

Table 1: Result of SimExact x SimLNS x SimSA-Expected

Inst	n	δ	SimExact		SimLNS		SimSA-Expected						GAP $_{c \times a}$	GAP $_{c \times b}$
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
1	25	0.1	5.92	259.05	4.60	40.71	0.48	4.06	7102.07	20.96	356	3284	-31.47%	-11.73%
2	25	0.1	6.31	244.85	6.10	22.33	1.94	4.51	5939.47	9.92	331	3036	-28.58%	-26.11%
3	25	0.1	13.15	178.94	6.79	18.58	0.85	6.31	7545.39	13.77	383	3907	-52.00%	-7.09%
4	25	0.1	5.39	472.48	5.11	22.43	1.25	4.52	7252.56	10.65	315	3158	-16.15%	-11.50%
5	25	0.1	5.54	342.72	5.56	18.40	1.00	4.60	6888.01	10.01	372	3164	-16.92%	-17.18%
6	25	0.1	8.45	304.41	6.40	23.32	1.83	5.67	6922.39	11.54	395	3456	-32.97%	-11.41%
7	25	0.1	6.06	4480.63	5.21	21.86	0.24	4.54	7177.95	10.39	360	3182	-25.13%	-12.90%
8	25	0.1	5.57	482.83	5.35	20.10	1.10	3.75	7241.06	11.75	404	3252	-32.65%	-29.93%
9	25	0.1	10.80	446.01	4.39	19.35	0.72	3.94	8080.87	12.01	395	3511	-63.52%	-10.34%
10	25	0.1	17.17	347.60	8.46	22.48	1.75	6.88	7237.06	12.32	363	3492	-59.90%	-18.62%
11	25	0.1	11.24	470.55	5.55	18.95	1.83	4.30	7553.65	12.05	378	3518	-61.70%	-22.39%
12	25	0.1	14.67	226.53	3.67	21.40	0.04	3.39	7342.02	11.21	348	3383	-76.87%	-7.64%
13	25	0.1	19.05	363.98	3.83	19.14	1.28	4.15	5589.76	9.83	334	2727	-78.23%	8.13%
14	25	0.1	8.77	440.17	8.39	21.88	3.97	7.67	4325.90	12.05	404	3332	-12.55%	-8.59%
15	25	0.1	6.16	332.77	6.21	20.16	1.87	5.42	5907.33	10.03	286	2925	-11.94%	-12.63%
16	25	0.1	6.92	496.11	6.55	21.34	2.37	5.63	5298.78	11.19	386	3358	-18.67%	-14.06%
17	25	0.1	11.53	317.91	7.03	18.29	1.44	4.66	6712.14	9.64	337	3038	-59.57%	-33.67%
18	25	0.1	21.82	286.41	6.46	20.62	1.56	5.48	6401.88	12.43	396	3360	-74.88%	-15.17%
19	25	0.1	5.55	311.76	5.21	20.66	1.24	5.02	6816.13	10.72	400	3318	-9.67%	-3.68%
20	25	0.1	5.28	468.68	5.55	19.70	0.08	4.83	7629.32	10.91	370	3115	-8.68%	-13.08%
21	25	0.1	14.17	4484.27	3.84	20.19	0.59	3.74	7425.17	10.05	314	2973	-73.61%	-2.56%
22	25	0.1	9.58	392.43	8.84	25.52	4.15	8.26	4858.56	14.57	458	4473	-13.76%	-6.54%
23	25	0.1	5.25	413.26	5.74	19.79	0.93	4.22	6405.36	10.60	350	3139	-19.64%	-26.52%
24	25	0.1	10.31	254.44	5.50	20.35	1.20	4.06	6884.00	10.09	361	2939	-60.58%	-26.05%
25	25	0.1	4.69	459.73	4.28	20.18	0.48	4.42	7211.81	10.45	374	3018	-5.66%	3.28%
26	25	0.5	10.49	311.55	8.67	130.46	0.30	8.16	15599.43	116.01	1660	14654	-22.23%	-5.92%
27	25	0.5	11.40	313.30	11.73	101.69	1.52	9.01	14259.90	110.57	1798	16077	-20.96%	-23.16%
28	25	0.5	16.46	221.73	11.82	45.45	1.99	10.67	15800.84	147.27	1837	15804	-35.17%	-9.74%
29	25	0.5	9.59	536.15	9.10	97.79	1.25	7.78	16300.85	103.40	1588	14998	-18.95%	-14.52%
30	25	0.5	10.37	414.90	9.83	42.11	1.07	8.67	15308.13	94.56	1658	14477	-16.47%	-11.80%
31	25	0.5	13.38	387.04	10.66	121.02	1.95	10.41	15281.97	120.73	1708	15420	-22.17%	-2.32%
32	25	0.5	9.61	4546.77	9.70	82.59	0.41	8.68	15889.20	98.48	1680	14423	-9.70%	-10.60%
33	25	0.5	9.54	551.90	9.57	99.54	0.98	7.80	16647.08	117.76	1713	15914	-18.22%	-18.47%
34	25	0.5	12.86	434.33	8.43	86.31	0.04	8.30	17402.31	100.54	1591	14989	-35.46%	-1.60%
