

RESULTS

NEOS Server Version 6.0 Job# : 12760513 Password : uSBNnxDd

User :

Solver : go:BARON:GAMS

Start : 2023-02-15 18:33:53 End : 2023-02-15 18:34:05

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.

This is the Output file for the Second Example (i.e., the one with the Real Data) and Model N1 is used.

The original consensus ranking is forced to be the Consolidated ranking.

That is, the ranking R1 > R5 > R2 > R4 > R3 is forced to be the consolidated ranking.

The value of the control parameter e is set to be equal to 0.020.

Announcements:

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Executed on prod-exec-1.neos-server.org

GAMS 41.4.0 caab8bc0 Dec 14, 2022 LEX-LEG x86 64bit/Linux - 02/15/23 18:34:03 Page 1

General Algebraic Modeling System

Compilation
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```
COMPILATION TIME = 0.000 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 18:34:03 Page 2

General Algebraic Modeling System

Range Statistics SOLVE REAL_EXAMPLE_Original_Model_N1 Using NLP From line 308
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RANGE STATISTICS (ABSOLUTE NON-ZERO FINITE VALUES)

```
RHS [\min, \max] : [2.000E-02, 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
```

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GAMS 41.4.0 caab8bc0 Dec 14, 2022 LEX-LEG x86 64bit/Linux - 02/15/23 18:34:03 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 REAL_EXAMPLE_Original_Model_N1 Using NLP From line 308
```

MODEL STATISTICS

| BLOCKS OF EQUATIONS | 62 | SINGLE EQUATIONS | 62 |
|---------------------|-----|------------------|-----|
| BLOCKS OF VARIABLES | 68 | SINGLE VARIABLES | 68 |
| NON ZERO ELEMENTS | 227 | NON LINEAR N-Z | 126 |
| CODE LENGTH | 408 | CONSTANT POOL | 16 |

GENERATION TIME = 0.002 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 18:34:03 Page 4

General Algebraic Modeling System

Solution Report SOLVE REAL_EXAMPLE_Original_Model_N1 Using NLP From line 308

SOLVE SUMMARY

MODEL REAL_EXAMPLE_Original_Model_N1 OBJECTIVE Z
TYPE NLP DIRECTION MINIMIZE
SOLVER BARON FROM LINE 308

**** SOLVER STATUS 1 Normal Completion

**** MODEL STATUS 2 Locally Optimal

**** OBJECTIVE VALUE 0.3693

RESOURCE USAGE, LIMIT 1.780 1000000000.000 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 = 0.369258757912164 found at node 3

Best possible = 0.369221835729

Absolute gap = 3.69221831644229E-5 optca = 1E-9 Relative gap = 9.99899998938022E-5 optcr = 0.0001

| | | LOWER | LEVEL | UPPER | MARGINAL |
|---------|------------|-------|-----------|-------|----------|
| EQU | Equation1 | 1.000 | 1.000 | 1.000 | -0.758 |
| | Equation2 | 0.020 | 0.020 | 0.020 | 37.921 |
| _ | e01_1 | • | -1.842E-7 | | 1.000 |
| EQU | e01_2 | • | -2.653E-7 | • | 1.000 |
| EQU | e01_3 | • | -4.145E-7 | • | 1.000 |
| EQU | e01_4 | • | -3.275E-7 | • | 1.000 |
| EQU | e01_5 | | -2.192E-7 | • | 1.000 |
| EQU | e02_1 | • | -2.865E-6 | • | 1.000 |
| EQU | e02_2 | • | -4.126E-6 | • | 1.000 |
| EQU | e02_3 | • | -6.446E-6 | • | 1.000 |
| EQU | e02_4 | | -5.093E-6 | • | 1.000 |
| EQU | e02_5 | • | -3.410E-6 | • | 1.000 |
| EQU | e03_1 | • | -1.254E-6 | • | 0.900 |
| | e03_2 | • | -1.267E-6 | • | 1.000 |
| | e03_3 | • | -1.948E-7 | • | 0.900 |
| - | e03_4 | • | -1.564E-6 | • | 1.000 |
| - | e03_5 | • | -1.047E-6 | • | 1.000 |
| - | e04_1 | • | -1.657E-6 | • | 1.000 |
| | e04_2 | • | -7.213E-7 | • | 1.000 |
| | e04_3 | • | -1.127E-6 | • | 1.000 |
| | e04_4 | • | -8.905E-7 | • | 1.000 |
| | e04_5 | • | -1.972E-6 | • | 1.000 |
| _ | e05_1 | • | -3.914E-7 | • | 0.903 |
| - | e05_2 | • | -1.382E-6 | • | 1.000 |
| _ | e05_3 | • | -2.160E-6 | • | 1.000 |
