.02   0.306     .9993332    1.002126
     timecub |   .9999956   4.08e-06    -1.07   0.283     .9999876    1.000004
       _cons |   .0014489   .0014228    -6.66   0.000     .0002114    .0099289
-------------+----------------------------------------------------------------
    /lnsig2u |   -.960928   .4743067                     -1.890552   -.0313039
-------------+----------------------------------------------------------------
     sigma_u |   .6184964   .1466785                      .3885723    .9844699
         rho |   .1886772    .072606                      .0840729    .3707492
------------------------------------------------------------------------------

177 . * percurbanl is negative and statistically significant
178 . * Quadrature test
179 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                          Quadrature check

                Fitted       Comparison     Comparison
              quadrature     quadrature     quadrature
              12 points      8 points       16 points
-----------------------------------------------------------
Log           -525.11954     -525.11944     -525.11954
likelihood                    .00010211      7.065e-07   Difference
                             -1.945e-07     -1.345e-09   Relative difference
-----------------------------------------------------------
ruralrevny:   .34406873      .34406138       .3440687
  lnpopl                    -7.355e-06     -3.119e-08   Difference
                            -.00002138     -9.064e-08   Relative difference
-----------------------------------------------------------
ruralrevny:   -.2549378     -.25493755     -.25493779
gdppcthl                     2.487e-07      2.211e-09   Difference
                            -9.754e-07     -8.671e-09   Relative difference
-----------------------------------------------------------
ruralrevny:   .01517848      .01517839      .01517848
 polityl                    -9.261e-08     -2.949e-09   Difference
                            -6.101e-06     -1.943e-07   Relative difference
-----------------------------------------------------------
ruralrevny:  -.00625293     -.00625304     -.00625293
polityl2                    -1.151e-07      1.305e-10   Difference
                             .00001841     -2.086e-08   Relative difference
-----------------------------------------------------------
ruralrevny:  -.01826758     -.01826744     -.01826759
percurbanl                   1.482e-07     -2.874e-09   Difference
                            -8.111e-06      1.573e-07   Relative difference
-----------------------------------------------------------
```

```
ruralrevny:  -.02748296     -.02748312     -.02748296
   time1                    -1.572e-07      1.986e-09   Difference
                             5.718e-06     -7.226e-08   Relative difference
-------------------------------------------------------
ruralrevny:   .00072818      .00072818      .00072818
  timesq                     4.484e-09     -2.243e-11   Difference
                             6.158e-06     -3.080e-08   Relative difference
-------------------------------------------------------
ruralrevny:  -4.380e-06     -4.380e-06     -4.380e-06
 timecub                    -2.310e-11      1.695e-13   Difference
                             5.274e-06     -3.870e-08   Relative difference
-------------------------------------------------------
ruralrevny:  -6.5369547     -6.5369039     -6.5369541
   _cons                     .00005079      6.066e-07   Difference
                            -7.770e-06     -9.279e-08   Relative difference
-------------------------------------------------------
lnsig2u:     -.96092797     -.96086509     -.96092941
   _cons                     .00006288     -1.436e-06   Difference
                            -.00006544      1.495e-06   Relative difference
-------------------------------------------------------
```

```
180 . * --Passed:  all coefficients change by less than .01
181 . * Different estimation frameworks
182 . * Pooled sample
183 . cloglog ruralrevny lnpopl gdppcthl polityl polityl2 percurbanl time1 timesq timecub, vce(cluster cowcode) nolog
    > eform

Complementary log-log regression                Number of obs     =     10,575
                                                Zero outcomes     =     10,471
                                                Nonzero outcomes  =        104

                                                Wald chi2(8)      =     106.75
Log pseudolikelihood =  -528.4134               Prob > chi2       =     0.0000

                              (Std. Err. adjusted for 157 clusters in cowcode)
------------------------------------------------------------------------------
             |               Robust
  ruralrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |    1.39392   .0942317     4.91   0.000     1.220942    1.591405
    gdppcthl |   .7726981   .0806086    -2.47   0.013      .629813    .9479993
     polityl |   1.019322   .0190594     1.02   0.306     .9826421     1.05737
    polityl2 |    .995207   .0039336    -1.22   0.224     .9875271    1.002947
  percurbanl |   .9816341   .0084526    -2.15   0.031     .9652062    .9983415
       time1 |   .9732046    .034537    -0.77   0.444     .9078138    1.043306
      timesq |   1.000708   .0007091     1.00   0.318     .9993193    1.002099
     timecub |   .9999958   4.07e-06    -1.04   0.299     .9999878    1.000004
       _cons |   .0019526   .0018886    -6.45   0.000     .0002933    .0129992
------------------------------------------------------------------------------

184 . * percurbanl is negative and statistically significant
185 . * Rare events framework
186 . relogit ruralrevny lnpopl gdppcthl polityl polityl2 percurbanl time1 timesq timecub, cluster(cowcode) pc(.0098)
(7,814 missing values generated)


Corrected logit estimates                       Number of obs =    10575

------------------------------------------------------------------------------
             |               Robust
  ruralrevny |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |   .3362426   .0692496     4.86   0.000     .2005159    .4719692
    gdppcthl |  -.2415279   .1043686    -2.31   0.021    -.4460865   -.0369693
     polityl |    .019156   .0188305     1.02   0.309    -.0177512    .0560632
    polityl2 |  -.0046407   .0039864    -1.16   0.244    -.0124539    .0031725
  percurbanl |  -.0191372   .0086474    -2.21   0.027    -.0360857   -.0021886
       time1 |  -.0294972   .0358915    -0.82   0.411    -.0998433     .040849
      timesq |   .0007294   .0007162     1.02   0.308    -.0006743    .0021332
     timecub |  -4.27e-06   4.11e-06    -1.04   0.299    -.0000123    3.79e-06
        cons |  -6.189452   .9815513    -6.31   0.000    -8.113258   -4.265647
------------------------------------------------------------------------------

187 . * Note: pc parameter set at proportion of positive ruralrevny in sample utilized (.0098)
188 . * percurbanl is negative and statistically significant
189 . * Firth method
190 . firthlogit ruralrevny lnpopl gdppcthl polityl polityl2 percurbanl time1 timesq timecub, or nolog