35	25	0.5	18.23	393.82	12.93	107.01	1.57	11.40	15989.48	123.68	1835	15681	-37.45%	-11.80%
36	25	0.5	13.84	528.79	10.32	42.84	1.66	8.53	16257.61	117.09	1633	15046	-38.37%	-17.36%
37	25	0.5	15.93	265.28	7.81	104.50	0.01	7.31	15998.93	99.84	1582	14908	-54.13%	-6.45%
38	25	0.5	20.55	407.64	9.43	89.09	1.10	8.69	13538.96	101.58	1682	14678	-57.74%	-7.94%
39	25	0.5	15.13	567.28	16.02	147.58	4.22	13.79	10820.89	172.69	2192	18656	-8.87%	-13.91%
40	25	0.5	11.31	406.68	10.49	85.76	1.91	9.95	13953.06	115.94	1652	14994	-12.02%	-5.11%
41	25	0.5	13.11	583.49	11.58	136.67	2.07	11.33	12639.39	130.07	1913	17192	-13.60%	-2.18%
42	25	0.5	13.87	364.33	10.67	64.93	1.50	9.20	15422.91	97.94	1604	14725	-33.64%	-13.73%
43	25	0.5	21.95	321.92	11.40	94.75	1.66	9.94	14463.78	125.12	1734	15778	-54.71%	-12.81%
44	25	0.5	10.50	380.80	10.25	93.82	1.39	9.78	15485.53	112.98	1761	15667	-6.85%	-4.62%
45	25	0.5	9.56	534.74	9.28	62.76	0.85	8.36	16728.47	100.41	1514	14008	-12.54%	-9.94%
46	25	0.5	15.89	4520.87	8.80	106.48	0.87	8.21	16827.63	97.21	1653	14024	-48.29%	-6.65%
47	25	0.5	15.62	519.14	15.05	149.34	4.14	14.39	11039.28	198.90	2347	20673	-7.88%	-4.39%
48	25	0.5	9.74	482.05	9.43	97.21	0.94	8.07	14425.45	103.00	1672	14801	-17.13%	-14.40%
49	25	0.5	13.74	311.20	9.93	105.31	1.40	8.19	15947.46	97.70	1647	14583	-40.37%	-17.49%
50	25	0.5	9.13	526.07	9.05	61.53	0.56	8.29	16557.47	101.31	1612	14787	-9.17%	-8.41%
51	25	2.0	15.78	1107.83	14.70	1261.57	0.10	13.54	29490.12	1178.34	5490	47516	-14.17%	-7.85%
52	25	2.0	18.15	1308.60	18.36	1501.44	2.17	16.16	27392.86	1468.68	6016	52276	-10.98%	-12.00%
53	25	2.0	21.26	936.16	17.43	324.66	0.74	16.49	29715.13	1215.61	5622	50558	-22.43%	-5.41%
54	25	2.0	15.97	1417.75	15.57	1151.33	1.16	13.79	30877.84	1232.93	5316	48275	-13.67%	-11.43%
55	25	2.0	15.77	1361.00	15.56	754.55	1.18	14.77	29489.91	1138.47	5243	48157	-6.35%	-5.07%
56	25	2.0	19.09	1363.07	17.26	1187.01	2.12	15.97	29132.65	1364.20	5745	50864	-16.33%	-7.44%
57	25	2.0	15.27	5464.84	15.06	549.96	0.24	14.00	29789.02	1016.80	5053	46060	-8.26%	-7.03%
58	25	2.0	15.10	1488.45	15.98	997.01	1.10	13.79	31568.74	1341.03	5658	51406	-8.62%	-13.65%

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Table 1: Result of SimExact x SimLNS x SimSA-Expected (continued)

Inst	n	δ	SimExact		SimLNS		SimSA-Expected						GAP _{c × a}	GAP _{c × b}
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
59	25	2.0	17.01	1070.69	14.76	671.36	0.60	14.64	33058.67	1185.39	5331	48268	-13.92%	-0.78%
60	25	2.0	21.10	1089.17	18.40	927.62	1.89	16.53	29613.40	1275.71	5273	49154	-21.65%	-10.15%
61	25	2.0	18.96	1332.26	15.99	324.86	1.63	14.82	31154.29	1287.08	5613	49364	-21.87%	-7.32%
62	25	2.0	20.29	964.11	13.96	1021.84	0.43	13.44	31222.12	1343.28	5757	50759	-33.77%	-3.73%
63	25	2.0	23.53	1045.22	16.11	947.62	2.57	14.66	26760.72	1359.40	5542	51559	-37.68%	-8.98%
64	25	2.0	24.94	2775.06	25.54	2247.97	3.97	24.64	22799.31	2522.62	7528	69025	-1.18%	-3.52%
65	25	2.0	18.45	1542.58	16.75	1440.63	3.46	16.94	27630.59	1432.66	5810	52003	-8.17%	1.13%
66	25	2.0	20.97	1995.46	19.61	1534.03	2.12	18.80	24784.78	1673.08	6716	58049	-10.32%	-4.09%
