**Lethal Connections: The Determinants of Network Connections in the Provisional Irish Republican Army 1970– 1998**

The PIRA militant network is comprised of the following four types of relationships between individual PIRA militants: (1) involvement in an act together within the PIRA movement, (2) friends before joining the PIRA movement, (3) blood relatives, and (4) relation through marriage. More specifically, the first relationship type implies that they have performed an attack, killed a target, or have been arrested together. The second relationship type includes schoolmates, work colleagues, or neighbors. The third relationship type includes siblings, parent/child, grandparent/grandchild, or uncle/aunt/nephew/niece and cousins. The fourth relationship type includes husband/wife, step siblings, stepparent/stepchild, or in-laws.

These four types of relations are treated as a tie and coded whether a tie exists between two different militants (i.e., a dyad), or not. Thus, our PIRA militant networks have, conceptually and technically, binary and symmetric relations between militants.

Do-file

-----------------------------------

New analysis started.

Period1

New results follow.

-----------------------------------

Siena version 3.11 (26-June-2007)

@1

Estimation by stochastic approximation algorithm.

=================================================

Random initialization of random number stream.

Current random number seed is 726339.

Conditional moment estimation.

Observed density = 0.0073

Number of ties = 810

Simulation method: M.H. nondirected, continuous (code 16).

4062 steps per simulation; multiplication factor = 5.000.

Initial value of gain parameter is 0.0010000 .

Number of subphases in Phase 2 is 4.