                                                Number of obs     =     10,575
                                                Wald chi2(8)      =      78.76
Penalized log likelihood = -478.85566           Prob > chi2       =     0.0000

------------------------------------------------------------------------------
  ruralrevny | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnpopl |   1.399605   .0831941     5.66   0.000     1.245687     1.57254
    gdppcthl |   .7860615   .0750918    -2.52   0.012     .6518414    .9479186
     polityl |   1.019311   .0175144     1.11   0.266     .9855546    1.054223
    polityl2 |   .9953648   .0037104    -1.25   0.213      .988119    1.002664
  percurbanl |   .9809791    .008929    -2.11   0.035     .9636337    .9986367
       time1 |   .9710276   .0384901    -0.74   0.458     .8984444    1.049475
      timesq |   1.000729   .0007412     0.98   0.325      .999277    1.002182
     timecub |   .9999957   4.02e-06    -1.06   0.289     .9999879    1.000004
       _cons |   .0020525    .001757    -7.23   0.000     .0003834    .0109881
------------------------------------------------------------------------------
```

```
191 . * percurbanl is negative and statistically significant
192 .
193 . * ========================================================================
194 . * ROBUSTNESS CHECKS: RELATIONSHIP OF URBAN/RURAL TO TIME SINCE INDEPENDENCE
195 . * ========================================================================
196 . * Urban revolutions
197 . xtcloglog ruralrevny lnyrsindependent time1 timesq timecub, nolog eform vce(robust)

Calculating robust standard errors:

Random-effects complementary log-log model      Number of obs     =     11,968
Group variable: cowcode                         Number of groups  =        158

Random effects u_i ~ Gaussian                   Obs per group:
                                                              min =         10
                                                              avg =       75.7
                                                              max =        115

Integration method: mvaghermite                 Integration pts.  =         12

                                                Wald chi2(4)      =      15.42
Log pseudolikelihood  = -641.09773              Prob > chi2       =     0.0039

                                (Std. Err. adjusted for 158 clusters in cowcode)
------------------------------------------------------------------------------
             |               Robust
  ruralrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
lnyrsindependent |   .7185092   .0742148    -3.20   0.001     .5868293    .8797372
       time1 |   .9884032   .0294625    -0.39   0.696     .9323122    1.047869
       timesq |   1.000026   .0006087     0.04   0.966     .9988334    1.001219
      timecub |          1   3.54e-06     0.12   0.906     .9999935    1.000007
        _cons |   .0272794   .0135632    -7.24   0.000     .0102948    .0722853
-------------+----------------------------------------------------------------
    /lnsig2u |   .3739908   .2425641                      -.101426    .8494076
-------------+----------------------------------------------------------------
     sigma_u |   1.205622   .1462203                      .9505514    1.529137
         rho |    .469112   .0604096                      .3545436    .5870315
------------------------------------------------------------------------------

198 . * Quadrature test
199 . quadchk, nooutput

Refitting model intpoints() =  8
Refitting model intpoints() = 16

                        Quadrature check

              Fitted       Comparison     Comparison
            quadrature     quadrature     quadrature
            12 points      8 points       16 points
-----------------------------------------------------
Log         -641.09773     -641.08364     -641.09649
likelihood                  .01408726      .00123882   Difference
                           -.00002197     -1.932e-06   Relative difference
-----------------------------------------------------
ruralrevny:  -.33057672     -.33094818      -.3305987
lnyrsindep~t                -.00037146     -.00002199   Difference
                             .00112368      .00006651   Relative difference
-----------------------------------------------------
ruralrevny:  -.01166461     -.01168301     -.01166607
   time1                     -.0000184     -1.458e-06   Difference
                             .00157734      .00012499   Relative difference
-----------------------------------------------------
ruralrevny:    .0000256      .00002572      .00002561
  timesq                    1.142e-07      1.009e-08   Difference
                            .00446108      .00039419   Relative difference
-----------------------------------------------------
ruralrevny:   4.176e-07      4.185e-07      4.177e-07
 timecub                    8.906e-10      5.359e-11   Difference
                            .00213255      .00012832   Relative difference
-----------------------------------------------------
ruralrevny:  -3.6016237     -3.6046145     -3.6016671
   _cons                    -.00299086     -.00004344   Difference
                            .00083042      .00001206   Relative difference
-----------------------------------------------------
lnsig2u:       .3739908      .38029041      .37435685
   _cons                    .00629961      .00036605   Difference
                            .01684429      .00097875   Relative difference
-----------------------------------------------------

200 . * --Passed:  all coefficients change by less than .01
201 . * Rural revolutions
202 . xtcloglog urbanrevny lnyrsindependent time1 timesq timecub, nolog eform vce(robust)

Calculating robust standard errors:

Random-effects complementary log-log model      Number of obs     =     11,968
Group variable: cowcode                         Number of groups  =        158

Random effects u_i ~ Gaussian                   Obs per group:
                                                              min =         10
                                                              avg =       75.7
                                                              max =        115

Integration method: mvaghermite                 Integration pts.  =         12

                                                Wald chi2(4)      =      11.93
Log pseudolikelihood  = -793.73485              Prob > chi2       =     0.0179
```

(Std. Err. adjusted for 158 clusters in cowcode)

urbanrevny	exp(b)	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnyrsindependent	1.160004	.1312918	1.31	0.190	.9292206	1.448106
time1	1.004007	.0244384	0.16	0.869	.9572336	1.053067
timesq	.9996922	.0004812	-0.64	0.522	.9987496	1.000636
timecub	1.000003	2.67e-06	1.00	0.316	.9999974	1.000008
_cons	.0060795	.0036393	-8.52	0.000	.0018807	.0196525
/lnsig2u	-.8459687	.3454424			-1.523023	-.1689141
sigma_u	.6550889	.1131477			.46696	.9190111
rho	.2069073	.056686			.1170442	.3392554

```
203 . * Quadrature test
204 . quadchk, noutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                           Quadrature check