67	25	2.0	18.21	1122.74	15.96	295.00	2.21	15.64	29795.05	1273.08	5321	49003	-14.14%	-2.01%
68	25	2.0	24.85	970.54	17.45	991.95	1.56	16.89	28102.15	1446.32	5908	52714	-32.05%	-3.22%
69	25	2.0	17.32	1477.40	16.61	904.36	1.86	16.30	29493.71	1396.40	5473	50725	-5.90%	-1.85%
70	25	2.0	14.80	1391.97	14.49	254.87	0.20	13.87	31871.04	1066.71	5159	46044	-6.32%	-4.27%
71	25	2.0	19.82	5087.40	14.73	876.92	2.84	13.89	32498.46	1142.98	5285	47213	-29.91%	-5.66%
72	25	2.0	24.74	2597.16	25.38	2074.50	4.17	24.61	21931.47	2585.21	7718	68756	-0.55%	-3.05%
73	25	2.0	15.06	1447.12	15.22	709.03	1.61	14.05	27482.23	1172.74	5383	48232	-6.73%	-7.69%
74	25	2.0	18.34	1112.03	16.13	1103.17	1.20	14.50	31030.07	1139.07	5712	49294	-20.95%	-10.09%
75	25	2.0	15.22	1432.91	14.69	984.70	0.59	14.38	31101.34	1060.19	5209	46757	-5.51%	-2.10%
76*	50	0.1	7.96	4497.95	5.45	52.22	2.29	5.18	6110.29	16.39	361	3094	-34.89%	-4.90%
77*	50	0.1	6.37	4497.03	5.42	52.35	1.71	5.38	6723.48	16.67	335	3360	-15.48%	-0.72%
78*	50	0.1	5.28	4498.19	3.35	51.96	0.54	3.44	7398.84	19.47	356	3108	-34.73%	2.87%
79*	50	0.1	7.93	4497.70	5.20	52.12	2.42	5.24	5806.30	18.90	373	3223	-33.86%	0.76%
80*	50	0.1	4.11	4499.46	4.24	52.34	0.46	3.53	7117.64	16.44	275	2957	-14.23%	-16.69%
81*	50	0.1	5.77	4497.12	4.62	54.93	0.78	4.05	7041.56	18.56	367	3329	-29.87%	-12.31%
82*	50	0.1	4.69	4498.80	4.71	51.55	1.27	3.90	6493.04	16.52	341	3086	-16.68%	-17.14%
83*	50	0.1	4.67	4499.17	3.89	53.88	0.54	3.49	7046.26	17.51	363	3266	-25.23%	-10.28%
84*	50	0.1	6.08	4497.57	4.77	55.42	1.49	4.69	7111.73	18.13	370	3182	-22.76%	-1.70%
85*	50	0.1	9.64	4497.86	5.63	54.21	2.50	5.52	6037.71	17.70	387	3112	-42.73%	-1.87%
86*	50	0.1	5.37	4495.45	4.42	52.14	1.24	4.11	7355.65	15.88	349	3076	-23.43%	-6.95%
87*	50	0.1	8.01	4498.38	4.81	50.68	0.92	4.60	7191.78	16.15	355	3012	-42.51%	-4.18%
88*	50	0.1	8.33	4496.62	4.92	54.46	1.74	5.03	6882.33	17.79	335	3348	-39.64%	2.19%
89*	50	0.1	4.50	4499.43	4.95	52.86	1.08	4.48	7186.67	17.48	354	3061	-0.42%	-9.52%
90*	50	0.1	6.04	4498.84	5.61	51.72	1.95	5.64	6429.53	16.87	347	3209	-6.76%	0.46%
91*	50	0.1	8.34	4498.29	5.05	52.78	1.43	4.74	7173.04	17.33	371	3008	-43.09%	-6.05%
92*	50	0.1	7.46	4498.41	4.50	53.35	1.15	3.92	7095.65	18.63	409	3208	-47.41%	-12.70%
93*	50	0.1	6.33	4497.34	4.37	50.65	1.27	4.09	6981.69	16.94	343	2958	-35.42%	-6.38%
94*	50	0.1	5.70	4499.35	4.67	50.91	1.71	4.33	6008.95	15.28	330	2816	-23.98%	-7.09%
95*	50	0.1	4.82	4500.12	3.51	53.11	1.07	3.63	7635.55	17.69	337	3055	-24.60%	3.54%
96*	50	0.1	6.87	4501.01	5.08	52.43	2.13	5.02	6627.51	17.61	385	3408	-26.84%	-1.10%
97*	50	0.1	5.92	4498.81	4.74	52.12	1.93	4.51	6713.73	18.16	347	3039	-23.70%	-4.85%
98*	50	0.1	8.46	4498.98	1.23	54.01	-2.05	1.33	6191.12	16.59	354	3123	-84.34%	7.88%
99*	50	0.1	4.38	4484.08	4.41	53.15	1.59	4.28	6805.27	17.83	340	3038	-2.31%	-2.97%
100*	50	0.1	7.85	4484.72	4.68	54.69	0.80	4.16	7127.84	16.54	341	3284	-47.02%	-11.15%
101*	50	0.5	11.88	4573.64	9.87	70.86	2.08	9.90	13895.67	101.59	1549	14651	-16.70%	0.30%