| _ | e05_4 | • | -1.707E-6 | • | 1.000 |
| - | e05_5 | • | -4.658E-7 | • | 0.902 |
| _ | e06_1 | • | -2.039E-7 | • | 0.903 |
| | e06_2 | • | -1.417E-6 | • | 1.000 |
| | e06_3 | • | -2.215E-6 | • | 1.000 |
| | e06_4 | • | -1.750E-6 | • | 1.000 |
| _ | e06_5 | • | -2.427E-7 | • | 0.902 |
| | Equation3 | • | • | • | 1.000 |
| | Objective~ | • | • | | 1.000 |
| | eq1_1 | • | • | +INF | 3.087 |
| EQU | eq1_2 | • | • | +INF | 2.046 |

| EQU eq1_3 | • | • | +INF | 4.391 |
|---|--------|--|--|-----------------|
| EQU eq1_4 | • | • | +INF | 2.892 |
| EQU eq2_1 | | • | +INF | 0.806 |
| EQU eq2_2 | • | • | +INF | 0.094 |
| EQU eq2_3 | | • | +INF | 0.069 |
| EQU eq2_4 | | • | +INF | 0.039 |
| EQU eq3_1 | • | 0.016 | +INF | 6.199E-10 |
| EQU eq3_2 | | • | • | 1.473 |
| EQU eq3_3 | | | +INF | 0.807 |
| EQU eq3_4 | | 0.004 | +INF | 2.5858E-9 |
| EQU eq4_1 | | • | • | -0.377 |
| EQU eq4_2 | | 0.032 | +INF | 3.116E-10 |
| EQU eq4_3 | | • | • | -1.148 |
| EQU eq4_4 | • | | • | 0.183 |
| EQU eq5_1 | • | • | +INF | 1.3148E-5 |
| EQU eq5_2 | • | 0.001 | +INF | 8.0961E-9 |
| EQU eq5_3 | • | | +INF | 1.158 |
| EQU eq5_4 | • | • | +INF | 0.097 |
| EQU eq6_1 | • | • | +INF | 1.3053E-5 |
| EQU eq6_2 | • | 0.001 | +INF | 8.0960E-9 |
| EQU eq6_3 | • | | +INF | 1.158 |
| EQU eq6_3 | • | • | | 0.097 |
| | • | • | +INF +INF | 2.681 |
| - 6 1 | • | • | | 4.758 |
| EQU eq2 | • | • | +INF | |
| | | | | |
| EQU eq3 | • | • | +INF | 10.472 |
| EQU eq3 EQU eq4 | • | • | +INF | 3.269 |
| | I OWER | · · | +INF | 3.269 |
| | LOWER | LEVEL | | |
| EQU eq4 | | | +INF UPPER | 3.269 |
| EQU eq4 VAR Z | LOWER | 0.369 | +INF UPPER +INF | 3.269 |
| EQU eq4 VAR Z VAR a1 | | 0.369 0.240 | +INF UPPER +INF +INF | 3.269 |
| EQU eq4 VAR Z VAR a1 VAR a2 | | 0.369 0.240 0.200 | +INF UPPER +INF +INF +INF | 3.269 |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 | | 0.369 0.240 0.200 0.160 | +INF UPPER +INF +INF +INF +INF | 3.269 |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 | | 0.369 0.240 0.200 0.160 0.180 | +INF UPPER +INF +INF +INF +INF +INF | 3.269 |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 | +INF UPPER +INF +INF +INF +INF +INF +INF | 3.269 |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR ee | | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 | +INF UPPER +INF +INF +INF +INF +INF +INF | 3.269 |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR ee VAR X1_1 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF | 3.269 |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR ee VAR X1_1 VAR X1_2 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +INF | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR ee VAR X1_1 VAR X1_2 VAR X1_3 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 1.188 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR ee VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 1.188 1.278 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR x1_1 VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 VAR X1_5 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 1.188 1.278 0.682 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 VAR X2_1 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 1.188 1.278 0.682 0.915 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 VAR X1_5 VAR X2_1 VAR X2_1 VAR X2_1 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 1.188 1.278 0.682 0.915 0.998 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 VAR X1_5 VAR X2_1 VAR X2_1 VAR X2_1 VAR X2_2 VAR X2_3 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.875 0.851 1.188 1.278 0.682 0.915 0.998 0.997 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 VAR X1_5 VAR X2_1 VAR