                 Fitted       Comparison     Comparison
               quadrature     quadrature     quadrature
               12 points      8 points       16 points
    ------------------------------------------------------
    Log          -793.73485     -793.73455     -793.73484
    likelihood                   .00029697      2.719e-06   Difference
                                -3.741e-07     -3.425e-09   Relative difference
    ------------------------------------------------------
    urbanrevny:   .14842381      .14840969      .14842349
    lnyrsindep~t                -.00001411     -3.193e-07   Difference
                                 -.0000951     -2.151e-06   Relative difference
    ------------------------------------------------------
    urbanrevny:    .0039993      .00399884      .00399931
       time1                    -4.627e-07      1.587e-08   Difference
                                 -.0001157      3.967e-06   Relative difference
    ------------------------------------------------------
    urbanrevny:  -.00030782     -.00030781     -.00030782
      timesq                     1.116e-08     -1.476e-10   Difference
                                -.00003627      4.794e-07   Relative difference
    ------------------------------------------------------
    urbanrevny:   2.675e-06      2.675e-06      2.675e-06
     timecub                   -5.089e-11      6.472e-13   Difference
                                -.00001903      2.420e-07   Relative difference
    ------------------------------------------------------
    urbanrevny:  -5.1028408     -5.1028334      -5.10284
       _cons                    7.431e-06      8.321e-07   Difference
                                -1.456e-06     -1.631e-07   Relative difference
    ------------------------------------------------------
    lnsig2u:      -.8459687     -.84580646     -.84597949
        cons                     .00016224     -.00001078   Difference
                                -.00019178      .00001274   Relative difference
    ------------------------------------------------------

205 . * --Passed:  all coefficients change by less than .01
206 .
207 . * ========================================================================
208 . * ROBUSTNESS CHECKS: RELATIONSHIP OF URBAN/RURAL TO EFFECTIVE TERRITORIAL
209 . *       CONTROL OF STATES
210 . * ========================================================================
211 . * Rural revolutions
212 . xtcloglog ruralrevny v2svstterr time1 timesq timecub, nolog eform vce(robust)

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     11,432
    Group variable: cowcode                         Number of groups  =        162

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =          6
                                                                  avg =       70.6
                                                                  max =        114

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(4)      =      65.59
    Log pseudolikelihood  = -592.52389              Prob > chi2       =     0.0000
```

(Std. Err. adjusted for 162 clusters in cowcode)

ruralrevny	exp(b)	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
v2svstterr	.9572811	.0064818	-6.45	0.000	.9446609	.9700699
time1	.9902208	.0301454	-0.32	0.747	.9328651	1.051103
timesq	1.000274	.0005976	0.46	0.647	.9991031	1.001446
timecub	.9999982	3.42e-06	-0.53	0.593	.9999915	1.000005
_cons	.2780883	.1625841	-2.19	0.029	.0884155	.8746553
/lnsig2u	.0091052	.3199286			-.6179434	.6361538
sigma u	1.004563	.1606942			.7342016	1.374482
rho	.3802246	.0753924			.2468202	.5345582

```
213 . * Quadrature test
214 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                  Fitted       Comparison     Comparison
                quadrature     quadrature     quadrature
                12 points      8 points       16 points
    ------------------------------------------------------
    Log          -592.52389     -592.52006     -592.52371
    likelihood                   .00383381      .00018421   Difference
                                -6.470e-06     -3.109e-07   Relative difference
    ------------------------------------------------------
    ruralrevny:  -.04365821      -.0436508     -.04365785
    v2svstterr                   7.411e-06      3.635e-07   Difference
                                -.00016975     -8.327e-06   Relative difference
    ------------------------------------------------------
    ruralrevny:  -.00982732     -.00981649     -.00982678
       time1                     .00001082      5.403e-07   Difference
                                -.00110144     -.00005498   Relative difference
    ------------------------------------------------------
    ruralrevny:   .00027372      .00027347      .00027371
      timesq                    -2.466e-07     -1.158e-08   Difference
                                -.00090081     -.00004232   Relative difference
    ------------------------------------------------------
    ruralrevny:  -1.829e-06     -1.827e-06     -1.829e-06
     timecub                     1.386e-09      6.254e-11   Difference
                                -.00075798      -.0000342   Relative difference
    ------------------------------------------------------
    ruralrevny:  -1.2798166     -1.2815844     -1.2798805
       _cons                    -.00176779     -.00006395   Difference
                                 .00138128      .00004997   Relative difference
    ------------------------------------------------------
    lnsig2u:      .00910522      .01100154      .00915443
        cons                     .00189632      .00004921   Difference
                                 .20826731      .00540505   Relative difference
    ------------------------------------------------------

215 . * --Passed:  all coefficients change by less than .01
216 . * Urban revolutions
217 . xtcloglog urbanrevny v2svstterr time1 timesq timecub, nolog eform vce(robust)

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     11,432
    Group variable: cowcode                         Number of groups  =        162

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =          6
                                                                  avg =       70.6
                                                                  max =        114

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(4)      =       7.83
    Log pseudolikelihood  = -774.64902              Prob > chi2       =     0.0982

                                  (Std. Err. adjusted for 162 clusters in cowcode)
    ------------------------------------------------------------------------------
                 |               Robust
      urbanrevny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    -------------+----------------------------------------------------------------
      v2svstterr |   .9957196   .0072492    -0.59   0.556     .9816124     1.01003
           time1 |    1.01334   .0263815     0.51   0.611     .9629298    1.066388
           timesq |     .99953    .000491    -0.96   0.339     .9985682    1.000493
         timecub |   1.000003   2.66e-06     1.30   0.193     .9999982    1.000009
           _cons |   .0142464    .009945    -6.09   0.000     .0036266    .0559634
    -------------+----------------------------------------------------------------
        /lnsig2u |  -.6823653   .3368775                     -1.342633   -.0220976
    -------------+----------------------------------------------------------------
         sigma_u |   .7109291    .119748                      .5110354     .989012
             rho |   .2350404   .0605694                      .1370119    .3728995
    ------------------------------------------------------------------------------