102*	50	0.5	11.01	4586.62	10.35	128.64	1.70	9.71	15055.22	127.64	1692	15539	-11.84%	-6.20%
103*	50	0.5	9.65	4575.77	8.77	123.71	0.53	8.05	17169.35	123.35	1629	15334	-16.62%	-8.18%
104*	50	0.5	12.43	4578.43	10.64	135.75	2.40	10.47	13352.77	121.17	1750	15460	-15.77%	-1.62%
105*	50	0.5	9.04	4582.45	8.40	130.33	0.43	7.80	16441.04	103.07	1679	14545	-13.71%	-7.07%
106*	50	0.5	9.95	4573.84	8.66	147.84	0.70	8.44	15707.01	113.21	1734	15238	-15.14%	-2.47%
107*	50	0.5	9.23	4586.28	9.14	116.44	1.51	8.54	14707.87	107.21	1595	14505	-7.39%	-6.55%
108*	50	0.5	9.46	4584.96	9.16	123.70	0.83	8.16	15941.35	116.09	1752	15294	-13.74%	-10.89%
109*	50	0.5	10.07	4576.40	9.71	133.72	1.47	8.85	15896.54	106.09	1598	14698	-12.07%	-8.81%
110*	50	0.5	13.78	4578.49	10.97	171.87	2.26	10.89	14544.13	130.29	1815	16340	-20.96%	-0.72%
111*	50	0.5	9.84	4571.90	9.09	126.71	1.38	8.74	17036.93	114.15	1581	15116	-11.12%	-3.83%
112*	50	0.5	11.60	4569.20	9.28	144.44	1.01	9.09	16690.72	114.16	1728	14909	-21.60%	-2.09%
113*	50	0.5	12.10	4569.43	10.07	139.42	1.75	9.44	15331.16	116.59	1596	15296	-22.00%	-6.26%
114*	50	0.5	9.41	4586.62	9.32	141.68	1.02	9.24	16743.34	104.70	1673	15187	-1.79%	-0.91%
115*	50	0.5	11.04	4581.82	10.13	169.03	1.61	9.97	14749.66	122.27	1746	15577	-9.68%	-1.57%
116*	50	0.5	12.61	4576.76	9.94	160.97	1.41	9.64	16666.10	104.29	1580	14811	-23.53%	-3.03%

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Table 1: Result of SimExact x SimLNS x SimSA-Expected (continued)

Inst	n	δ	SimExact		SimLNS		SimSA-Expected						GAP $_{c \times a}$	GAP $_{c \times b}$
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
117*	50	0.5	12.20	4574.11	9.61	147.14	0.91	8.59	16481.43	117.28	1754	15843	-29.56%	-10.60%
118*	50	0.5	10.33	4579.04	9.01	120.20	1.26	9.13	16222.87	96.53	1737	14522	-11.65%	1.30%
119*	50	0.5	10.90	4587.51	9.44	138.14	1.49	9.05	14659.87	101.95	1620	15334	-16.91%	-4.08%
120*	50	0.5	9.48	4572.78	8.24	107.29	1.14	7.64	17340.55	115.11	1549	14602	-19.46%	-7.38%
121*	50	0.5	11.08	4590.81	10.20	74.68	1.83	9.80	14761.59	120.66	1692	15465	-11.60%	-3.94%
122*	50	0.5	10.26	4579.62	9.13	118.86	1.86	8.97	15347.49	111.98	1748	14601	-12.52%	-1.73%
123*	50	0.5	12.34	4573.25	5.80	156.08	-2.15	5.95	14537.92	123.67	1839	15744	-51.82%	2.48%
124*	50	0.5	9.33	4518.42	9.49	135.67	1.14	9.20	15855.74	117.50	1635	15029	-1.34%	-2.98%
125*	50	0.5	11.20	4512.43	8.63	140.61	0.77	8.57	15688.06	106.71	1666	14630	-23.49%	-0.73%
126*	50	2.0	18.33	5568.60	15.94	344.17	2.08	16.20	27237.63	1195.20	5524	50487	-11.66%	1.62%
127*	50	2.0	17.15	5720.70	16.90	1133.51	1.73	16.25	29070.78	1410.17	5656	51640	-5.26%	-3.87%
128*	50	2.0	15.74	5560.47	14.21	1030.01	0.46	14.17	32372.33	1227.95	5521	48821	-9.98%	-0.25%
129*	50	2.0	18.42	5642.49	17.05	1448.75	2.44	16.98	25605.60	1346.19	5629	50777	-7.83%	-0.41%
130*	50	2.0	14.20	5548.79	13.63	1014.64	0.43	13.27	31041.27	1062.99	5411	46959	-6.52%	-2.63%
131*	50	2.0	15.55	5546.15	14.58	1209.83	0.64	13.95	29332.70	1083.95	5271	48123	-10.31%	-4.29%
132*	50	2.0	15.36	5698.33	15.04	978.89	0.96	15.34	29090.48	1133.95	5818	50409	-0.12%	1.99%