Initial parameter values are

1. alternating k-stars, par. 2 -0.2328

corresponding to statistic 9

2. Gender 0.6105

corresponding to statistic 16

3. same Gender 0.6826

corresponding to statistic 18

4. University 0.5904

corresponding to statistic 22

5. same University 0.4612

corresponding to statistic 24

6. Marital Stat 0.1824

corresponding to statistic 25

7. same Marital Stat 0.5000

corresponding to statistic 27

8. Age at Recru 0.0099

corresponding to statistic 28

9. Age at Recru similarity 1.7417

corresponding to statistic 29

10. Antrim Briga -0.4082

corresponding to statistic 31

11. same Antrim Briga 1.2031

corresponding to statistic 33

12. Derry Brigad -0.5987

corresponding to statistic 34

13. same Derry Brigad 0.2455

corresponding to statistic 36

14. Armagh Briga -0.2555

corresponding to statistic 37

15. same Armagh Briga 0.5873

corresponding to statistic 39

16. Down Brigade -2.2066

corresponding to statistic 40

17. same Down Brigade -1.4561

corresponding to statistic 42

18. Tyrone Briga -0.2998

corresponding to statistic 43

19. same Tyrone Briga 0.3998

corresponding to statistic 45

20. Period1Vio 0.3249

corresponding to statistic 46

21. same Period1Vio 0.7551

corresponding to statistic 48

22. Period1NonVi 0.1545

corresponding to statistic 49

23. same Period1NonVi -0.0274

corresponding to statistic 51

24. same Period1VForO 0.8955

corresponding to statistic 54

25. Period1Senio 1.4086

corresponding to statistic 55

26. same Period1Senio 0.2150

corresponding to statistic 57

27. Period1Gun 0.2551

corresponding to statistic 58

28. same Period1Gun 0.8809

corresponding to statistic 60

29. Period1IED\_C 0.4432

corresponding to statistic 61

30. same Period1IED\_C 0.8648

corresponding to statistic 63

31. Period1IED\_P 0.0027

corresponding to statistic 64

32. same Period1IED\_P 0.5273

corresponding to statistic 66

33. same Period1ForOp 0.0815

corresponding to statistic 69

34. Period1Rob 0.5743

corresponding to statistic 70

35. same Period1Rob 1.7795

corresponding to statistic 72

Observed values of target statistics are

1. alternating k-stars, par. 2 699.3111

2. Sum of degrees times Gender -0.6590

3. Same values on Gender 372.0000

4. Sum of degrees times University 8.3510

5. Same values on University 374.0000

6. Sum of degrees times Marital Stat 43.4340

7. Same values on Marital Stat 208.0000

8. Sum of degrees times Age at Recru 119.7204

9. Similarity on Age at Recru 8.4694

10. Sum of degrees times Antrim Briga -12.4684

11. Same values on Antrim Briga 309.0000

12. Sum of degrees times Derry Brigad -22.7725

13. Same values on Derry Brigad 345.0000

14. Sum of degrees times Armagh Briga -10.0855

15. Same values on Armagh Briga 351.0000

16. Sum of degrees times Down Brigade -16.7420

17. Same values on Down Brigade 355.0000

18. Sum of degrees times Tyrone Briga -15.2461

19. Same values on Tyrone Briga 341.0000

20. Sum of degrees times Period1Vio -20.5420

21. Same values on Period1Vio 331.0000

22. Sum of degrees times Period1NonVi 7.9720

23. Same values on Period1NonVi 361.0000

24. Same values on Period1VForO 385.0000

25. Sum of degrees times Period1Senio 59.9210

26. Same values on Period1Senio 330.0000

27. Sum of degrees times Period1Gun -4.1680

28. Same values on Period1Gun 370.0000

29. Sum of degrees times Period1IED\_C -1.2290

30. Same values on Period1IED\_C 379.0000

31. Sum of degrees times Period1IED\_P -16.8650

32. Same values on Period1IED\_P 336.0000

33. Same values on Period1ForOp 376.0000

34. Sum of degrees times Period1Rob 0.5520

35. Same values on Period1Rob 385.0000

35 parameters, 35 statistics

@2

End of stochastic approximation algorithm, phase 3.

---------------------------------------------------

Total of 6121 iterations.

Parameter estimates based on 3621 iterations,

convergence diagnostics, covariance and derivative matrices based on 2500 iterations.

Information for convergence diagnosis.

Averages, standard deviations, and t-ratios for deviations from targets:

1. 0.961 11.316 0.085

2. 0.322 6.099 0.053

3. -0.320 5.114 -0.063

4. 0.158 5.320 0.030

5. -0.132 4.882 -0.027

6. 0.192 10.430 0.018

7. -0.056 9.686 -0.006

8. 0.969 173.909 0.006

9. -0.023 1.761 -0.013

10. -0.203 14.951 -0.014

11. -0.424 8.461 -0.050

12. -0.202 5.864 -0.034

13. 0.093 6.584 0.014

14. -0.499 5.854 -0.085

15. 0.050 6.205 0.008

16. 0.061 4.375 0.014

17. -0.256 5.958 -0.043

18. -0.364 6.559 -0.055

19. 0.051 6.656 0.008

20. 0.354 15.144 0.023

21. -0.075 7.556 -0.010

22. 0.238 9.043 0.026

23. -0.016 5.874 -0.003

24. -0.043 4.215 -0.010

25. -0.050 8.230 -0.006

26. -0.473 7.308 -0.065

27. -0.034 8.452 -0.004

28. -0.521 5.617 -0.093

29. 0.092 6.065 0.015

30. 0.043 4.667 0.009

31. 0.191 12.962 0.015

32. -0.196 7.369 -0.027

33. -0.058 4.923 -0.012

34. 0.421 8.346 0.050

35. -0.270 4.348 -0.062

Good convergence is indicated by the t-ratios being close to zero.

Autocorrelations during phase 3 :

1. 0.1466

2. 0.2365

3. 0.1564

4. 0.2211

5. 0.1980

6. 0.2222

7. 0.1489

8. 0.1964

9. 0.1829

10. 0.1657

11. 0.1097

12. 0.0844

13. 0.0998

14. 0.1144

15. 0.0674

16. 0.0156

17. 0.0267

18. 0.0893

19. 0.0810

20. 0.1699

21. 0.0699

22. 0.2952

23. 0.1877

24. 0.1061

25. 0.3269

26. 0.2558

27. 0.2094

28. 0.0753

29. 0.2224

30. 0.1293

31. 0.1658

32. 0.1181

33. 0.1100

34. 0.3200

35. 0.1185

@2

Estimation results.

-------------------

Regular end of estimation algorithm.

Total of 6121 iteration steps.

@3

Estimates and standard errors

1. alternating k-stars, par. 2 -0.2320 ( 0.1131)

2. Gender 0.6220 ( 0.2602)

3. same Gender 0.6944 ( 0.3003)

4. University 0.5858 ( 0.3841)

5. same University 0.4641 ( 0.4076)

6. Marital Stat 0.1768 ( 0.1137)

7. same Marital Stat 0.5020 ( 0.1046)

8. Age at Recru 0.0101 ( 0.0074)

9. Age at Recru similarity 1.7434 ( 0.7150)

10. Antrim Briga -0.4086 ( 0.0900)

11. same Antrim Briga 1.2042 ( 0.1340)

