```
****************************************************************************************
****************************************************************************************
               MONTE CARLO EXPERIMENT #           2.000
****************************************************************************************
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****************************************************************************************
   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) =           1.000
                       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 =          0.9559

         Best response mapping iteration  =           3.000
         Convergence criterion =          0.3053

         Best response mapping iteration  =           4.000
         Convergence criterion =          0.1105

         Best response mapping iteration  =           5.000
         Convergence criterion =         0.04602

         Best response mapping iteration  =           6.000
         Convergence criterion =         0.01991

         Best response mapping iteration  =           7.000
         Convergence criterion =        0.008868

         Best response mapping iteration  =           8.000
         Convergence criterion =        0.004034

         Best response mapping iteration  =           9.000
```

Convergence criterion = 0.001814

Best response mapping iteration = 10.00
Convergence criterion = 0.0008198

Best response mapping iteration = 11.00
Convergence criterion = 0.0003699

Best response mapping iteration = 12.00
Convergence criterion = 0.0001708

Best response mapping iteration = 13.00
Convergence criterion = 7.899e-005

Best response mapping iteration = 14.00
Convergence criterion = 3.652e-005

Best response mapping iteration = 15.00
Convergence criterion = 1.687e-005

Best response mapping iteration = 16.00
Convergence criterion = 7.797e-006

CONVERGENCE ACHIEVED AFTER 17.00 BEST RESPONSE ITERATIONS

EQUILIBRIUM PROBABILITIES

```
 0.1107          0.1240          0.1391          0.1562
 0.1754
 0.1014          0.1136          0.1274          0.1430
 0.3728
 0.1021          0.1144          0.1283          0.3404
 0.1619
0.09473          0.1061          0.1191          0.3177
 0.3507
 0.1028          0.1152          0.3103          0.1451
 0.1631
0.09531          0.1068          0.2890          0.1345
 0.3527
0.09594          0.1075          0.2908          0.3215
 0.1522
0.08977          0.1006          0.2734          0.3024
 0.3341
 0.1035          0.2825          0.1301          0.1461
 0.1641
0.09584          0.2626          0.1205          0.1353
 0.3545
0.09648          0.2643          0.1213          0.3232
 0.1530
0.09021          0.2481          0.1134          0.3038
 0.3356
0.09709          0.2659          0.2941          0.1370
```

0.1540			
0.09071	0.2493	0.2760	0.1280
0.3373			
0.09125	0.2508	0.2776	0.3070
0.1448			
0.08591	0.2369	0.2624	0.2905
0.3212			
0.2568	0.1167	0.1309	0.1470
0.1651			
0.2384	0.1079	0.1211	0.1360
0.3561			
0.2399	0.1087	0.1219	0.3247
0.1538			
0.2249	0.1015	0.1139	0.3051
0.3370			
0.2414	0.1094	0.2956	0.1378
0.1548			
0.2261	0.1021	0.2772	0.1286
0.3387			
0.2274	0.1027	0.2788	0.3084
0.1455			
0.2146	0.09667	0.2634	0.2916
0.3224			
0.2427	0.2687	0.1234	0.1386
0.1557			
0.2272	0.2516	0.1151	0.1293
0.3403			
0.2285	0.2531	0.1158	0.3099
0.1462			
0.2155	0.2389	0.1090	0.2928
0.3237			
0.2298	0.2545	0.2817	0.1308
0.1471			
0.2166	0.2400	0.2658	0.1230
0.3252			
0.2177	0.2413	0.2672	0.2957
0.1390			
0.2065	0.2289	0.2537	0.2810
0.3108			
0.2200	0.2452	0.2728	0.3030
0.3357			
0.2031	0.2264	0.2523	0.2805
0.5889			
0.2037	0.2272	0.2531	0.5517
0.3123			
0.1896	0.2116	0.2359	0.5235
0.5618			
0.2045	0.2281	0.5146	0.2825
0.3135			
0.1903	0.2124	0.4869	0.2636
0.5633			
0.1909	0.2131	0.4882	0.5263
0.2938			

0.1789	0.1998	0.4641	0.5015
0.5395			
0.2054	0.4782	0.2551	0.2837
0.3147			
0.1911	0.4511	0.2377	0.2646
0.5649			
0.1917	0.4524	0.2385	0.5279
0.2949			
0.1795	0.4290	0.2237	0.5029
0.5409			
0.1924	0.4538	0.4911	0.2664
0.2959			
0.1802	0.4303	0.4667	0.2501
0.5423			
0.1808	0.4314	0.4680	0.5055
0.2790			
0.1703	0.4108	0.4465	0.4834
0.5210			
0.4426	0.2300	0.2562	0.2849
0.3161			
0.4166	0.2141	0.2386	0.2657
0.5665			
0.4177	0.2148	0.2394	0.5295
0.2960			
0.3953	0.2012	0.2245	0.5043
0.5424			
0.4191	0.2156	0.4927	0.2675
0.2971			
0.3965	0.2019	0.4681	0.2510
0.5438			
0.3976	0.2026	0.4693	0.5070
0.2800			
0.3779	0.1909	0.4477	0.4847
0.5224			
0.4205	0.4567	0.2412	0.2685
0.2982			
0.3977	0.4329	0.2261	0.2519
0.5453			
0.3988	0.4341	0.2268	0.5084
0.2810			
0.3790	0.4132	0.2138	0.4860
0.5237			
0.4001	0.4354	0.4721	0.2536
0.2820			
0.3801	0.4144	0.4502	0.2392
0.5250			
0.3812	0.4155	0.4514	0.4885
0.2671			
0.3636	0.3970	0.4320	0.4684
0.5057			
0.3939	0.4291	0.4651	0.5016
0.5381			
0.3768	0.4111	0.4465	0.4825