133*	50	2.0	15.68	5752.30	15.05	1019.87	0.49	15.03	31164.55	1269.86	5688	51714	-4.14%	-0.16%
134*	50	2.0	15.50	5582.01	14.91	949.05	1.32	14.13	29924.39	1002.86	5187	47379	-8.88%	-5.28%
135*	50	2.0	19.86	5734.17	17.71	1324.28	2.23	17.41	27805.39	1442.77	5918	53292	-12.35%	-1.71%
136*	50	2.0	15.89	5524.11	14.38	963.47	1.22	14.03	31517.44	1012.98	5140	47042	-11.69%	-2.45%
137*	50	2.0	16.37	5523.06	14.75	945.04	0.97	14.86	31238.97	1050.88	5138	47105	-9.22%	0.79%
138*	50	2.0	18.03	5642.95	16.19	1010.33	1.67	15.92	29625.04	1336.60	5979	50975	-11.72%	-1.70%
139*	50	2.0	15.68	5646.83	15.36	990.48	1.00	15.18	31397.60	1057.83	5281	48028	-3.17%	-1.17%
140*	50	2.0	17.56	5768.14	16.96	811.75	1.68	16.40	28076.93	1319.09	5820	50503	-6.58%	-3.30%
141*	50	2.0	18.22	5551.85	16.05	1105.83	2.20	15.56	32115.65	1284.29	5463	49505	-14.61%	-3.08%
142*	50	2.0	18.29	5668.47	15.59	1350.15	1.12	15.32	31305.68	1284.55	5916	50767	-16.21%	-1.72%
143*	50	2.0	16.43	5636.68	15.18	1350.39	1.23	15.29	31364.94	1125.83	5459	48625	-6.93%	0.75%
144*	50	2.0	17.24	5825.90	16.52	1257.56	1.79	16.71	29063.99	1319.58	5840	52645	-3.06%	1.12%
145*	50	2.0	14.54	5425.86	13.61	1030.35	0.64	13.62	32992.83	1037.88	5334	47434	-6.35%	0.04%
146*	50	2.0	17.59	5769.41	17.36	1166.79	1.80	16.28	28499.56	1343.86	5532	51435	-7.46%	-6.20%
147*	50	2.0	16.50	5628.70	15.63	1332.78	1.90	15.02	29834.32	1251.08	5710	49522	-8.98%	-3.92%
148*	50	2.0	17.58	4970.25	12.44	1468.55	-2.20	12.86	28202.67	1308.88	5696	52236	-26.83%	3.41%
149*	50	2.0	15.55	4810.62	15.43	1006.34	1.08	14.65	30284.55	1171.41	5240	49732	-5.75%	-5.02%
150*	50	2.0	16.38	4757.95	14.66	1060.32	0.77	14.07	29721.69	1099.47	5192	47564	-14.09%	-3.97%
151*	75	0.1	7.13	4494.21	4.15	102.68	1.62	4.58	6805.65	23.92	358	2899	-35.77%	10.27%
152*	75	0.1	5.93	4489.05	4.44	108.26	1.78	4.13	6154.95	29.94	353	3053	-30.32%	-6.99%
153*	75	0.1	4.92	4491.80	5.14	110.19	1.04	4.32	6547.61	25.09	318	3207	-12.08%	-15.93%
154*	75	0.1	5.39	4490.85	2.90	104.99	-0.29	2.78	6639.68	24.87	361	3085	-48.47%	-4.07%
155*	75	0.1	4.71	4492.05	4.17	103.96	1.64	4.42	6748.29	26.47	361	3073	-6.02%	6.08%
156*	75	0.1	4.18	4491.46	3.63	105.01	0.83	3.36	6753.81	24.80	301	3060	-19.61%	-7.64%
157*	75	0.1	8.87	4490.76	4.19	105.91	1.65	4.05	6603.60	25.79	290	3117	-54.37%	-3.44%
158*	75	0.1	5.21	4491.67	4.32	102.00	1.38	4.39	6146.28	24.52	286	2977	-15.69%	1.69%
159*	75	0.1	6.20	4491.79	4.14	105.97	1.57	4.30	7183.17	26.28	344	3054	-30.62%	3.99%
160*	75	0.1	6.14	4491.94	5.16	121.20	2.09	4.81	6295.31	25.20	342	3110	-21.64%	-6.71%
161*	75	0.1	5.59	4489.75	5.12	107.07	1.45	4.83	6098.19	25.76	356	3161	-13.60%	-5.66%
162*	75	0.1	7.84	4491.53	3.94	94.15	1.13	3.86	6843.69	24.50	338	3101	-50.79%	-1.95%
163*	75	0.1	4.91	4489.80	4.03	104.12	0.58	3.45	6746.83	26.25	354	2916	-29.76%	-14.37%
164*	75	0.1	5.68	4491.98	4.18	102.57	1.02	4.34	6617.61	24.52	293	2953	-23.55%	3.94%
165*	75	0.1	5.90	4492.03	5.69	99.83	2.07	5.41	6295.66	25.64	372	3189	-8.21%	-4.83%
166*	75	0.1	6.44	4490.98	4.78	102.81	1.26	4.54	6813.70	25.03	320	3035	-29.46%	-4.97%
