RESULTS

```
************************************************************

   NEOS Server Version 6.0
   Job#     : 12760156
   Password : VMCpQHFS
   User     :
   Solver   : go:BARON:GAMS
   Start    : 2023-02-15 17:07:58
   End      : 2023-02-15 17:08:14
   Host     : prod-sub-1.neos-server.org

   Disclaimer:

   This information is provided without any express or
   implied warranty. In particular, there is no warranty
   of any kind concerning the fitness of this
   information for any particular purpose.

   Announcements:
************************************************************
Executed on prod-exec-5.neos-server.org
GAMS 41.4.0  caab8bc0 Dec 14, 2022          LEX-LEG x86 64bit/Linux - 02/15/23 17:08:13 Page 1
G e n e r a l   A l g e b r a i c   M o d e l i n g   S y s t e m
C o m p i l a t i o n



COMPILATION TIME     =        0.001 SECONDS      2 MB  41.4.0 caab8bc0 LEX-LEG
GAMS 41.4.0  caab8bc0 Dec 14, 2022          LEX-LEG x86 64bit/Linux - 02/15/23 17:08:13 Page 2
G e n e r a l   A l g e b r a i c   M o d e l i n g   S y s t e m
Range Statistics    SOLVE First_Illustrative_Example_Section_3_1 Using NLP From line 302


RANGE STATISTICS (ABSOLUTE NON-ZERO FINITE VALUES)

RHS       [min, max] : [ 1.200E-01, 1.000E+00] - Zero values observed as well
Bound     [min, max] : [        NA,        NA] - Zero values observed as well
Matrix    [min, max] : [ 1.000E+00, 2.000E+00] - Zero values observed as well

GAMS 41.4.0  caab8bc0 Dec 14, 2022          LEX-LEG x86 64bit/Linux - 02/15/23 17:08:13 Page 3
G e n e r a l   A l g e b r a i c   M o d e l i n g   S y s t e m
Model Statistics    SOLVE First_Illustrative_Example_Section_3_1 Using NLP From line 302
```

This is the Output file when Model E1 is used. That is, when the data of the First Illustrative Example are used and Borda's result is forced (i.e., R1 = R2 = R3 = R4) and the value of the control parameter *e* is set to be equal to 0.140.

```
MODEL STATISTICS

BLOCKS OF EQUATIONS          54     SINGLE EQUATIONS           54
BLOCKS OF VARIABLES          60     SINGLE VARIABLES           60
NON ZERO ELEMENTS           204     NON LINEAR N-Z             96
CODE LENGTH                 318     CONSTANT POOL              16


GENERATION TIME      =        0.004 SECONDS      3 MB  41.4.0 caab8bc0 LEX-LEG
GAMS 41.4.0  caab8bc0 Dec 14, 2022          LEX-LEG x86 64bit/Linux - 02/15/23 17:08:13 Page 4
G e n e r a l   A l g e b r a i c   M o d e l i n g   S y s t e m
Solution Report     SOLVE First_Illustrative_Example_Section_3_1 Using NLP From line 302


               S O L V E      S U M M A R Y

     MODEL   First_Illustrative_Example_Section_3_1   OBJECTIVE  Z
     TYPE    NLP                                     DIRECTION  MINIMIZE
     SOLVER  BARON                                   FROM LINE  302

**** SOLVER STATUS     1 Normal Completion
**** MODEL STATUS      2 Locally Optimal
**** OBJECTIVE VALUE                6.9120

 RESOURCE USAGE, LIMIT          0.120 10000000000.000
 ITERATION COUNT, LIMIT         0    2147483647
 EVALUATION ERRORS              0             0

GAMS/BARON       41.4.0 caab8bc0 Dec 14, 2022          LEG x86 64bit/Linux

BARON is a product of The Optimization Firm, LLC. http://www.minlp.com/
Parts of the BARON software were created at the
University of Illinois at Urbana-Champaign.


================================================================================
 BARON version 22.9.30. Built: LNX-64 Fri Sep 30 09:06:37 EDT 2022

 BARON is a product of The Optimization Firm.
 For information on BARON, see https://minlp.com/about-baron

 If you use this software, please cite publications from
 https://minlp.com/baron-publications, such as:

 Khajavirad, A. and N. V. Sahinidis,
 A hybrid LP/NLP paradigm for global optimization relaxations,
 Mathematical Programming Computation, 10, 383-421, 2018.
```

```
===========================================================================
 This BARON run may utilize the following subsolver(s)
 For LP/MIP/QP: CLP/CBC, ILOG CPLEX
 For NLP: MINOS, SNOPT, External NLP, IPOPT, FILTERSQP

Solution      = 6.91199999999989  best solution found during preprocessing
Best possible = 6.91130886911
Absolute gap  = 0.000691130889890701  optca = 1E-9
Relative gap  = 9.99900014309479E-5  optcr = 0.0001


                       LOWER     LEVEL     UPPER    MARGINAL

---- EQU Equation2      0.120     0.120     0.120   115.200
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      7.680
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      7.680
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      7.680
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      7.680
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      7.680
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Constrain~      .         .        +INF      7.680
---- EQU Constrain~      .         .        +INF      5.760
---- EQU Equation1      1.000     1.000     1.000   -13.824
---- EQU EQ_t1_1         .         .         .        1.000
---- EQU EQ_t1_2         .         .         .        1.000
---- EQU EQ_t1_3         .         .         .        1.000
---- EQU EQ_t1_4         .         .         .        1.000
---- EQU EQ_t2_1         .         .         .        1.000
---- EQU EQ_t2_2         .         .         .        1.000
---- EQU EQ_t2_3         .         .         .        1.000
---- EQU EQ_t2_4         .         .         .        1.000
---- EQU EQ_t3_1         .         .         .        1.000
---- EQU EQ_t3_2         .         .         .        1.000
---- EQU EQ_t3_3         .         .         .        1.000
---- EQU EQ_t3_4         .         .         .        1.000
---- EQU EQ_t4_1         .         .         .        1.000
---- EQU EQ_t4_2         .         .         .        1.000
---- EQU EQ_t4_3         .         .         .        1.000
---- EQU EQ_t4_4         .         .         .        1.000
```

```
---- EQU EQ_t5_1          .          .          .        1.000
---- EQU EQ_t5_2          .          .          .        1.000
---- EQU EQ_t5_3          .          .          .        1.000
---- EQU EQ_t5_4          .          .          .        1.000
---- EQU EQ_t6_1          .    -3.47E-14        .        1.000
---- EQU EQ_t6_2          .    -3.49E-14        .        1.000
---- EQU EQ_t6_3          .    -3.49E-14        .        1.000
---- EQU EQ_t6_4          .          .          .        1.000
---- EQU EQ_tt1           .          .          .          .