0.7655			
0.3764	0.4107	0.4461	0.7384
0.5182			
0.3603	0.3938	0.4284	0.7224
0.7501			
0.3761	0.4104	0.7093	0.4818
0.5179			
0.3602	0.3936	0.6925	0.4637
0.7500			
0.3598	0.3933	0.6922	0.7220
0.4992			
0.3449	0.3775	0.6759	0.7064
0.7350			
0.3761	0.6783	0.4458	0.4818
0.5179			
0.3602	0.6608	0.4283	0.4638
0.7500			
0.3599	0.6605	0.4280	0.7220
0.4992			
0.3449	0.6437	0.4115	0.7065
0.7351			
0.3597	0.6604	0.6921	0.4633
0.4991			
0.3448	0.6436	0.6759	0.4463
0.7351			
0.3446	0.6434	0.6757	0.7063
0.4815			
0.3307	0.6272	0.6600	0.6912
0.7206			
0.6457	0.4105	0.4459	0.4819
0.5181			
0.6278	0.3938	0.4285	0.4640
0.7503			
0.6275	0.3935	0.4282	0.7223
0.4994			
0.6103	0.3778	0.4118	0.7068
0.7354			
0.6274	0.3934	0.6923	0.4635
0.4993			
0.6102	0.3777	0.6762	0.4466
0.7353			
0.6100	0.3775	0.6760	0.7065
0.4817			
0.5935	0.3628	0.6603	0.6915
0.7209			
0.6274	0.6607	0.4281	0.4635
0.4993			
0.6103	0.6440	0.4118	0.4467
0.7354			
0.6101	0.6438	0.4115	0.7066
0.4818			
0.5937	0.6277	0.3962	0.6917
0.7210			

0.6100	0.6437	0.6760	0.4464
0.4818			
0.5937	0.6277	0.6605	0.4305
0.7210			
0.5935	0.6275	0.6603	0.6916
0.4653			
0.5778	0.6121	0.6453	0.6771
0.7071			
0.6155	0.6467	0.6764	0.7043
0.7304			
0.6060	0.6375	0.6674	0.6957
0.8817			
0.6053	0.6368	0.6668	0.8676
0.7216			
0.5958	0.6275	0.6577	0.8627
0.8768			
0.6046	0.6361	0.8520	0.6945
0.7210			
0.5951	0.6268	0.8465	0.6858
0.8765			
0.5944	0.6261	0.8462	0.8620
0.7121			
0.5848	0.6167	0.8406	0.8569
0.8715			
0.6039	0.8346	0.6655	0.6939
0.7205			
0.5944	0.8287	0.6564	0.6852
0.8762			
0.5937	0.8282	0.6558	0.8616
0.7116			
0.5842	0.8222	0.6467	0.8565
0.8712			
0.5930	0.8278	0.8454	0.6839
0.7110			
0.5835	0.8218	0.8399	0.6751
0.8709			
0.5828	0.8214	0.8395	0.8558
0.7020			
0.5732	0.8152	0.8338	0.8506
0.8658			
0.8153	0.6348	0.6649	0.6933
0.7199			
0.8089	0.6255	0.6559	0.6846
0.8759			
0.8084	0.6249	0.6552	0.8613
0.7110			
0.8019	0.6155	0.6461	0.8562
0.8709			
0.8080	0.6242	0.8451	0.6834
0.7105			
0.8015	0.6148	0.8395	0.6746
0.8706			
0.8010	0.6142	0.8391	0.8555