12. Derry Brigad -0.5991 ( 0.3161)

13. same Derry Brigad 0.2491 ( 0.3392)

14. Armagh Briga -0.2533 ( 0.2693)

15. same Armagh Briga 0.5928 ( 0.3099)

16. Down Brigade -2.2266 ( 0.5802)

17. same Down Brigade -1.4658 ( 0.5384)

18. Tyrone Briga -0.2976 ( 0.2324)

19. same Tyrone Briga 0.3964 ( 0.2685)

20. Period1Vio 0.3266 ( 0.3665)

21. same Period1Vio 0.7537 ( 0.1679)

22. Period1NonVi 0.1391 ( 0.3423)

23. same Period1NonVi -0.0474 ( 0.3524)

24. same Period1VForO 0.9023 ( 0.4072)

25. Period1Senio 1.4162 ( 0.2453)

26. same Period1Senio 0.2196 ( 0.2568)

27. Period1Gun 0.2543 ( 0.3790)

28. same Period1Gun 0.8855 ( 0.2196)

29. Period1IED\_C 0.4347 ( 0.4030)

30. same Period1IED\_C 0.8577 ( 0.2883)

31. Period1IED\_P 0.0029 ( 0.3633)

32. same Period1IED\_P 0.5285 ( 0.1721)

33. same Period1ForOp 0.0810 ( 0.3524)

34. Period1Rob 0.5863 ( 0.3386)

35. same Period1Rob 1.8042 ( 0.3816)

----------------------------------------------------------------------------------------------

-----------------------------------

New analysis started.

Period 2

New results follow.

-----------------------------------

Siena version 3.11 (26-June-2007)

@1

Estimation by stochastic approximation algorithm.

=================================================

Random initialization of random number stream.

Current random number seed is 2349752.

Conditional moment estimation.

Observed density = 0.0101

Number of ties = 680

Simulation method: M.H. nondirected, continuous (code 16).

3413 steps per simulation; multiplication factor = 5.000.

Initial value of gain parameter is 0.0010000 .

Number of subphases in Phase 2 is 4.