167*	75	0.1	5.16	4492.46	5.74	102.97	1.80	5.10	6562.25	26.41	340	3007	-1.18%	-11.23%
168*	75	0.1	4.97	4493.10	4.80	104.71	2.10	4.94	6416.31	25.56	361	3041	-0.56%	3.01%
169*	75	0.1	9.74	4491.09	3.72	104.18	1.18	3.56	6703.20	25.89	328	3191	-63.48%	-4.53%
170*	75	0.1	8.15	4492.54	5.06	103.93	2.15	5.01	6734.70	26.68	373	3204	-38.44%	-0.82%
171*	75	0.1	5.89	4492.77	4.84	104.72	2.17	5.04	6939.51	26.02	355	3304	-14.35%	4.18%
172*	75	0.1	5.16	4489.54	4.50	101.50	1.40	4.10	7213.08	25.43	367	3086	-20.62%	-8.90%
173*	75	0.1	5.54	4492.95	5.08	105.20	2.25	4.58	6345.00	23.96	319	2951	-17.34%	-9.89%
174*	75	0.1	5.22	4491.81	4.74	101.15	0.99	4.07	7426.99	27.75	375	3274	-22.06%	-14.18%

Continued on the next page

Table 1: Result of SimExact x SimLNS x SimSA-Expected (continued)

Inst	n	δ	SimExact		SimLNS		SimSA-Expected						GAP $_{c \times a}$	GAP $_{c \times b}$
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
175*	75	0.1	5.13	4490.49	5.05	103.70	1.54	4.65	6220.96	25.69	410	3345	-9.30%	-7.91%
176*	75	0.5	10.87	4522.78	9.25	191.70	1.67	9.08	15841.99	117.11	1539	14430	-16.47%	-1.90%
177*	75	0.5	10.88	4526.83	9.64	192.37	1.52	9.09	14759.30	154.96	1852	15986	-16.42%	-5.63%
178*	75	0.5	10.00	4534.28	10.06	198.07	1.37	9.07	15227.23	149.63	1830	15862	-9.34%	-9.90%
179*	75	0.5	9.47	4529.26	7.28	208.95	-0.27	7.29	15260.99	113.26	1690	14950	-23.05%	0.15%
180*	75	0.5	8.94	4535.02	8.83	184.52	1.60	8.47	15325.89	130.91	1655	14677	-5.22%	-4.09%
181*	75	0.5	9.25	4533.80	8.93	190.17	0.88	8.32	15806.77	138.39	1818	15254	-10.09%	-6.84%
182*	75	0.5	12.71	4526.85	8.98	192.91	1.41	8.89	15304.54	135.89	1680	15279	-30.04%	-0.95%
183*	75	0.5	9.99	4533.23	8.86	174.31	1.42	8.75	14186.68	117.95	1648	14611	-12.41%	-1.30%
184*	75	0.5	10.60	4530.61	8.87	173.95	1.44	8.82	16631.36	133.21	1779	15028	-16.83%	-0.55%
185*	75	0.5	10.74	4532.65	9.60	740.27	2.11	9.29	14507.57	124.16	1614	15179	-13.49%	-3.16%
186*	75	0.5	10.77	4538.02	10.10	189.82	1.55	9.80	14318.89	150.40	1770	15878	-9.02%	-3.04%
187*	75	0.5	11.78	4536.46	8.92	124.30	0.99	8.26	15805.22	122.57	1714	15212	-29.93%	-7.47%
188*	75	0.5	9.18	4528.64	8.30	204.66	0.53	7.89	15886.69	114.62	1563	14850	-14.05%	-4.95%
189*	75	0.5	10.37	4533.40	9.11	176.48	0.96	8.61	15395.24	116.00	1561	14738	-16.95%	-5.39%
190*	75	0.5	10.27	4535.88	10.36	186.49	2.47	9.79	14096.52	129.26	1604	14730	-4.65%	-5.51%
191*	75	0.5	10.72	4529.91	9.08	168.81	1.33	9.20	15917.41	125.99	1790	15174	-14.15%	1.36%
192*	75	0.5	10.35	4536.05	10.14	184.22	1.82	10.31	15788.17	146.25	1839	15793	-0.41%	1.65%
193*	75	0.5	9.84	4534.42	9.99	191.15	2.17	9.45	14897.47	124.15	1557	15063	-3.90%	-5.36%
194*	75	0.5	13.33	4530.29	8.67	229.53	1.19	8.25	15543.27	137.20	1745	15693	-38.13%	-4.89%
195*	75	0.5	12.32	4535.54	10.02	200.48	1.87	10.14	15654.42	142.42	1745	15733	-17.66%	1.25%
196*	75	0.5	9.92	4537.22	10.06	189.56	1.94	9.57	15454.12	113.56	1560	15050	-3.48%	-4.89%
197*	75	0.5	9.46	4531.54	8.91	208.88	1.48	9.44	16705.02	130.94	1709	14971	-0.20%	5.95%
198*	75	0.5	10.79	4539.02	9.52	187.59	2.01	9.79	15145.74	116.43	1591	15245	-9.24%	2.88%
