```
********************************************************************************
********************************************************************************
               MONTE CARLO EXPERIMENT #           6.000
********************************************************************************
********************************************************************************

********************************************************************************
   COMPUTING A MPE OF THE DYNAMIC GAME
********************************************************************************

--------------------------------------------------------------------------------
       Values of the structural parameters

                     Fixed cost firm 1   =          -1.900
                     Fixed cost firm 2   =          -1.800
                     Fixed cost firm 3   =          -1.700
                     Fixed cost firm 4   =          -1.600
                     Fixed cost firm 5   =          -1.500
       Parameter of market size (theta_rs) =           1.000
Parameter of competition effect (theta_rn) =           1.000
                   Entry cost (theta_ec) =           4.000
                     Discount factor     =          0.9500
                  Std. Dev. epsilons     =           1.000

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

       BEST RESPONSE MAPPING ITERATIONS

         Best response mapping iteration  =          1.000
         Convergence criterion =           1000.

         Best response mapping iteration  =          2.000
         Convergence criterion =          0.9910

         Best response mapping iteration  =          3.000
         Convergence criterion =          0.4804

         Best response mapping iteration  =          4.000
         Convergence criterion =          0.2636

         Best response mapping iteration  =          5.000
         Convergence criterion =          0.2050

         Best response mapping iteration  =          6.000
         Convergence criterion =          0.1502

         Best response mapping iteration  =          7.000
         Convergence criterion =         0.09862

         Best response mapping iteration  =          8.000
         Convergence criterion =         0.06620

         Best response mapping iteration  =          9.000
```

```
Convergence criterion =         0.04176

Best response mapping iteration  =          10.00
Convergence criterion =         0.02671

Best response mapping iteration  =          11.00
Convergence criterion =         0.01673

Best response mapping iteration  =          12.00
Convergence criterion =         0.01048

Best response mapping iteration  =          13.00
Convergence criterion =        0.006506

Best response mapping iteration  =          14.00
Convergence criterion =        0.004030

Best response mapping iteration  =          15.00
Convergence criterion =        0.002482

Best response mapping iteration  =          16.00
Convergence criterion =        0.001525

Best response mapping iteration  =          17.00
Convergence criterion =       0.0009336

Best response mapping iteration  =          18.00
Convergence criterion =       0.0005702

Best response mapping iteration  =          19.00
Convergence criterion =       0.0003472

Best response mapping iteration  =          20.00
Convergence criterion =       0.0002110

Best response mapping iteration  =          21.00
Convergence criterion =       0.0001279

Best response mapping iteration  =          22.00
Convergence criterion =      7.740e-005

Best response mapping iteration  =          23.00
Convergence criterion =      4.675e-005

Best response mapping iteration  =          24.00
Convergence criterion =      2.818e-005

Best response mapping iteration  =          25.00
Convergence criterion =      1.696e-005

Best response mapping iteration  =          26.00
Convergence criterion =      1.019e-005
```

CONVERGENCE ACHIEVED AFTER 27.00 BEST RESPONSE ITERATIONS

EQUILIBRIUM PROBABILITIES

0.01332	0.01659	0.02123	0.02800
0.03811			
0.007547	0.009175	0.01143	0.01470
0.6912			
0.008122	0.009939	0.01248	0.6197
0.02182			
0.006151	0.007434	0.009203	0.4771
0.5856			
0.008700	0.01070	0.5503	0.01766
0.02388			
0.006366	0.007712	0.4081	0.01227
0.6065			
0.006710	0.008170	0.4317	0.5252
0.01767			
0.005466	0.006590	0.3543	0.4298
0.5310			
0.009242	0.4869	0.01448	0.01897
0.02571			
0.006542	0.3514	0.009872	0.01267
0.6222			
0.006925	0.3717	0.01058	0.5421
0.01839			
0.005572	0.3031	0.008316	0.4383
0.5413			
0.007274	0.3900	0.4688	0.01458
0.01966			
0.005732	0.3115	0.3717	0.01100
0.5581			
0.005987	0.3252	0.3897	0.4757
0.01563			
0.005046	0.2768	0.3299	0.4009
0.4971			
0.4307	0.01205	0.01532	0.02012
0.02729			
0.3049	0.008120	0.01011	0.01299
0.6341			
0.3222	0.008674	0.01088	0.5552
0.01895			
0.2620	0.006833	0.008455	0.4448
0.5490			
0.3383	0.009185	0.4820	0.01508
0.02035			
0.2691	0.007053	0.3776	0.01121
0.5666			
0.2805	0.007415	0.3966	0.4842
0.01598			
0.2388	0.006156	0.3338	0.4058
0.5031			