Initial parameter values are

1. alternating k-stars, par. 2 0.0501

corresponding to statistic 9

2. Gender 0.6417

corresponding to statistic 16

3. same Gender 0.4798

corresponding to statistic 18

4. University -0.1847

corresponding to statistic 22

5. same University -0.1629

corresponding to statistic 24

6. Marital Stat 0.0629

corresponding to statistic 25

7. same Marital Stat 0.5145

corresponding to statistic 27

8. Age at Recru 0.0288

corresponding to statistic 28

9. Age at Recru similarity 2.5371

corresponding to statistic 29

10. Antrim Briga -0.0805

corresponding to statistic 31

11. same Antrim Briga 0.6242

corresponding to statistic 33

12. Derry Brigad 0.4620

corresponding to statistic 34

13. same Derry Brigad 1.0312

corresponding to statistic 36

14. Armagh Briga 0.6068

corresponding to statistic 37

15. same Armagh Briga 1.2105

corresponding to statistic 39

16. Down Brigade -1.6772

corresponding to statistic 40

17. same Down Brigade -1.3732

corresponding to statistic 42

18. Period2Vio 0.5062

corresponding to statistic 49

19. same Period2Vio 0.6894

corresponding to statistic 51

20. Period2NonVi 0.0395

corresponding to statistic 52

21. same Period2NonVi 0.1010

corresponding to statistic 54

22. same Period2VForO 0.1258

corresponding to statistic 57

23. Period2Gun -0.0578

corresponding to statistic 61

24. same Period2Gun 0.2803

corresponding to statistic 63

25. Period2IED\_P 0.2021

corresponding to statistic 67

26. same Period2IED\_P 0.5413

corresponding to statistic 69

27. same Period2ForOp 1.3773

corresponding to statistic 72

28. Period2Rob 0.5323

corresponding to statistic 73

29. same Period2Rob 0.6792

corresponding to statistic 75

Observed values of target statistics are

1. alternating k-stars, par. 2 626.7200

2. Sum of degrees times Gender 6.4160

3. Same values on Gender 305.0000

4. Sum of degrees times University 2.5280

5. Same values on University 295.0000

6. Sum of degrees times Marital Stat -4.7366

7. Same values on Marital Stat 198.0000

8. Sum of degrees times Age at Recru 310.6413

9. Similarity on Age at Recru 12.6736

10. Sum of degrees times Antrim Briga -18.2492

11. Same values on Antrim Briga 247.0000

12. Sum of degrees times Derry Brigad 24.2014

13. Same values on Derry Brigad 281.0000

14. Sum of degrees times Armagh Briga -3.7030

15. Same values on Armagh Briga 304.0000

16. Sum of degrees times Down Brigade -6.8515

17. Same values on Down Brigade 309.0000

18. Sum of degrees times Period2Vio 39.8200

19. Same values on Period2Vio 260.0000

20. Sum of degrees times Period2NonVi -3.2920

21. Same values on Period2NonVi 285.0000

22. Same values on Period2VForO 324.0000

23. Sum of degrees times Period2Gun 12.5840

24. Same values on Period2Gun 262.0000

25. Sum of degrees times Period2IED\_P 27.2360

26. Same values on Period2IED\_P 276.0000

27. Same values on Period2ForOp 323.0000

28. Sum of degrees times Period2Rob -0.0560

29. Same values on Period2Rob 289.0000

29 parameters, 29 statistics

@2

End of stochastic approximation algorithm, phase 3.

---------------------------------------------------

Total of 5712 iterations.

Parameter estimates based on 3212 iterations,

convergence diagnostics, covariance and derivative matrices based on 2500 iterations.

Information for convergence diagnosis.

Averages, standard deviations, and t-ratios for deviations from targets:

1. 0.477 10.413 0.046

2. -0.233 6.328 -0.037

3. 0.053 5.471 0.010

4. -0.264 6.316 -0.042

5. 0.280 6.083 0.046

6. 0.000 8.951 0.000

7. 0.078 8.994 0.009

8. -6.190 212.879 -0.029

9. 0.082 2.093 0.039

10. 0.206 14.344 0.014

11. 0.285 8.249 0.035

12. -0.175 12.662 -0.014

13. 0.014 6.851 0.002

14. 0.526 8.017 0.066

15. 0.168 5.609 0.030

16. -0.044 4.300 -0.010

17. 0.085 5.329 0.016

18. -0.072 15.665 -0.005

19. 0.147 7.730 0.019

20. 0.050 9.551 0.005

21. -0.158 6.818 -0.023

22. 0.104 3.884 0.027

23. -0.181 12.127 -0.015

24. 0.072 7.874 0.009

25. 0.131 12.887 0.010

26. -0.080 7.028 -0.011

27. -0.124 4.030 -0.031

28. -0.009 9.526 -0.001

29. -0.174 6.566 -0.026

Good convergence is indicated by the t-ratios being close to zero.

Autocorrelations during phase 3 :

1. 0.0706

2. 0.2599

3. 0.2078

4. 0.1101

5. 0.1283

6. 0.1375

7. 0.1195

8. 0.1687

9. 0.1070

10. 0.2189

11. 0.1145

12. 0.2073

13. 0.0500

14. 0.2524

15. 0.0092

16. 0.0692

17. 0.0602

18. 0.1875

19. 0.0951

20. 0.2275

21. 0.1354

22. 0.0734

23. 0.1774

24. 0.1169

25. 0.2779

26. 0.1035

27. 0.0584

28. 0.2276

29. 0.1129

@2

Estimation results.

-------------------

Regular end of estimation algorithm.

Total of 5712 iteration steps.

@3

Estimates and standard errors

1. alternating k-stars, par. 2 0.0481 ( 0.1075)

2. Gender 0.6427 ( 0.3067)

3. same Gender 0.4811 ( 0.3500)

4. University -0.1833 ( 0.5110)

5. same University -0.1668 ( 0.5275)

6. Marital Stat 0.0619 ( 0.1291)

7. same Marital Stat 0.5166 ( 0.1142)

8. Age at Recru 0.0288 ( 0.0064)

9. Age at Recru similarity 2.5332 ( 0.5934)

10. Antrim Briga -0.0782 ( 0.0913)

11. same Antrim Briga 0.6271 ( 0.1359)

12. Derry Brigad 0.4627 ( 0.1082)

13. same Derry Brigad 1.0333 ( 0.1746)

14. Armagh Briga 0.6033 ( 0.1630)

15. same Armagh Briga 1.2031 ( 0.2567)

16. Down Brigade -1.6762 ( 0.4815)

17. same Down Brigade -1.3737 ( 0.4272)

18. Period2Vio 0.5093 ( 0.1933)

19. same Period2Vio 0.6905 ( 0.1557)