218 . * Quadrature test
219 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                  Fitted       Comparison     Comparison
                quadrature     quadrature     quadrature
                12 points      8 points       16 points
    ------------------------------------------------------
    Log          -774.64902     -774.64847     -774.64902
    likelihood                   .00055212      6.976e-06   Difference
                                -7.127e-07     -9.005e-09   Relative difference
    ------------------------------------------------------
    urbanrevny:  -.00428961      -.0042889     -.00428962
    v2svstterr                   7.113e-07     -8.621e-09   Difference
                                -.00016583      2.010e-06   Relative difference
    ------------------------------------------------------
    urbanrevny:   .01325137      .01325076      .01325138
       time1                    -6.101e-07      1.200e-08   Difference
                                -.00004604      9.055e-07   Relative difference
    ------------------------------------------------------
```

```
    urbanrevny:  -.00047007     -.00047004     -.00047007
      timesq                    2.155e-08     -2.624e-10   Difference
                               -.00004584      5.582e-07   Relative difference
    -------------------------------------------------------
    urbanrevny:   3.468e-06      3.468e-06      3.468e-06
     timecub                   -1.256e-10      1.321e-12   Difference
                               -.00003623      3.809e-07   Relative difference
    -------------------------------------------------------
    urbanrevny:   -4.251254     -4.2514089     -4.2512516
       _cons                   -.00015487      2.444e-06   Difference
                                .00003643     -5.749e-07   Relative difference
    -------------------------------------------------------
    lnsig2u:     -.68236525     -.68209506     -.68237058
       _cons                     .0002702     -5.324e-06   Difference
                               -.00039597      7.803e-06   Relative difference
    -------------------------------------------------------

220 . * --Passed:  all coefficients change by less than .01
221 .
222 . * ============================================================================
223 . * ROBUSTNESS CHECKS: COUNTRY EXTERNAL BATTLE DEATHS AND ONSET OF REVOLUTIONS
224 . * ============================================================================
225 . * Social
226 . xtcloglog leftistny lnextwardeathsl time1 timesq timecub if colony==0, vce(robust) eform nolog

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     13,196
    Group variable: cowcode                         Number of groups  =        165

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         10
                                                                  avg =       80.0
                                                                  max =        115

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(4)      =      28.32
    Log pseudolikelihood  = -391.63832              Prob > chi2       =     0.0000

                                  (Std. Err. adjusted for 165 clusters in cowcode)
    ------------------------------------------------------------------------------
                 |               Robust
       leftistny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    -------------+----------------------------------------------------------------
    lnextwardeathsl |    1.09749   .0453544     2.25   0.024     1.012101    1.190082
              time1 |   .9456729   .0314009    -1.68   0.093     .8860882    1.009264
             timesq |   1.001876   .0007586     2.48   0.013      1.00039    1.003364
            timecub |   .9999844   4.92e-06    -3.17   0.002     .9999748    .9999941
              _cons |   .0058684   .0027486   -10.97   0.000     .0023434    .0146961
    -------------+----------------------------------------------------------------
           /lnsig2u |  -.3788576   .4799896                     -1.31962    .5619047
    -------------+----------------------------------------------------------------
            sigma_u |   .8274316   .1985793                      .5169496     1.32439
                rho |   .2938916   .0996071                      .1397557    .5160456
    ------------------------------------------------------------------------------

227 . * Quadrature test
228 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                   Fitted       Comparison     Comparison
                 quadrature     quadrature     quadrature
                 12 points      8 points       16 points
    -------------------------------------------------------
    Log          -391.63832     -391.63765     -391.63831
    likelihood                   .00066566      8.290e-06   Difference
                                -1.700e-06     -2.117e-08   Relative difference
    -------------------------------------------------------
    leftistny:    .09302535      .09300804       .0930255
    lnextwarde~l                -.00001731      1.541e-07   Difference
                                -.00018602      1.657e-06   Relative difference
    -------------------------------------------------------
    leftistny:   -.05585853     -.05585165      -.0558586
       time1                     6.880e-06     -7.569e-08   Difference
                                -.00012316      1.355e-06   Relative difference
    -------------------------------------------------------
    leftistny:    .00187422      .00187408      .00187422
      timesq                   -1.394e-07      1.294e-09   Difference
                                -.00007437      6.906e-07   Relative difference
    -------------------------------------------------------
    leftistny:   -.00001558     -.00001558     -.00001558
     timecub                   7.767e-10     -7.513e-12   Difference
                                -.00004985      4.822e-07   Relative difference
    -------------------------------------------------------
    leftistny:   -5.1381654     -5.1383509     -5.1381547
       _cons                   -.00018551      .00001075   Difference
                                 .0000361     -2.093e-06   Relative difference
    -------------------------------------------------------
    lnsig2u:     -.37885756     -.37823716     -.37888185
       _cons                    .00062041     -.00002429   Difference
                                -.00163757      .00006411   Relative difference
    -------------------------------------------------------
```

```
229 . * --Passed:  all coefficients change by less than .01
230 . * Constitutional/anti-monarchical
231 . xtcloglog antimonarchny lnextwardeathsl time1 timesq timecub if colony==0, vce(robust) eform nolog

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     13,196
    Group variable: cowcode                         Number of groups  =        165

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         10
                                                                  avg =       80.0
                                                                  max =        115

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(4)      =      40.26
    Log pseudolikelihood  = -158.46593              Prob > chi2       =     0.0000

                                  (Std. Err. adjusted for 165 clusters in cowcode)
    ------------------------------------------------------------------------------
                    |               Robust
      antimonarchny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    ----------------+-------------------------------------------------------------
    lnextwardeathsl |   1.192516   .0778822     2.70   0.007     1.049236    1.355363
              time1 |   .9090052   .0399768    -2.17   0.030      .833934    .9908344
             timesq |    1.00071   .0008677     0.82   0.413     .9990104    1.002412
            timecub |   .9999993   4.75e-06    -0.16   0.877       .99999    1.000009
              _cons |   .0067493   .0043181    -7.81   0.000     .0019261    .0236506
    ----------------+-------------------------------------------------------------
           /lnsig2u |   .7742635   .4899894                     -.1860981    1.734625
    ----------------+-------------------------------------------------------------
            sigma_u |   1.472751   .3608161                      .9111488    2.380505
                rho |   .5687035   .1201845                      .3354141    .7750283
    ------------------------------------------------------------------------------