0.3521	0.4180	0.01217	0.01590
0.02150			
0.2748	0.3233	0.008981	0.01152
0.5796			
0.2873	0.3392	0.009536	0.4975
0.01653			
0.2425	0.2847	0.007747	0.4130
0.5120			
0.2981	0.3530	0.4250	0.01299
0.01748			
0.2481	0.2916	0.3485	0.01020
0.5265			
0.2569	0.3030	0.3635	0.4446
0.01439			
0.2239	0.2626	0.3132	0.3812
0.4740			
0.04891	0.06527	0.08925	0.1248
0.1767			
0.02636	0.03404	0.04501	0.06103
0.9327			
0.02691	0.03498	0.04665	0.9041
0.08948			
0.01795	0.02284	0.02978	0.7979
0.8613			
0.02788	0.03649	0.8666	0.06770
0.09533			
0.01858	0.02374	0.7384	0.04188
0.8724			
0.01906	0.02450	0.7507	0.8237
0.06123			
0.01440	0.01821	0.6484	0.7301
0.8071			
0.02918	0.8207	0.05197	0.07210
0.1018			
0.01928	0.6752	0.03250	0.04391
0.8823			
0.01979	0.6864	0.03382	0.8364
0.06445			
0.01481	0.5796	0.02438	0.7408
0.8164			
0.02049	0.7007	0.7799	0.04869
0.06840			
0.01524	0.5910	0.6719	0.03399
0.8279			
0.01564	0.6016	0.6844	0.7672
0.04949			
0.01255	0.5218	0.6005	0.6853
0.7694			
0.7681	0.04061	0.05516	0.07677
0.1085			
0.6118	0.02571	0.03389	0.04587
0.8907			
0.6213	0.02656	0.03529	0.8475

0.06749
 0.5150 0.01928 0.02510 0.7500
 0.8241
 0.6345 0.02770 0.7934 0.05102
0.07176
 0.5253 0.01995 0.6820 0.03509
 0.8357
 0.5342 0.02059 0.6948 0.7768
0.05121
 0.4585 0.01615 0.6081 0.6929
 0.7761
 0.6497 0.7313 0.03903 0.05397
0.07611
 0.5360 0.6128 0.02707 0.03652
 0.8457
 0.5452 0.6241 0.02817 0.7891
0.05353
 0.4661 0.5375 0.02151 0.7026
 0.7850
 0.5566 0.6375 0.7225 0.04032
0.05657
 0.4746 0.5475 0.6290 0.02984
 0.7964
 0.4826 0.5576 0.6413 0.7286
0.04335
 0.4232 0.4907 0.5685 0.6547
 0.7428
 0.1560 0.2060 0.2705 0.3495
 0.4384
 0.1209 0.1589 0.2084 0.2706
 0.9808
 0.1172 0.1544 0.2031 0.9731
 0.3384
0.08788 0.1151 0.1512 0.9570
 0.9682
 0.1149 0.1516 0.9622 0.2617
 0.3357
0.08694 0.1141 0.9411 0.1971
 0.9682
0.08519 0.1120 0.9397 0.9560
 0.2534
0.06445 0.08422 0.9111 0.9341
 0.9515
 0.1138 0.9473 0.1992 0.2612
 0.3356
0.08687 0.9202 0.1507 0.1981
 0.9685
0.08514 0.9181 0.1484 0.9563
 0.2550
0.06486 0.8824 0.1118 0.9351
 0.9523
0.08428 0.9172 0.9395 0.1953
 0.2551