20. Period2NonVi 0.0394 ( 0.2989)

21. same Period2NonVi 0.0984 ( 0.2994)

22. same Period2VForO 0.1328 ( 0.3836)

23. Period2Gun -0.0584 ( 0.1948)

24. same Period2Gun 0.2809 ( 0.1667)

25. Period2IED\_P 0.1999 ( 0.1874)

26. same Period2IED\_P 0.5405 ( 0.1645)

27. same Period2ForOp 1.3851 ( 0.3576)

28. Period2Rob 0.5314 ( 0.2870)

29. same Period2Rob 0.6801 ( 0.3016)

------------------------------------------------------------------------------------------------

-----------------------------------

New analysis started.

Period 3

New results follow.

-----------------------------------

Siena version 3.11 (26-June-2007)

@1

Estimation by stochastic approximation algorithm.

=================================================

Random initialization of random number stream.

Current random number seed is 1662334.

Conditional moment estimation.

Observed density = 0.0074

Number of ties = 2050

Simulation method: M.H. nondirected, continuous (code 16).

10269 steps per simulation; multiplication factor = 5.000.

Initial value of gain parameter is 0.0100000 .

Number of subphases in Phase 2 is 4.

Initial parameter values are

1. alternating k-stars, par. 2 0.5849

corresponding to statistic 9

2. Gender 0.4699

corresponding to statistic 16

3. same Gender 0.4924

corresponding to statistic 18

4. University 0.2824

corresponding to statistic 22

5. same University 0.2330

corresponding to statistic 24

6. Marital Stat 0.1646

corresponding to statistic 25

7. same Marital Stat 0.2057

corresponding to statistic 27

8. Age at Recru -0.0002

corresponding to statistic 28

9. Age at Recru similarity 0.0034

corresponding to statistic 29

10. Antrim Briga 0.1356

corresponding to statistic 31

11. same Antrim Briga 0.8951

corresponding to statistic 33

12. Derry Brigad 0.3472

corresponding to statistic 34

13. same Derry Brigad 0.9369

corresponding to statistic 36

14. Armagh Briga 0.3520

corresponding to statistic 37

15. same Armagh Briga 0.6347

corresponding to statistic 39

16. Down Brigade -2.7647

corresponding to statistic 40

17. same Down Brigade -2.6523

corresponding to statistic 42

18. Tyrone Briga 0.6926

corresponding to statistic 43

19. same Tyrone Briga 1.0778

corresponding to statistic 45

20. Period3Vio 0.2610

corresponding to statistic 49

21. same Period3Vio 0.2530

corresponding to statistic 51

22. Period3Gun -0.0596

corresponding to statistic 61

23. same Period3Gun 0.3807

corresponding to statistic 63

24. same Period3IED\_C 0.3889

corresponding to statistic 66

25. Period3IED\_P 0.0472

corresponding to statistic 67

26. same Period3IED\_P 0.3144

corresponding to statistic 69

27. same Period3ForOp 0.4548

corresponding to statistic 72

28. Period3Rob 0.5726

corresponding to statistic 73

29. same Period3Rob 0.7371

corresponding to statistic 75

Observed values of target statistics are

1. alternating k-stars, par. 2 2441.4256

2. Sum of degrees times Gender 10.3600

3. Same values on Gender 914.0000

4. Sum of degrees times University 3.4650

5. Same values on University 909.0000

6. Sum of degrees times Marital Stat 60.5625

7. Same values on Marital Stat 481.0000

8. Sum of degrees times Age at Recru -72.3319

9. Similarity on Age at Recru 15.7470

10. Sum of degrees times Antrim Briga 80.7500

11. Same values on Antrim Briga 737.0000

12. Sum of degrees times Derry Brigad -8.3800

13. Same values on Derry Brigad 818.0000

14. Sum of degrees times Armagh Briga -26.3500

15. Same values on Armagh Briga 862.0000

16. Sum of degrees times Down Brigade -23.1750

17. Same values on Down Brigade 895.0000

18. Sum of degrees times Tyrone Briga 20.5550

19. Same values on Tyrone Briga 863.0000

20. Sum of degrees times Period3Vio 20.2200

21. Same values on Period3Vio 650.0000

22. Sum of degrees times Period3Gun -1.5000

23. Same values on Period3Gun 749.0000

24. Same values on Period3IED\_C 960.0000

25. Sum of degrees times Period3IED\_P 23.1900

26. Same values on Period3IED\_P 764.0000

27. Same values on Period3ForOp 919.0000

28. Sum of degrees times Period3Rob -0.4800

29. Same values on Period3Rob 902.0000

29 parameters, 29 statistics

@2

End of stochastic approximation algorithm, phase 3.