232 . * Quadrature test
233 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                  Fitted       Comparison     Comparison
                quadrature     quadrature     quadrature
                12 points      8 points       16 points
    ------------------------------------------------------------
    Log          -158.46593     -158.45669     -158.46519
    likelihood                   .00924339      .00074533   Difference
                                -.00005833     -4.703e-06   Relative difference
    ------------------------------------------------------------
    antimonarchny: .17606555     .17584657      .17604327
    lnextwarde~l                -.00021899     -.00002228   Difference
                                -.00124377     -.00012654   Relative difference
    ------------------------------------------------------------
    antimonarchny:-.09540441    -.09536793     -.09540554
       time1                     .00003648     -1.126e-06   Difference
                                -.00038238       .0000118   Relative difference
    ------------------------------------------------------------
    antimonarchny: .00070926     .00070798      .00070919
      timesq                   -1.278e-06     -6.296e-08   Difference
                                -.00180214     -.00008877   Relative difference
    ------------------------------------------------------------
    antimonarchny:-7.374e-07    -7.301e-07     -7.369e-07
     timecub                     7.248e-09      4.360e-10   Difference
                                -.00982916     -.00059125   Relative difference
    ------------------------------------------------------------
    antimonarchny:-4.9983219      -5.00567     -4.9987169
       _cons                    -.00734815       -.000395   Difference
                                 .00147012      .00007903   Relative difference
    ------------------------------------------------------------
    lnsig2u:      .77426354      .78248835      .77485877
       _cons                     .00822481      .00059523   Difference
                                 .01062276      .00076878   Relative difference
    ------------------------------------------------------------

234 . * Failed--using 16 integration points below
235 . xtcloglog antimonarchny lnextwardeathsl time1 timesq timecub if colony==0, vce(robust) eform nolog intpoints(16)

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     13,196
    Group variable: cowcode                         Number of groups  =        165

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         10
                                                                  avg =       80.0
                                                                  max =        115

    Integration method: mvaghermite                 Integration pts.  =         16

                                                    Wald chi2(4)      =      40.25
    Log pseudolikelihood  = -158.46519              Prob > chi2       =     0.0000
```

```
                                (Std. Err. adjusted for 165 clusters in cowcode)
------------------------------------------------------------------------------
                |               Robust
  antimonarchny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
----------------+-------------------------------------------------------------
lnextwardeathsl |    1.19249   .0778812     2.70   0.007     1.049211    1.355334
          time1 |   .9090042   .0399613    -2.17   0.030     .8339608    .9908004
         timesq |   1.000709   .0008676     0.82   0.413     .9990105    1.002411
        timecub |   .9999993   4.75e-06    -0.16   0.877       .99999    1.000009
          _cons |   .0067466   .0043114    -7.82   0.000     .0019281    .0236069
----------------+-------------------------------------------------------------
       /lnsig2u |   .7748588   .4843268                     -.1744043    1.724122
----------------+-------------------------------------------------------------
        sigma_u |   1.473189   .3567525                      .9164918    2.368036
            rho |   .5688495   .1187859                      .3380258    .7731917
------------------------------------------------------------------------------

236 . * Quadrature test
237 . quadchk, nooutput

    Refitting model intpoints() = 11
    Refitting model intpoints() = 21

                           Quadrature check

                Fitted       Comparison     Comparison
              quadrature     quadrature     quadrature
              16 points      11 points      21 points
    ----------------------------------------------------------
    Log          -158.46519     -158.46445     -158.46525
    likelihood                    .0007363     -.00006401   Difference
                                 -4.646e-06      4.039e-07   Relative difference
    ----------------------------------------------------------
    antimonarchny: .17604325      .17603415      .17604608
    lnextwarde~l                 -9.102e-06      2.836e-06   Difference
                                  -.0000517      .00001611   Relative difference
    ----------------------------------------------------------
    antimonarchny:-.09540553     -.09540264       -.095405
       time1                      2.883e-06      5.230e-07   Difference
                                 -.00003022     -5.481e-06   Relative difference
    ----------------------------------------------------------
    antimonarchny: .00070919      .00070911      .00070919
      timesq                    -8.584e-08     -1.773e-10   Difference
                                 -.00012104     -2.500e-07   Relative difference
    ----------------------------------------------------------
    antimonarchny:-7.369e-07     -7.365e-07     -7.369e-07
     timecub                     4.791e-10     -1.300e-11   Difference
                                 -.00065013      .00001765   Relative difference
    ----------------------------------------------------------
    antimonarchny: -4.998717     -4.9991498     -4.9986886
       _cons                     -.00043273      .00002844   Difference
                                  .00008657     -5.689e-06   Relative difference
    ----------------------------------------------------------
    lnsig2u:      .77485884      .77531539      .77480343
        cons                      .00045655     -.00005541   Difference
                                   .0005892     -.00007151   Relative difference
    ----------------------------------------------------------

238 . * --Passed:  all coefficients change by less than .01
239 . * Urban civic
240 . xtcloglog urbancivicny lnextwardeathsl time1 timesq timecub if colony==0, vce(robust) eform nolog

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     13,196
    Group variable: cowcode                         Number of groups  =        165

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         10
                                                                  avg =       80.0
                                                                  max =        115

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(4)      =      28.19
    Log pseudolikelihood  = -325.06876              Prob > chi2       =     0.0000

                                (Std. Err. adjusted for 165 clusters in cowcode)
------------------------------------------------------------------------------
                |               Robust
   urbancivicny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
----------------+-------------------------------------------------------------
lnextwardeathsl |   1.008537   .1101657     0.08   0.938      .814165    1.249313
          time1 |   .9147193   .0704842    -1.16   0.247     .7864987    1.063843
         timesq |   1.002306   .0013173     1.75   0.080     .9997275    1.004891
        timecub |   .9999886   6.68e-06    -1.71   0.087     .9999755    1.000002
          _cons |   .0006051   .0009914    -4.52   0.000     .0000244    .0150124
----------------+-------------------------------------------------------------
       /lnsig2u |  -3.283571   6.278825                     -15.58984      9.0227
----------------+-------------------------------------------------------------
        sigma_u |    .193634    .607897                      .0004118    91.04467
            rho |   .0222857   .1368097                     1.03e-07    .9998016
------------------------------------------------------------------------------
```