0.7015			
0.7943	0.6048	0.8335	0.8503
0.8655			
0.8075	0.8270	0.6540	0.6828
0.7099			
0.8010	0.8210	0.6449	0.6740
0.8703			
0.8006	0.8206	0.6443	0.8552
0.7009			
0.7939	0.8144	0.6351	0.8500
0.8652			
0.8001	0.8202	0.8384	0.6728
0.7004			
0.7935	0.8140	0.8327	0.6640
0.8649			
0.7930	0.8136	0.8323	0.8493
0.6913			
0.7862	0.8073	0.8265	0.8440
0.8597			
0.8061	0.8242	0.8406	0.8557
0.8693			
0.8032	0.8214	0.8381	0.8533
0.9477			
0.8029	0.8212	0.8379	0.9417
0.8669			
0.7999	0.8184	0.8353	0.9407
0.9467			
0.8026	0.8209	0.9350	0.8529
0.8667			
0.7996	0.8181	0.9338	0.8505
0.9466			
0.7993	0.8178	0.9337	0.9405
0.8643			
0.7962	0.8150	0.9325	0.9394
0.9455			
0.8023	0.9275	0.8373	0.8526
0.8665			
0.7993	0.9262	0.8347	0.8502
0.9465			
0.7990	0.9260	0.8345	0.9403
0.8641			
0.7959	0.9247	0.8319	0.9393
0.9454			
0.7986	0.9259	0.9335	0.8497
0.8638			
0.7956	0.9246	0.9323	0.8473
0.9453			
0.7953	0.9244	0.9321	0.9390
0.8614			
0.7922	0.9231	0.9309	0.9379
0.9442			
0.9190	0.8203	0.8370	0.8523
0.8662			

```
        0.9175            0.8175            0.8344            0.8499
        0.9464
        0.9174            0.8172            0.8342            0.9402
        0.8638
        0.9159            0.8143            0.8315            0.9391
        0.9453
        0.9173            0.8169            0.9333            0.8494
        0.8636
        0.9158            0.8140            0.9321            0.8470
        0.9452
        0.9156            0.8138            0.9320            0.9389
        0.8611
        0.9141            0.8109            0.9308            0.9378
        0.9441
        0.9171            0.9256            0.8336            0.8492
        0.8633
        0.9156            0.9243            0.8310            0.8467
        0.9451
        0.9155            0.9241            0.8307            0.9388
        0.8609
        0.9140            0.9228            0.8280            0.9377
        0.9440
        0.9153            0.9240            0.9317            0.8462
        0.8606
        0.9138            0.9226            0.9305            0.8437
        0.9439
        0.9137            0.9225            0.9304            0.9374
        0.8581
        0.9121            0.9211            0.9291            0.9363
        0.9427
--------------------------------------------------------------------------------

********************************************************************************
   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   =          2.777
--------------------------------------------------------------------------------
       (2)    Std. Dev. number of firms        =          1.657
--------------------------------------------------------------------------------
       (3)    Regression N[t] on N[t-1]        =         0.7058
--------------------------------------------------------------------------------
       (4)    Average number of entrants       =         0.6965
--------------------------------------------------------------------------------
       (5)    Average number of exits          =         0.6901
--------------------------------------------------------------------------------
       (6)    Excess turnover (in # of firms)  =         0.4589
--------------------------------------------------------------------------------
```

```
      (7)    Correlation entries and exits    =         -0.1792
--------------------------------------------------------------------------------
      (8)    Frequencies of being active      =
         0.4985
         0.5285
         0.5547
         0.5810
         0.6140
--------------------------------------------------------------------------------


********************************************************************************
       MONTE CARLO EXPERIMENT #          2.000
********************************************************************************

     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 # 2.00000
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	1.00000
MEAN 2step-True	-1.90983	1.00816	1.01441	1.00029
MEDIAN 2step-True	-1.90068	1.00499	0.978919	0.997343
S.E. 2step-True	0.200518	0.197351	0.612248	0.118440
MEAN 2step-Freq	-0.929469	0.347031	0.0827955	0.882369
MEDIAN 2step-Freq	-0.928855	0.342648	0.0717566	0.881864
S.E. 2step-Freq	0.211438	0.119117	0.346647	0.125183
MEAN NPL-Freq	-1.91257	1.02873	1.07314	0.989967
MEDIAN NPL-Freq	-1.91806	1.00477	0.969682	0.986047
S.E. NPL-Freq	0.219513	0.231678	0.707496	0.120477
MEAN 2step-Logit	-1.94129	0.985925	0.925402	0.991670
MEDIAN 2step-Logit	-1.93819	0.970190	0.862873	0.991351

S.E. 2step-Logit	0.212160	0.205166	0.613184	0.122387

MEAN NPL-Logit	-1.91247	1.02928	1.07462	0.989543
MEDIAN NPL-Logit	-1.91827	1.00477	0.969682	0.985834
S.E. NPL-Logit	0.219941	0.232467	0.710061	0.121039

MEAN 2step-Random	-1.94129	0.985925	0.925402	0.991670
MEDIAN 2step-Rando	-1.93819	0.970190	0.862873	0.991351
S.E. 2step-Random	0.212160	0.205166	0.613184	0.122387

MEAN NPL-Random	-1.91207	1.02882	1.07370	0.989757
MEDIAN NPL-Random	-1.91871	1.00477	0.969682	0.985854
S.E. NPL-Random	0.220102	0.231344	0.707712	0.120948

****

MONTE CARLO EXPERIMENT # 2.00000

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	0.200759	0.197519	0.612417	

0.118441

RATIO: 2step-Freq	4.94770	3.36040	1.60107	1.45033
RATIO: NPL-Freq	1.09521	1.18192	1.16141	1.02071
RATIO: 2step-Logit	1.07662	1.04115	1.00863	1.03571
RATIO: NPL-Logit	1.09731	1.18623	1.16582	1.02574
RATIO: 2step-Rando	3.59526	0.830350	1.69323	1.01032
RATIO: NPL-Random	1.09799	1.18030	1.16185	1.02482