---------------------------------------------------

Total of 5712 iterations.

Parameter estimates based on 3212 iterations,

convergence diagnostics, covariance and derivative matrices based on 2500 iterations.

Information for convergence diagnosis.

Averages, standard deviations, and t-ratios for deviations from targets:

1. 1.127 17.110 0.066

2. -0.258 14.619 -0.018

3. 0.321 11.483 0.028

4. -0.755 14.057 -0.054

5. 0.488 11.977 0.041

6. 0.885 19.851 0.045

7. 0.633 16.838 0.038

8. 3.326 409.370 0.008

9. -0.047 4.861 -0.010

10. 1.458 36.636 0.040

11. 0.061 15.277 0.004

12. -1.235 27.627 -0.045

13. 0.609 14.085 0.043

14. 0.172 15.418 0.011

15. 0.071 14.031 0.005

16. -0.105 8.474 -0.012

17. 0.300 12.946 0.023

18. -0.365 19.186 -0.019

19. 0.061 13.748 0.004

20. 2.730 32.692 0.084

21. -0.062 15.236 -0.004

22. 1.118 27.208 0.041

23. -0.322 15.300 -0.021

24. -0.236 9.574 -0.025

25. 1.466 24.181 0.061

26. -0.694 15.012 -0.046

27. -0.392 12.048 -0.033

28. 0.950 17.500 0.054

29. -0.341 11.687 -0.029

Good convergence is indicated by the t-ratios being close to zero.

Autocorrelations during phase 3 :

1. 0.0185

2. 0.2077

3. 0.1165

4. 0.1460

5. 0.1201

6. 0.1841

7. 0.0919

8. 0.1282

9. 0.1062

10. 0.2159

11. 0.0396

12. 0.2618

13. 0.0512

14. 0.1849

15. 0.0920

16. 0.0665

17. 0.0525

18. 0.3871

19. 0.0619

20. 0.1790

21. 0.0532

22. 0.2134

23. 0.0633

24. 0.0969

25. 0.1692

26. 0.0686

27. 0.0726

28. 0.2425

29. 0.0879

@2

Estimation results.

-------------------

Regular end of estimation algorithm.

Total of 5712 iteration steps.

@3

Estimates and standard errors

1. alternating k-stars, par. 2 0.5866 ( 0.0632)

2. Gender 0.4672 ( 0.1451)

3. same Gender 0.4912 ( 0.1807)

4. University 0.2763 ( 0.1795)

5. same University 0.2294 ( 0.2067)

6. Marital Stat 0.1668 ( 0.0563)

7. same Marital Stat 0.2065 ( 0.0613)

8. Age at Recru -0.0002 ( 0.0037)

9. Age at Recru similarity -0.0008 ( 0.2908)

10. Antrim Briga 0.1363 ( 0.0420)

11. same Antrim Briga 0.8981 ( 0.0807)

12. Derry Brigad 0.3463 ( 0.0552)

13. same Derry Brigad 0.9362 ( 0.1125)

14. Armagh Briga 0.3537 ( 0.1205)

15. same Armagh Briga 0.6307 ( 0.1726)

16. Down Brigade -2.7699 ( 0.2754)

17. same Down Brigade -2.6550 ( 0.2464)

18. Tyrone Briga 0.6908 ( 0.0814)

19. same Tyrone Briga 1.0811 ( 0.1425)

20. Period3Vio 0.2628 ( 0.0884)

21. same Period3Vio 0.2512 ( 0.0799)

22. Period3Gun -0.0589 ( 0.0901)

23. same Period3Gun 0.3845 ( 0.0909)

24. same Period3IED\_C 0.3891 ( 0.1368)

25. Period3IED\_P 0.0490 ( 0.0937)

26. same Period3IED\_P 0.3165 ( 0.0967)

27. same Period3ForOp 0.4583 ( 0.0958)

28. Period3Rob 0.5716 ( 0.0938)

29. same Period3Rob 0.7368 ( 0.1354)

------------------------------------------------------------------------------------------------

-----------------------------------

New analysis started.

Period 4-5

New results follow.

-----------------------------------

Siena version 3.11 (26-June-2007)

@1

Estimation by stochastic approximation algorithm.