```
241 . * Quadrature test
242 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                  Fitted       Comparison     Comparison
                quadrature     quadrature     quadrature
                12 points      8 points       16 points
    ------------------------------------------------------------
    Log          -325.06876     -325.06876     -325.06876
    likelihood                   1.570e-10      1.573e-10   Difference
                                -4.830e-13     -4.840e-13   Relative difference
    ------------------------------------------------------------
    urbancivicny: .00850084      .00850083      .00850083
    lnextwarde~l                -1.712e-08     -1.712e-08   Difference
                                -2.014e-06     -2.014e-06   Relative difference
    ------------------------------------------------------------
    urbancivicny:-.08913802     -.08913799     -.08913799
       time1                     3.085e-08      3.085e-08   Difference
                                -3.460e-07     -3.460e-07   Relative difference
    ------------------------------------------------------------
    urbancivicny:  .0023034       .0023034       .0023034
      timesq                    -5.076e-10     -5.076e-10   Difference
                                -2.204e-07     -2.204e-07   Relative difference
    ------------------------------------------------------------
    urbancivicny:-.00001141     -.00001141     -.00001141
     timecub                     2.261e-12      2.261e-12   Difference
                                -1.981e-07     -1.981e-07   Relative difference
    ------------------------------------------------------------
    urbancivicny:-7.4101505     -7.4101486     -7.4101486
       _cons                     1.932e-06      1.932e-06   Difference
                                -2.607e-07     -2.607e-07   Relative difference
    ------------------------------------------------------------
    lnsig2u:     -3.2835712     -3.2837258     -3.2837258
        cons                    -.00015459     -.00015458   Difference
                                 .00004708      .00004708   Relative difference
    ------------------------------------------------------------

243 . * --Passed:  all coefficients change by less than .01
244 . * Independence
245 . xtcloglog independny lnextwardeathsl  time1 timesq timecub , vce(robust) eform nolog

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     18,278
    Group variable: cowcode                         Number of groups  =        165

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         21
                                                                  avg =      110.8
                                                                  max =        115

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(4)      =       3.93
    Log pseudolikelihood  = -653.51109              Prob > chi2       =     0.4154

                                      (Std. Err. adjusted for 165 clusters in cowcode)
    ------------------------------------------------------------------------------
                 |               Robust
      independny |      exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    -------------+----------------------------------------------------------------
    lnextwardeathsl |   1.020806   .0395431     0.53   0.595     .9461718    1.101327
              time1 |   1.002927     .02363     0.12   0.901      .957666    1.050327
             timesq |    .999957   .0004906    -0.09   0.930      .998996    1.000919
            timecub |   .9999996   2.88e-06    -0.12   0.901      .999994    1.000005
              _cons |    .003869   .0014448   -14.87   0.000      .001861     .008044
    -------------+----------------------------------------------------------------
           /lnsig2u |   .1748396    .285066                     -.3838796    .7335587
    -------------+----------------------------------------------------------------
            sigma_u |   1.091355   .1555541                      .8253566    1.443079
                rho |   .4199787   .0694411                      .2928505    .5586928
    ------------------------------------------------------------------------------

246 . * Quadrature test
247 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                  Fitted       Comparison     Comparison
                quadrature     quadrature     quadrature
                12 points      8 points       16 points
    ------------------------------------------------------------
    Log          -653.51109     -653.50154     -653.51052
    likelihood                   .00955486      .00057586   Difference
                                -.00001462     -8.812e-07   Relative difference
    ------------------------------------------------------------
    independny:   .02059231      .02054461      .02059085
    lnextwarde~l                 -.0000477     -1.463e-06   Difference
                                -.00231655     -.00007103   Relative difference
    ------------------------------------------------------------
    independny:   .00292251      .00292365      .00292255
       time1                     1.140e-06      3.961e-08   Difference
                                 .00039018      .00001355   Relative difference
    ------------------------------------------------------------
```

```
independny:  -.00004301     -.00004303     -.00004301
  timesq                    -2.120e-08     -1.537e-09   Difference
                             .00049301      .00003574   Relative difference
-------------------------------------------------------
independny:  -3.585e-07     -3.584e-07     -3.585e-07
 timecub                     7.938e-11      8.804e-12   Difference
                            -.00022142     -.00002456   Relative difference
-------------------------------------------------------
independny:  -5.5547503     -5.5565053     -5.5547534
   _cons                    -.00175499     -3.096e-06   Difference
                             .00031594      5.573e-07   Relative difference
-------------------------------------------------------
lnsig2u:      .17483957      .17790894      .17488582
   _cons                     .00306937      .00004625   Difference
                             .01755533       .0002645   Relative difference
-------------------------------------------------------
```

```
248 . * Failed--using 16 integration points below
249 . xtcloglog independny lnextwardeathsl  time1 timesq timecub , vce(robust) eform nolog intpoints(16)

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     18,278
    Group variable: cowcode                         Number of groups  =        165

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         21
                                                                  avg =      110.8
                                                                  max =        115

    Integration method: mvaghermite                 Integration pts.  =         16

                                                    Wald chi2(4)      =       3.93
    Log pseudolikelihood  = -653.51052              Prob > chi2       =     0.4154

                                  (Std. Err. adjusted for 165 clusters in cowcode)
------------------------------------------------------------------------------
             |               Robust
  independny |      exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
lnextwardeathsl |   1.020805   .0395428     0.53   0.595     .9461712    1.101325
       time1 |   1.002927   .0236299     0.12   0.901     .9576661    1.050327
       timesq |    .999957   .0004906    -0.09   0.930      .998996    1.000919
      timecub |   .9999996   2.88e-06    -0.12   0.901      .999994    1.000005
        _cons |    .003869   .0014449   -14.87   0.000     .0018609    .0080441
-------------+----------------------------------------------------------------
     /lnsig2u |   .1748732   .2847792                     -.3832837    .7330301
-------------+----------------------------------------------------------------
      sigma_u |   1.091373   .1554002                      .8256025    1.442698
          rho |   .4199869   .0693716                      .2929739    .5585624
------------------------------------------------------------------------------
```