0.06472 0.8823 0.9123 0.1482
0.9527
0.06402 0.8808 0.9114 0.9351
0.1948
0.05013 0.8400 0.8786 0.9094
0.9333
0.9274 0.1510 0.2001 0.2628
0.3376
0.8935 0.1154 0.1524 0.2004
0.9691
0.8907 0.1133 0.1500 0.9571
0.2582
0.8474 0.08616 0.1136 0.9364
0.9533
0.8891 0.1124 0.9405 0.1977
0.2583
0.8469 0.08612 0.9140 0.1506
0.9537
0.8448 0.08531 0.9131 0.9364
0.1980
0.7968 0.06647 0.8810 0.9114
0.9348
0.8890 0.9184 0.1499 0.1989
0.2602
0.8478 0.8853 0.1149 0.1523
0.9545
0.8457 0.8838 0.1141 0.9374
0.2004
0.7988 0.8448 0.08874 0.9130
0.9361
0.8451 0.8837 0.9144 0.1526
0.2018
0.7992 0.8454 0.8836 0.1188
0.9370
0.7981 0.8448 0.8834 0.9141
0.1585
0.7506 0.8036 0.8493 0.8869
0.9165
0.4218 0.4892 0.5539 0.6132
0.6655
0.3944 0.4601 0.5242 0.5841
0.9914
0.3896 0.4552 0.5194 0.9893
0.6338
0.3609 0.4243 0.4876 0.9877
0.9899
0.3844 0.4499 0.9865 0.5748
0.6294
0.3558 0.4190 0.9845 0.5431
0.9897
0.3511 0.4140 0.9842 0.9872
0.5947
0.3214 0.3816 0.9817 0.9853

0.9880
0.3791 0.9827 0.5090 0.5699
0.6250
0.3507 0.9802 0.4773 0.5383
0.9895
0.3461 0.9797 0.4723 0.9870
0.5903
0.3168 0.9766 0.4385 0.9850
0.9878
0.3411 0.9793 0.9835 0.5287
0.5858
0.3121 0.9761 0.9810 0.4946
0.9875
0.3076 0.9756 0.9806 0.9844
0.5480
0.2782 0.9717 0.9775 0.9819
0.9853
0.9776 0.4394 0.5042 0.5654
0.6209
0.9744 0.4091 0.4727 0.5340
0.9894
0.9738 0.4042 0.4678 0.9867
0.5863
0.9699 0.3725 0.4343 0.9847
0.9876
0.9732 0.3991 0.9832 0.5245
0.5819
0.9692 0.3676 0.9807 0.4906
0.9873
0.9685 0.3628 0.9803 0.9841
0.5443
0.9636 0.3306 0.9771 0.9816
0.9851
0.9726 0.9784 0.4578 0.5198
0.5776
0.9685 0.9752 0.4248 0.4862
0.9871
0.9679 0.9747 0.4200 0.9839
0.5402
0.9628 0.9707 0.3856 0.9813
0.9849
0.9672 0.9742 0.9795 0.4768
0.5358
0.9621 0.9701 0.9763 0.4415
0.9846
0.9613 0.9695 0.9758 0.9806
0.4962
0.9550 0.9645 0.9718 0.9775
0.9819
0.7318 0.7649 0.7933 0.8176
0.8385
0.7235 0.7573 0.7864 0.8113
0.9965