X2_1 VAR X2_1 VAR X2_2 VAR X2_3 VAR X2_4 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.875 0.851 1.188 1.278 0.682 0.915 0.998 0.997 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 VAR X1_5 VAR X2_1 VAR X2_1 VAR X2_1 VAR X2_2 VAR X2_3 VAR X2_4 VAR X2_5 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 1.188 1.278 0.682 0.915 0.998 0.997 0.998 1.089 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 VAR X1_5 VAR X2_1 VAR X2_1 VAR X2_1 VAR X2_2 VAR X2_3 VAR X2_4 VAR X3_1 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 1.188 1.278 0.682 0.915 0.998 0.997 0.998 1.089 0.999 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |
| EQU eq4 VAR Z VAR a1 VAR a2 VAR a3 VAR a4 VAR a5 VAR X1_1 VAR X1_2 VAR X1_3 VAR X1_4 VAR X1_5 VAR X2_1 VAR X2_1 VAR X2_1 VAR X2_2 VAR X2_3 VAR X2_4 VAR X2_5 | -INF | 0.369 0.240 0.200 0.160 0.180 0.220 0.020 0.875 0.851 1.188 1.278 0.682 0.915 0.998 0.997 0.998 1.089 | +INF UPPER +INF +INF +INF +INF +INF +INF +INF +IN | 3.269 MARGINAL |

| • | | | | |
|-----------------------|---|-----------|------|-----------|
| VAR X3_4 | • | 1.131 | +INF | -2.30E-12 |
| VAR X3_5 | • | 0.926 | +INF | -1.88E-12 |
| VAR X4_1 | • | 0.954 | +INF | -1.43E-12 |
| VAR X4_2 | | 0.885 | +INF | -1.04E-12 |
| VAR X4_3 | • | 1.106 | +INF | -1.30E-12 |
| VAR X4_4 | | 0.983 | +INF | -1.16E-12 |
| VAR X4_5 | | 1.041 | +INF | -1.56E-12 |
| VAR X5_1 | | 0.999 | +INF | -9.119E-9 |
| VAR X5_2 | • | 0.893 | +INF | -2.01E-12 |
| VAR X5_3 | | 0.991 | +INF | -2.51E-12 |
| VAR X5_4 | | 1.103 | +INF | -2.23E-12 |
| VAR X5_5 | | 0.999 | +INF | 5.466E-11 |
| VAR X6 1 | • | 1.000 | +INF | • |
| VAR X6 2 | • | 0.894 | +INF | 1.304E-12 |
| VAR X6_3 | • | 0.993 | +INF | 1.630E-12 |
| VAR X6 4 | | 1.105 | +INF | 1.449E-12 |
| VAR X6 5 | • | 1.000 | +INF | |
| VAR t1 <u></u> 1 | • | 0.016 | +INF | 5.406E-10 |
| VAR t1 2 | | 0.022 | +INF | 3.448E-10 |
| VAR t1 ⁻ 3 | • | 0.035 | +INF | 1.844E-10 |
| VAR t1 4 | • | 0.077 | +INF | 2.979E-11 |
| VAR t1 5 | • | 0.101 | +INF | • |
| VAR t2 <u>_</u> 1 | • | 0.007 | +INF | 1.2710E-9 |
| VAR t2 <u>_</u> 2 | • | • | +INF | 1.6229E-6 |
| VAR t2 3 | • | • | +INF | 1.0386E-6 |
| VAR t2 4 | • | • | +INF | 1.3145E-6 |
| VAR t2 5 | • | 0.008 | +INF | 1.1725E-9 |
| VAR t3 1 | • | • | +INF | 0.100 |
| VAR t3 2 | • | 0.007 | +INF | 1.4370E-9 |
| VAR t3 <u></u> 3 | • | • | +INF | 0.100 |
| VAR t3 4 | • | 0.017 | +INF | 4.685E-10 |
| VAR t3 5 | • | 0.006 | +INF | 1.7598E-9 |
| VAR t4 <u>_</u> 1 | • | 0.002 | +INF | 4.7768E-9 |
| VAR t4 <u>_</u> 2 | • | 0.013 | +INF | 6.587E-10 |
| VAR t4 3 | • | 0.011 | +INF | 7.818E-10 |
| VAR t4 4 | • | 2.8942E-4 | +INF | 3.6809E-8 |
| VAR t4_5 | • | 0.002 | +INF | 5.7037E-9 |
| VAR t5 <u></u> 1 | • | • | +INF | 0.097 |
| VAR t5 <u></u> 2 | | 0.011 | +INF | 7.872E-10 |
| VAR t5 <u></u> 3 | • | 7.8429E-5 | +INF | 1.6760E-7 |
| VAR t5 <u></u> 4 | | 0.011 | +INF | 8.199E-10 |
| VAR t5 <u></u> 5 | • | • | +INF | 0.098 |
| VAR t6 <u></u> 1 | • | • | +INF | 0.097 |
| VAR t6 <u></u> 2 | • | 0.011 | +INF | 7.869E-10 |
| VAR t6 <u></u> 3 | • | 4.5492E-5 | +INF | 1.6760E-7 |
| VAR t6 <u></u> 4 | • | 0.011 | +INF | 8.203E-10 |
| VAR t6 <u></u> 5 | • | • | +INF | 0.098 |
| VAR tt | • | 0.369 | +INF | • |
| | | | | |

**** REPORT SUMMARY: 0 NONOPT

0 INFEASIBLE

0 UNBOUNDED

Ø ERRORS

EXECUTION TIME = 1.805 SECONDS 3 MB 41.4.0 caab8bc0 LEX-LEG

USER: NEOS Server License prod-exec-1.neos-server.orgS221207/0001AB-GEN mac@44:a8:42:25:df:6c DCE1890

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**** FILE SUMMARY

Input /var/lib/condor/execute/dir_49173/gamsexec/MODEL.gms
Output /var/lib/condor/execute/dir_49173/gamsexec/solve.lst