```
250 . * Quadrature test
251 . quadchk, nooutput

    Refitting model intpoints() = 11
    Refitting model intpoints() = 21

                          Quadrature check

              Fitted       Comparison     Comparison
            quadrature     quadrature     quadrature
            16 points      11 points      21 points
-------------------------------------------------------
Log          -653.51052     -653.50981     -653.51056
likelihood                   .00071199       -.000037   Difference
                            -1.089e-06      5.662e-08   Relative difference
-------------------------------------------------------
independny:   .02059125       .0205883      .02059125
lnextwarde~l                -2.945e-06      3.003e-09   Difference
                            -.00014301      1.458e-07   Relative difference
-------------------------------------------------------
independny:   .00292254      .00292261      .00292254
   time1                     6.972e-08     -1.174e-09   Difference
                             .00002386     -4.016e-07   Relative difference
-------------------------------------------------------
independny:  -.00004301     -.00004301     -.00004301
  timesq                    -1.247e-09      1.372e-10   Difference
                             .00002898     -3.189e-06   Relative difference
-------------------------------------------------------
independny:  -3.585e-07     -3.585e-07     -3.585e-07
 timecub                     4.248e-12     -9.772e-13   Difference
                            -.00001185      2.726e-06   Relative difference
-------------------------------------------------------
independny:  -5.5547525     -5.5548995     -5.5547578
   _cons                    -.00014701     -5.273e-06   Difference
                             .00002647      9.493e-07   Relative difference
-------------------------------------------------------
lnsig2u:      .17487321      .17511485      .17487787
   _cons                     .00024164      4.665e-06   Difference
                             .00138181      .00002668   Relative difference
-------------------------------------------------------
```

```
252 . * --Passed:  all coefficients change by less than .01
253 . * Ethnic hierarchy
254 . xtcloglog ethnicorderny lnextwardeathsl time1 timesq timecub if colony==0, vce(robust) eform nolog

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     13,196
    Group variable: cowcode                         Number of groups  =        165

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         10
                                                                  avg =       80.0
                                                                  max =        115

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(4)      =       7.02
    Log pseudolikelihood  = -300.48582              Prob > chi2       =     0.1348

                                  (Std. Err. adjusted for 165 clusters in cowcode)
    ------------------------------------------------------------------------------
                    |               Robust
      ethnicorderny |     exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    ----------------+-------------------------------------------------------------
    lnextwardeathsl |   .9431512   .1107334    -0.50   0.618     .7492789    1.187187
              time1 |   1.112526   .1413807     0.84   0.401     .8672392    1.427189
             timesq |   .9985973   .0018759    -0.75   0.455     .9949274    1.002281
            timecub |   1.000007   8.78e-06     0.75   0.453     .9999894    1.000024
              _cons |   .0000701   .0001913    -3.50   0.000     3.33e-07    .0147599
    ----------------+-------------------------------------------------------------
           /lnsig2u |   .9055379   .2977726                      .3219143    1.489161
    ----------------+-------------------------------------------------------------
            sigma_u |   1.572661   .2341477                     1.174635    2.105558
                rho |   .6005693   .0714314                     .4561663    .7293764
    ------------------------------------------------------------------------------

255 . * Quadrature test
256 . quadchk, nooutput

    Refitting model intpoints() =  8
    Refitting model intpoints() = 16

                            Quadrature check

                   Fitted       Comparison     Comparison
                 quadrature     quadrature     quadrature
                 12 points      8 points       16 points
    ----------------------------------------------------
    Log          -300.48582     -300.44047     -300.48063
    likelihood                   .04535644      .00519412   Difference
                                -.00015094     -.00001729   Relative difference
    ----------------------------------------------------
    ethnicorderny:-.05852865    -.05829109     -.05851903
    lnextwarde~l                 .00023755      9.617e-06   Difference
                                -.00405876      -.0001643   Relative difference
    ----------------------------------------------------
    ethnicorderny:  .1066333     .10650425      .10662849
       time1                    -.00012905     -4.809e-06   Difference
                                -.00121021      -.0000451   Relative difference
    ----------------------------------------------------
    ethnicorderny:-.00140367    -.00140441     -.00140367
      timesq                    -7.353e-07      1.293e-09   Difference
                                 .00052387     -9.213e-07   Relative difference
    ----------------------------------------------------
    ethnicorderny: 6.586e-06     6.596e-06      6.586e-06
     timecub                     9.875e-09      1.701e-10   Difference
                                 .00149936      .00002582   Relative difference
    ----------------------------------------------------
    ethnicorderny:-9.5660117    -9.5731143     -9.5653132
       _cons                    -.00710256      .00069853   Difference
                                 .00074248     -.00007302   Relative difference
    ----------------------------------------------------
    lnsig2u:      .90553787      .92315027      .90526207
       _cons                     .01761239     -.00027581   Difference
                                 .01944965     -.00030458   Relative difference
    ----------------------------------------------------

257 . * Failed--using 16 integration points below
258 . xtcloglog ethnicorderny lnextwardeathsl time1 timesq timecub if colony==0, vce(robust) eform nolog intpoints(16)

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =     13,196
    Group variable: cowcode                         Number of groups  =        165

    Random effects u_i ~ Gaussian                   Obs per group:
                                                                  min =         10
                                                                  avg =       80.0
                                                                  max =        115

    Integration method: mvaghermite                 Integration pts.  =         16

                                                    Wald chi2(4)      =       7.02
    Log pseudolikelihood  = -300.48063              Prob > chi2       =     0.1349
```

```
                                (Std. Err. adjusted for 165 clusters in cowcode)
------------------------------------------------------------------------------
             |               Robust
  ethnicorderny |      exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
lnextwardeathsl |   .9431781   .1107135    -0.50   0.618     .7493362    1.187164
          time1 |    1.11251   .1413846     0.84   0.401     .8672177    1.427184
         timesq |   .9985973    .001876    -0.75   0.455     .9949271    1.002281
        timecub |   1.000007   8.78e-06     0.75   0.453     .9999894    1.000024
          _cons |   .0000701   .0001914    -3.50   0.000     3.33e-07    .0147659
---------------+--------------------------------------------------------------
       /lnsig2u |   .9061008   .2968689                      .3242484    1.487953
---------------+--------------------------------------------------------------
        sigma_u |   1.573103   .2335028                     1.176006    2.104287
            rho |   .6007043   .0712066                     .4567454    .7291379
------------------------------------------------------------------------------