0.7222	0.7562	0.7854	0.9960
0.8320			
0.7135	0.7482	0.7781	0.9958
0.9963			
0.7208	0.7549	0.9953	0.8094
0.8311			
0.7120	0.7469	0.9951	0.8028
0.9963			
0.7107	0.7457	0.9951	0.9957
0.8243			
0.7015	0.7372	0.9948	0.9955
0.9961			
0.7191	0.9945	0.7829	0.8083
0.8301			
0.7102	0.9942	0.7755	0.8016
0.9963			
0.7089	0.9942	0.7745	0.9957
0.8232			
0.6996	0.9939	0.7667	0.9955
0.9961			
0.7074	0.9941	0.9950	0.7995
0.8222			
0.6980	0.9939	0.9948	0.7924
0.9961			
0.6966	0.9938	0.9947	0.9955
0.8149			
0.6867	0.9935	0.9945	0.9952
0.9959			
0.9934	0.7516	0.7813	0.8069
0.8288			
0.9931	0.7434	0.7739	0.8001
0.9963			
0.9931	0.7423	0.7728	0.9957
0.8219			
0.9928	0.7336	0.7649	0.9955
0.9961			
0.9930	0.7409	0.9949	0.7981
0.8209			
0.9927	0.7321	0.9947	0.7908
0.9960			
0.9927	0.7309	0.9947	0.9954
0.8135			
0.9923	0.7216	0.9944	0.9952
0.9958			
0.9930	0.9940	0.7701	0.7968
0.8198			
0.9926	0.9938	0.7621	0.7895
0.9960			
0.9926	0.9937	0.7609	0.9954
0.8123			
0.9922	0.9934	0.7524	0.9952
0.9958			
0.9925	0.9937	0.9946	0.7873

```
         0.8112
         0.9922           0.9934           0.9943           0.7795
         0.9958
         0.9921           0.9933           0.9943           0.9951
         0.8031
         0.9917           0.9930           0.9940           0.9948
         0.9955
--------------------------------------------------------------------------------

********************************************************************************
   DESCRIPTIVE STATISTICS FROM THE EQUILIBRIUM
   BASED ON      5.000e+004 OBSERVATIONS

   TABLE 2 OF THE PAPER AGUIRREGABIRIA AND MIRA (2007)
********************************************************************************


--------------------------------------------------------------------------------
       (1)    Average number of active firms   =           2.808
--------------------------------------------------------------------------------
       (2)    Std. Dev. number of firms        =           1.900
--------------------------------------------------------------------------------
       (3)    Regression N[t] on N[t-1]        =          0.9200
--------------------------------------------------------------------------------
       (4)    Average number of entrants       =          0.2192
--------------------------------------------------------------------------------
       (5)    Average number of exits          =          0.2141
--------------------------------------------------------------------------------
       (6)    Excess turnover (in # of firms)  =         0.02996
--------------------------------------------------------------------------------
       (7)    Correlation entries and exits    =         -0.1122
--------------------------------------------------------------------------------
       (8)    Frequencies of being active      =
          0.4557
          0.5030
          0.5539
          0.6109
          0.6847
--------------------------------------------------------------------------------


********************************************************************************
       MONTE CARLO EXPERIMENT #           6.000
********************************************************************************

     Replication =           1.000
         (a)     Simulations of x's and a's
         (b.1)   Estimation of initial CCPs (Non-Parametric)
         (b.2)   NPL algorithm using frequency estimates as initial CCPs
         (c.1)   Estimation of initial CCPs (Semi-Parametric: Logit)
         (c.2)   NPL algorithm using Logit estimates as initial CCPs
         (d.1)   Estimation of initial CCPs (Completely Random)
         (d.2)   NPL algorithm using U(0,1) random draws as initial CCPs
```

```
        (e)     NPL algorithm using true values as initial CCPs
    Replication =         2.00000
        (a)     Simulations of x's and a's
        (b.1)   Estimation of initial CCPs (Non-Parametric)
        (b.2)   NPL algorithm using frequency estimates as initial CCPs
        (c.1)   Estimation of initial CCPs (Semi-Parametric: Logit)
        (c.2)   NPL algorithm using Logit estimates as initial CCPs
        (d.1)   Estimation of initial CCPs (Completely Random)
        (d.2)   NPL algorithm using U(0,1) random draws as initial CCPs
        (e)     NPL algorithm using true values as initial CCPs

...

    Replication =         999.000
        (a)     Simulations of x's and a's
        (b.1)   Estimation of initial CCPs (Non-Parametric)
        (b.2)   NPL algorithm using frequency estimates as initial CCPs
        (c.1)   Estimation of initial CCPs (Semi-Parametric: Logit)
        (c.2)   NPL algorithm using Logit estimates as initial CCPs
        (d.1)   Estimation of initial CCPs (Completely Random)
        (d.2)   NPL algorithm using U(0,1) random draws as initial CCPs
        (e)     NPL algorithm using true values as initial CCPs
    Replication =         1000.00
        (a)     Simulations of x's and a's
        (b.1)   Estimation of initial CCPs (Non-Parametric)
        (b.2)   NPL algorithm using frequency estimates as initial CCPs
        (c.1)   Estimation of initial CCPs (Semi-Parametric: Logit)
        (c.2)   NPL algorithm using Logit estimates as initial CCPs
        (d.1)   Estimation of initial CCPs (Completely Random)
        (d.2)   NPL algorithm using U(0,1) random draws as initial CCPs
        (e)     NPL algorithm using true values as initial CCPs

          Number of Re-drawings due to Multicollinearity =        0.000000

********************************************************************************
   MONTE CARLO EXPERIMENT #         6.00000
   EMPIRICAL MEANS AND STANDARD ERRORS

   TABLE 4 OF THE PAPER AGUIRREGABIRIA AND MIRA (2007)
********************************************************************************


--------------------------------------------------------------------------------
                       theta_fc_1          theta_rs        theta_rn        theta_ec
--------------------------------------------------------------------------------
TRUE VALUES               -1.90000           1.00000          1.00000          4.00000

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

   MEAN 2step-True        -1.90730           1.00482          1.00576          4.04644


 MEDIAN 2step-True        -1.90816           1.00543          1.00773          4.03833
```