199*	75	0.5	9.26	4533.15	8.84	136.67	0.97	8.38	16311.96	116.32	1607	14552	-9.53%	-5.19%
200*	75	0.5	10.59	4534.14	10.18	196.52	1.29	9.77	14192.04	171.97	1687	15816	-7.74%	-3.98%
201*	75	2.0	16.60	4773.49	14.92	1340.98	1.60	14.49	30446.60	1197.05	5339	48379	-12.75%	-2.90%
202*	75	2.0	17.70	4827.19	16.21	1611.13	1.74	16.56	28780.21	1668.20	6053	53260	-6.42%	2.16%
203*	75	2.0	16.26	4898.71	16.05	1155.02	1.09	15.68	29167.57	1418.58	5529	51772	-3.59%	-2.32%
204*	75	2.0	15.12	4811.57	12.82	998.82	-0.26	13.07	29067.03	1207.70	5488	48824	-13.53%	1.96%
205*	75	2.0	14.98	4857.72	15.26	1507.89	1.57	14.87	29779.58	1303.72	5852	49410	-0.76%	-2.55%
206*	75	2.0	15.45	4840.08	14.39	1056.20	0.87	14.60	30196.83	1256.07	5430	49726	-5.46%	1.45%
207*	75	2.0	17.71	4808.45	14.68	1055.80	1.23	15.39	29310.60	1199.74	5602	49908	-13.15%	4.79%
208*	75	2.0	15.21	4824.77	14.72	1021.69	1.48	14.53	27305.12	1248.24	5226	48790	-4.51%	-1.32%
209*	75	2.0	15.53	4789.65	14.02	1086.37	1.46	14.29	31218.75	1214.26	5270	48000	-8.00%	1.88%
210*	75	2.0	17.05	4850.71	15.60	1129.00	2.10	15.46	28160.98	1315.08	5613	51291	-9.33%	-0.93%
211*	75	2.0	16.67	4929.55	16.46	1299.38	1.48	16.23	27420.61	1471.81	5928	51989	-2.65%	-1.40%
212*	75	2.0	17.50	4836.51	15.19	431.83	1.14	14.98	30727.36	1361.03	5721	51026	-14.36%	-1.39%
213*	75	2.0	14.75	4828.50	14.10	1421.86	0.94	14.03	30621.46	1242.87	5355	49387	-4.85%	-0.46%
214*	75	2.0	15.43	4823.23	14.77	967.92	0.96	14.75	29322.09	1238.14	5324	47890	-4.37%	-0.12%
215*	75	2.0	16.24	4863.72	16.27	1017.71	2.17	15.80	27278.01	1255.99	5643	49577	-2.70%	-2.89%
216*	75	2.0	15.94	4813.42	15.27	985.17	1.34	15.10	30117.23	1255.14	5521	48892	-5.26%	-1.11%
217*	75	2.0	16.10	4853.00	16.25	773.53	1.78	15.90	29324.58	1268.04	5382	49354	-1.25%	-2.20%
218*	75	2.0	15.64	4829.50	15.19	974.62	2.09	14.91	28218.36	1275.06	5515	49029	-4.66%	-1.86%
219*	75	2.0	18.44	4831.48	14.93	1244.41	1.20	14.72	29800.10	1352.84	5500	51403	-20.20%	-1.42%
220*	75	2.0	17.80	4850.26	16.32	1089.57	1.91	16.15	29675.76	1288.75	5842	50907	-9.29%	-1.06%
221*	75	2.0	15.78	4850.31	15.59	1231.72	1.93	15.65	29473.52	1176.25	5363	49129	-0.82%	0.38%
222*	75	2.0	15.21	4834.34	14.55	1432.08	1.42	14.72	31363.94	1169.17	5368	48021	-3.24%	1.18%
223*	75	2.0	16.78	4900.25	16.21	1090.43	2.29	16.23	29458.09	1515.05	6003	51497	-3.26%	0.15%
224*	75	2.0	14.87	4836.64	14.50	495.43	1.04	13.73	31360.51	1468.81	5136	48840	-7.69%	-5.30%
225*	75	2.0	17.51	4882.21	16.80	833.55	1.54	16.63	27994.18	1789.45	5908	54528	-5.06%	-1.04%
226*	100	0.1	5.74	4495.50	4.97	171.90	2.41	5.12	6235.27	33.56	352	3044	-10.74%	3.02%
227*	100	0.1	6.12	4495.67	4.91	168.47	2.07	4.76	6312.53	36.76	335	2941	-22.23%	-3.22%
228*	100	0.1	6.95	4497.49	3.81	167.87	1.17	3.92	6222.68	33.24	291	2880	-43.67%	2.85%
229*	100	0.1	5.06	4497.65	4.72	167.93	2.15	4.78	6532.14	34.37	329	2883	-5.52%	1.33%
230*	100	0.1	5.20	4498.39	4.77	169.50	1.85	4.32	7132.65	34.54	280	2982	-16.91%	-9.42%
231*	100	0.1	6.30	4496.17	3.75	170.88	0.92	3.85	6642.69	33.60	334	3122	-38.91%	2.68%
232*	100	0.1	5.22	4499.04	5.08	170.03	2.15	5.07	6843.20	35.55	301	3337	-2.87%	-0.21%