259 . * Quadrature test
260 . quadchk, nooutput

    Refitting model intpoints() = 11
    Refitting model intpoints() = 21

                           Quadrature check

                Fitted       Comparison     Comparison
              quadrature     quadrature     quadrature
              16 points      11 points      21 points
    ------------------------------------------------------------
    Log          -300.48063     -300.47518     -300.48128
    likelihood                   .00545248     -.00065001   Difference
                                -.00001815      2.163e-06   Relative difference
    ------------------------------------------------------------
    ethnicorderny:-.05850017    -.05846513     -.05851151
    lnextwarde~l                 .00003505     -.00001134   Difference
                                -.00059906      .00019377   Relative difference
    ------------------------------------------------------------
    ethnicorderny: .10661904     .10659752      .10662484
       time1                    -.00002151      5.802e-06   Difference
                                -.00020175      .00005441   Relative difference
    ------------------------------------------------------------
    ethnicorderny:-.00140371    -.00140379     -.00140368
      timesq                    -8.265e-08      3.079e-08   Difference
                                 .00005888     -.00002193   Relative difference
    ------------------------------------------------------------
    ethnicorderny: 6.587e-06     6.588e-06      6.586e-06
     timecub                     1.372e-09     -4.293e-10   Difference
                                 .00020828     -.00006517   Relative difference
    ------------------------------------------------------------
    ethnicorderny:-9.5653838    -9.5677435     -9.5648724
       _cons                    -.00235978      .00051133   Difference
                                  .0002467     -.00005346   Relative difference
    ------------------------------------------------------------
    lnsig2u:      .90610081      .91002538      .90515223
        cons                     .00392457     -.00094858   Difference
                                 .00433128     -.00104689   Relative difference
    ------------------------------------------------------------

261 . * --Passed:  all coefficients change by less than .01
262 .
263 . * ========================================================================
264 . * ROBUSTNESS CHECKS: FINANCIAL CRISIS AND ONSET OF URBAN CIVIC REVOLUTIONS
265 . * ========================================================================
266 . xtcloglog urbancivicny rrfinstressl time1 timesq timecub if colony==0, vce(robust) eform nolog

    Calculating robust standard errors:

    Random-effects complementary log-log model      Number of obs     =      6,420
    Group variable: cowcode                         Number of groups  =         68

    Random effects u i ~ Gaussian                   Obs per group:
                                                                  min =         37
                                                                  avg =       94.4
                                                                  max =        111

    Integration method: mvaghermite                 Integration pts.  =         12

                                                    Wald chi2(4)      =       8.87
    Log pseudolikelihood  = -122.51061              Prob > chi2       =     0.0645

                                (Std. Err. adjusted for 68 clusters in cowcode)
    ------------------------------------------------------------------------------
                 |               Robust
    urbancivicny |      exp(b)   Std. Err.      z    P>|z|     [95% Conf. Interval]
    -------------+----------------------------------------------------------------
    rrfinstressl |   1.034623   .2457363     0.14   0.886     .6495474    1.647986
           time1 |   .9452195   .0796752    -0.67   0.504     .8012768     1.11502
          timesq |   1.001778   .0016755     1.06   0.288     .9984997    1.005067
         timecub |   .9999901   9.50e-06    -1.04   0.300     .9999715    1.000009
           _cons |   .0005229   .0008096    -4.88   0.000     .0000251    .0108742
    -------------+----------------------------------------------------------------
        /lnsig2u |  -.7125539   .9242476                     -2.524046    1.098938
    -------------+----------------------------------------------------------------
         sigma_u |   .7002787   .3236154                      .2830808    1.732333
             rho |   .2296561   .1635125                      .0464531    .6459395
    ------------------------------------------------------------------------------
```

```
. * Quadrature test
. quadchk, nooutput

Refitting model intpoints() =  8
Refitting model intpoints() = 16

                          Quadrature check

               Fitted       Comparison     Comparison
             quadrature     quadrature     quadrature
             12 points      8 points       16 points
-----------------------------------------------------
Log          -122.51061     -122.51061     -122.51061
likelihood                  -2.072e-06     -1.283e-07   Difference
                             1.691e-08      1.047e-09   Relative difference
-----------------------------------------------------
urbancivicny: .03403719      .03403719      .03403719
rrfinstressl                -2.683e-12     -5.104e-10   Difference
                            -7.884e-11     -1.500e-08   Relative difference
-----------------------------------------------------
urbancivicny:-.05633807     -.05633807     -.05633807
   time1                     3.893e-12     -2.496e-10   Difference
                            -6.910e-11      4.430e-09   Relative difference
-----------------------------------------------------
urbancivicny: .00177658      .00177658      .00177658
  timesq                    -3.734e-14      4.283e-12   Difference
                            -2.102e-11      2.411e-09   Relative difference
-----------------------------------------------------
urbancivicny:-9.851e-06     -9.851e-06     -9.851e-06
 timecub                     1.081e-16     -2.049e-14   Difference
                            -1.097e-11      2.079e-09   Relative difference
-----------------------------------------------------
urbancivicny:-7.5562088     -7.5562088     -7.5562089
   _cons                     3.486e-10     -4.076e-08   Difference
                            -4.614e-11      5.394e-09   Relative difference
-----------------------------------------------------
lnsig2u:     -.71255388     -.71255388      -.7125538
    cons                    -1.920e-09      7.541e-08   Difference
                             2.695e-09     -1.058e-07   Relative difference
-----------------------------------------------------

. * --Passed:  all coefficients change by less than .01
.
.
. log close
          name:  <unnamed>
           log:  C:\Users\mbeissin\Desktop\Stata files for book\Robustnesstestfiles\Logfiles\robustnesstestschapter2.l
> og
      log type:  text
     closed on:  26 Jan 2022, 09:16:46
-----------------------------------------------------------------------------------------------------------------------
```