S.E. 2step-True	0.202867	0.127989	0.243496	0.194297
MEAN 2step-Freq	-0.585756	0.341525	0.215783	2.73151
MEDIAN 2step-Freq	-0.579550	0.333995	0.214711	2.73423
S.E. 2step-Freq	0.236096	0.126734	0.232386	0.215516
MEAN NPL-Freq	-1.92608	1.01231	1.01128	4.03953
MEDIAN NPL-Freq	-1.92452	1.00866	1.00741	4.03321
S.E. NPL-Freq	0.234079	0.157854	0.291645	0.197190
MEAN 2step-Logit	-1.90372	0.998974	0.995096	4.04451
MEDIAN 2step-Logit	-1.90101	0.994717	0.993452	4.04019
S.E. 2step-Logit	0.234769	0.153624	0.285033	0.198395
MEAN NPL-Logit	-1.92598	1.01237	1.01151	4.03965
MEDIAN NPL-Logit	-1.92452	1.00866	1.00741	4.03311
S.E. NPL-Logit	0.233891	0.157998	0.292192	0.197262
MEAN 2step-Random	-1.90372	0.998974	0.995096	4.04451

MEDIAN 2step-Rando	-1.90101	0.994717	0.993452	4.04019
S.E. 2step-Random	0.234769	0.153624	0.285033	0.198395
MEAN NPL-Random	-1.92603	1.01240	1.01153	4.03964
MEDIAN NPL-Random	-1.92452	1.00866	1.00741	4.03311
S.E. NPL-Random	0.233997	0.158070	0.292274	0.197262

****

MONTE CARLO EXPERIMENT # 6.00000
SQUARE-ROOT MEAN SQUARE ERRORS
RATIOS OVER THE SQUARE-ROOT MSE OF THE 2-STEP PML USING THE TRUE CCPs

TABLE 5 OF THE PAPER AGUIRREGABIRIA AND MIRA (2007)

****

	theta_fc_1	theta_rs	theta_rn	theta_ec
SQ-MSE 2-step-TRUE	0.202998	0.128080	0.243564	0.199769
RATIO: 2step-Freq	6.57780	5.23547	3.35815	6.44078
RATIO: NPL-Freq	1.16024	1.23620	1.19830	1.00672
RATIO: 2step-Logit	1.15666	1.19946	1.17043	1.01781
RATIO: NPL-Logit	1.15927	1.23736	1.20058	1.00720

RATIO: 2step-Rando	10.8067	2.32494	4.57799	1.22216
RATIO: NPL-Random	1.15981	1.23794	1.20092	1.00719