=================================================

Random initialization of random number stream.

Current random number seed is 3387997.

Conditional moment estimation.

Observed density = 0.0077

Number of ties = 1028

Simulation method: M.H. nondirected, continuous (code 16).

4123 steps per simulation; multiplication factor = 4.000.

Initial value of gain parameter is 0.0100000 .

Number of subphases in Phase 2 is 4.

Initial parameter values are

1. alternating k-stars, par. 2 0.0307

corresponding to statistic 9

2. Gender 0.0795

corresponding to statistic 16

3. same Gender 0.1602

corresponding to statistic 18

4. University 0.3053

corresponding to statistic 22

5. same University 0.5593

corresponding to statistic 24

6. Marital Stat 0.1110

corresponding to statistic 25

7. same Marital Stat 0.4869

corresponding to statistic 27

8. Age at Recru 0.0042

corresponding to statistic 28

9. Age at Recru similarity 1.1439

corresponding to statistic 29

10. Antrim Briga 0.0219

corresponding to statistic 31

11. same Antrim Briga 0.7078

corresponding to statistic 33

12. Derry Brigad 0.1020

corresponding to statistic 34

13. same Derry Brigad 0.0447

corresponding to statistic 36

14. Armagh Briga -0.0914

corresponding to statistic 37

15. same Armagh Briga 0.1257

corresponding to statistic 39

16. Tyrone Briga 0.0305

corresponding to statistic 43

17. same Tyrone Briga 0.0815

corresponding to statistic 45

18. Period4-5Vio 0.1495

corresponding to statistic 49

19. same Period4-5Vio 0.2146

corresponding to statistic 51

20. Period4-5Non 0.4789

corresponding to statistic 52

21. same Period4-5Non 0.7313

corresponding to statistic 54

22. Period4-5VFo -0.1764

corresponding to statistic 55

23. same Period4-5VFo 0.1671

corresponding to statistic 57

24. Period4-5Gun 0.0837

corresponding to statistic 61

25. same Period4-5Gun 0.5649

corresponding to statistic 63

26. Period4-5IED 0.3261

corresponding to statistic 64

27. same Period4-5IED 0.5014

corresponding to statistic 66

28. Period4-5IED -0.0205

corresponding to statistic 67

29. same Period4-5IED 0.1387

corresponding to statistic 69

30. Period4-5For 0.5401

corresponding to statistic 70

31. same Period4-5For 0.8513

corresponding to statistic 72

32. Period4-5Rob 0.1665

corresponding to statistic 73

33. same Period4-5Rob 0.5170

corresponding to statistic 75

Observed values of target statistics are

1. alternating k-stars, par. 2 966.1563

2. Sum of degrees times Gender -5.2504

3. Same values on Gender 470.0000

4. Sum of degrees times University -2.6608

5. Same values on University 459.0000

6. Sum of degrees times Marital Stat 9.4772

7. Same values on Marital Stat 314.0000

8. Sum of degrees times Age at Recru 101.9336

9. Similarity on Age at Recru 14.2560

10. Sum of degrees times Antrim Briga -39.6927

11. Same values on Antrim Briga 363.0000

12. Sum of degrees times Derry Brigad 10.3305

13. Same values on Derry Brigad 407.0000

14. Sum of degrees times Armagh Briga -10.0927

15. Same values on Armagh Briga 403.0000

16. Sum of degrees times Tyrone Briga -2.4622

17. Same values on Tyrone Briga 415.0000

18. Sum of degrees times Period4-5Vio 12.7852

19. Same values on Period4-5Vio 329.0000

20. Sum of degrees times Period4-5Non 23.3708

21. Same values on Period4-5Non 423.0000

22. Sum of degrees times Period4-5VFo -2.6032

23. Same values on Period4-5VFo 449.0000

24. Sum of degrees times Period4-5Gun -0.5336

25. Same values on Period4-5Gun 394.0000

26. Sum of degrees times Period4-5IED -2.0068

27. Same values on Period4-5IED 460.0000

28. Sum of degrees times Period4-5IED 2.9344

29. Same values on Period4-5IED 359.0000

30. Sum of degrees times Period4-5For 13.3708

31. Same values on Period4-5For 431.0000

32. Sum of degrees times Period4-5Rob 6.3776

33. Same values on Period4-5Rob 452.0000

33 parameters, 33 statistics

@2

End of stochastic approximation algorithm, phase 3.

---------------------------------------------------

Total of 5493 iterations.