---- EQU EQ_tt2           .          .          .          .
---- EQU EQ_tt3           .          .          .          .
---- EQU EQ_tt4           .          .          .          .
---- EQU EQ_tt5           .          .          .          .
---- EQU EQ_tt6           .          .          .          .
---- EQU Objective~       .          .          .        1.000
---- EQU eq1              .          .          .      -11.059
---- EQU eq2              .          .          .       -7.373
---- EQU eq3              .          .          .       -3.686

                       LOWER      LEVEL      UPPER    MARGINAL

---- VAR Z               -INF       6.912      +INF         .
---- VAR a1               .         0.250      +INF         .
---- VAR a2               .         0.250      +INF         .
---- VAR a3               .         0.250      +INF         .
---- VAR a4               .         0.250      +INF         .
---- VAR X1_1             .         1.720      +INF         .
---- VAR X1_2             .         1.240      +INF         .
---- VAR X1_3             .         0.760      +INF         .
---- VAR X1_4             .         0.280      +INF         .
---- VAR X2_1             .         1.720      +INF         .
---- VAR X2_2             .         0.280      +INF         .
---- VAR X2_3             .         1.240      +INF         .
---- VAR X2_4             .         0.760      +INF         .
---- VAR X3_1             .         1.720      +INF         .
---- VAR X3_2             .         0.760      +INF         .
---- VAR X3_3             .         0.280      +INF         .
---- VAR X3_4             .         1.240      +INF         .
---- VAR X4_1             .         0.280      +INF         .
---- VAR X4_2             .         1.720      +INF         .
---- VAR X4_3             .         1.240      +INF         .
---- VAR X4_4             .         0.760      +INF         .
---- VAR X5_1             .         0.280      +INF         .
---- VAR X5_2             .         0.760      +INF         .
---- VAR X5_3             .         1.720      +INF         .
---- VAR X5_4             .         1.240      +INF         .
---- VAR X6_1             .         0.280      +INF         .
---- VAR X6_2             .         1.240      +INF         .
---- VAR X6_3             .         0.760      +INF         .
```

```
---- VAR X6_4            .        1.720     +INF        .
---- VAR t1_1            .        0.518     +INF        .
---- VAR t1_2            .        0.058     +INF        .
---- VAR t1_3            .        0.058     +INF        .
---- VAR t1_4            .        0.518     +INF        .
---- VAR t2_1            .        0.518     +INF        .
---- VAR t2_2            .        0.518     +INF        .
---- VAR t2_3            .        0.058     +INF        .
---- VAR t2_4            .        0.058     +INF        .
---- VAR t3_1            .        0.518     +INF        .
---- VAR t3_2            .        0.058     +INF        .
---- VAR t3_3            .        0.518     +INF        .
---- VAR t3_4            .        0.058     +INF        .
---- VAR t4_1            .        0.518     +INF        .
---- VAR t4_2            .        0.518     +INF        .
---- VAR t4_3            .        0.058     +INF        .
---- VAR t4_4            .        0.058     +INF        .
---- VAR t5_1            .        0.518     +INF        .
---- VAR t5_2            .        0.058     +INF        .
---- VAR t5_3            .        0.518     +INF        .
---- VAR t5_4            .        0.058     +INF        .
---- VAR t6_1            .        0.518     +INF        .
---- VAR t6_2            .        0.058     +INF        .
---- VAR t6_3            .        0.058     +INF        .
---- VAR t6_4            .        0.518     +INF        .
---- VAR ee             -INF      0.120     +INF        .
---- VAR tt1             .        1.152     +INF        .
---- VAR tt2             .        1.152     +INF        .
---- VAR tt3             .        1.152     +INF        .
---- VAR tt4             .        1.152     +INF        .
---- VAR tt5             .        1.152     +INF        .
---- VAR tt6             .        1.152     +INF        .


**** REPORT SUMMARY :        0     NONOPT
                             0 INFEASIBLE
                             0  UNBOUNDED
                             0     ERRORS


EXECUTION TIME       =        0.161 SECONDS      3 MB  41.4.0 caab8bc0 LEX-LEG


USER: NEOS Server License prod-exec-5.neos-server.orgS221207/0001AB-GEN
      mac@f0:1f:af:d3:59:c4                                    DCE1890
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**** FILE SUMMARY
```

```
Input      /var/lib/condor/execute/dir_12971/gamsexec/MODEL.gms
Output     /var/lib/condor/execute/dir_12971/gamsexec/solve.lst
```