Parameter estimates based on 3493 iterations,

convergence diagnostics, covariance and derivative matrices based on 2000 iterations.

Information for convergence diagnosis.

Averages, standard deviations, and t-ratios for deviations from targets:

1. -0.101 11.696 -0.009

2. -0.384 6.867 -0.056

3. 0.373 6.299 0.059

4. -0.147 8.737 -0.017

5. -0.062 6.951 -0.009

6. 0.357 9.031 0.039

7. 0.567 11.098 0.051

8. -0.259 254.362 -0.001

9. 0.051 2.513 0.020

10. -0.093 15.548 -0.006

11. 0.212 10.369 0.020

12. -0.141 8.703 -0.016

13. 0.505 8.911 0.057

14. 0.156 9.432 0.017

15. 0.097 9.207 0.011

16. 0.069 8.260 0.008

17. 0.028 8.628 0.003

18. 0.123 17.851 0.007

19. -0.008 10.886 -0.001

20. -0.416 14.594 -0.028

21. 0.706 8.608 0.082

22. 0.021 11.589 0.002

23. 0.275 7.665 0.036

24. 0.417 15.247 0.027

25. -0.457 9.577 -0.048

26. -0.288 8.273 -0.035

27. 0.311 6.845 0.045

28. 0.299 14.664 0.020

29. -0.381 10.682 -0.036

30. -0.205 14.765 -0.014

31. 0.103 8.425 0.012

32. -0.545 11.523 -0.047

33. 0.112 7.427 0.015

Good convergence is indicated by the t-ratios being close to zero.

Autocorrelations during phase 3 :

1. -0.0093

2. 0.1141

3. 0.1103

4. 0.1967

5. 0.0964

6. 0.1204

7. 0.1267

8. 0.1288

9. 0.1186

10. 0.0917

11. 0.0812

12. 0.0497

13. 0.0443

14. 0.0809

15. 0.0445

16. 0.0383

17. 0.0028

18. 0.1052

19. 0.0784

20. 0.2277

21. 0.0644

22. 0.2336

23. 0.0971

24. 0.1237

25. 0.0458

26. 0.1282

27. 0.0999

28. 0.1225

29. 0.0995

30. 0.2376

31. 0.0785

32. 0.2484

33. 0.0829

@2

Estimation results.

-------------------

Regular end of estimation algorithm.

Total of 5493 iteration steps.

@3

Estimates and standard errors

1. alternating k-stars, par. 2 0.0285 ( 0.0926)

2. Gender 0.0797 ( 0.3655)

3. same Gender 0.1606 ( 0.3941)

4. University 0.3023 ( 0.1870)

5. same University 0.5584 ( 0.2272)

6. Marital Stat 0.1138 ( 0.1158)

7. same Marital Stat 0.4941 ( 0.0934)

8. Age at Recru 0.0043 ( 0.0051)

9. Age at Recru similarity 1.1381 ( 0.4777)

10. Antrim Briga 0.0237 ( 0.0803)

11. same Antrim Briga 0.7106 ( 0.1134)

12. Derry Brigad 0.1057 ( 0.2062)

13. same Derry Brigad 0.0529 ( 0.2192)

14. Armagh Briga -0.0988 ( 0.1856)

15. same Armagh Briga 0.1205 ( 0.2053)

16. Tyrone Briga 0.0303 ( 0.2140)

17. same Tyrone Briga 0.0801 ( 0.2242)

18. Period4-5Vio 0.1474 ( 0.1619)

19. same Period4-5Vio 0.2177 ( 0.1070)

20. Period4-5Non 0.4846 ( 0.1302)

21. same Period4-5Non 0.7401 ( 0.1469)

22. Period4-5VFo -0.1732 ( 0.1759)

23. same Period4-5VFo 0.1762 ( 0.2016)

24. Period4-5Gun 0.0848 ( 0.1550)

25. same Period4-5Gun 0.5653 ( 0.1263)

26. Period4-5IED 0.3274 ( 0.2376)

27. same Period4-5IED 0.5012 ( 0.2424)

28. Period4-5IED -0.0162 ( 0.1591)

29. same Period4-5IED 0.1369 ( 0.1205)

30. Period4-5For 0.5375 ( 0.1398)

31. same Period4-5For 0.8517 ( 0.1625)

32. Period4-5Rob 0.1588 ( 0.1588)

33. same Period4-5Rob 0.5097 ( 0.1874)