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Table 1: Result of SimExact x SimLNS x SimSA-Expected (continued)

Inst	n	δ	SimExact		SimLNS		SimSA-Expected						$GAP_{c \times a}$	$GAP_{c \times b}$
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
233*	100	0.1	4.74	4498.73	4.56	168.09	1.99	4.47	6925.00	36.72	335	3209	-5.51%	-1.94%
234*	100	0.1	5.13	4499.01	4.80	168.11	2.08	4.78	6971.55	34.06	318	3156	-6.88%	-0.53%
235*	100	0.1	4.52	4499.03	4.11	168.03	1.83	4.14	6685.98	38.55	320	2884	-8.46%	0.58%
236*	100	0.1	4.77	4497.94	4.03	168.85	1.02	3.93	6141.13	35.03	343	3074	-17.57%	-2.28%
237*	100	0.1	4.94	4497.56	4.21	177.69	1.20	3.74	6843.57	36.09	277	2941	-24.29%	-11.07%
238*	100	0.1	6.94	4499.76	5.07	179.93	1.70	4.85	6942.55	34.79	323	3193	-30.09%	-4.27%
239*	100	0.1	5.15	4497.47	4.88	165.37	1.96	5.11	6965.22	34.18	334	3109	-0.90%	4.63%
240*	100	0.1	4.77	4497.40	4.71	163.89	1.86	4.47	6570.58	33.55	336	3011	-6.15%	-5.13%
241*	100	0.1	5.59	4495.84	5.42	178.96	2.36	5.33	6011.81	33.89	333	2874	-4.64%	-1.67%
242*	100	0.1	6.54	4497.84	4.71	175.13	1.54	4.54	6566.60	34.17	346	3187	-30.57%	-3.64%
243*	100	0.1	5.87	4498.30	4.81	165.62	2.15	4.96	6827.27	34.79	397	3164	-15.62%	2.95%
244*	100	0.1	5.46	4498.14	5.24	171.13	2.41	5.41	6692.66	33.49	361	3035	-0.99%	3.21%
245*	100	0.1	5.17	4497.42	4.74	166.15	1.62	4.59	6368.59	34.45	340	3086	-11.34%	-3.31%
246*	100	0.1	5.46	4498.07	5.23	168.14	2.22	5.01	6357.15	34.65	325	3096	-8.31%	-4.22%
247*	100	0.1	4.99	4496.82	3.93	168.20	1.40	3.90	6699.60	32.94	315	2882	-21.76%	-0.61%
248*	100	0.1	5.90	4497.84	5.49	178.12	1.87	5.20	6576.09	34.72	374	3309	-11.85%	-5.24%
249*	100	0.1	4.63	4497.10	3.77	166.13	1.50	3.75	7312.21	34.77	301	3177	-19.02%	-0.57%
250*	100	0.1	5.24	4496.38	4.70	169.76	1.75	4.65	6839.37	34.35	281	2976	-11.13%	-0.91%
251*	100	0.5	10.86	4548.04	10.63	277.80	2.46	10.34	14961.13	151.31	1753	15901	-4.75%	-2.73%
252*	100	0.5	10.59	4546.62	10.15	248.24	2.09	8.84	14716.99	144.20	1662	14797	-16.57%	-12.96%
253*	100	0.5	11.40	4542.60	8.33	244.41	1.28	8.11	14618.82	145.34	1580	14673	-28.82%	-2.58%
254*	100	0.5	9.75	4549.14	9.53	245.72	2.11	9.38	15577.31	112.90	1617	15036	-3.74%	-1.57%
255*	100	0.5	9.99	4548.76	9.16	278.28	1.81	8.94	16647.26	144.32	1637	14890	-10.53%	-2.40%
256*	100	0.5	10.44	4546.30	8.36	244.75	0.96	8.62	15597.46	154.07	1779	15730	-17.45%	3.08%
257*	100	0.5	10.52	4554.62	9.97	295.49	1.84	10.06	15443.43	160.09	1611	15482	-4.39%	0.90%
258*	100	0.5	9.42	4551.08	9.30	264.49	1.97	9.27	15851.37	177.20	1812	15362	-1.53%	-0.30%
259*	100	0.5	10.26	4553.64	9.91	273.09	2.05	9.37	15942.03	151.43	1737	15137	-8.67%	-5.46%
260*	100	0.5	9.38	4553.91	9.24	285.92	1.80	8.77	15877.15	192.62	1640	14895	-6.42%	-5.01%
261*	100	0.5	10.29	4548.92	9.37	282.17	0.89	9.40	15006.84	195.67	1847	16562	-8.63%	0.32%
262*	100	0.5	9.23	4549.31	9.03	247.09	1.21	9.05	16398.24	191.29	1633	15269	-2.01%	0.15%
263*	100	0.5	12.01	4551.98	9.96	258.41	1.87	9.74	16176.43	166.83	1721	15812	-18.87%	-2.19%
264*	100	0.5	9.96	4547.48	9.87	220.93	1.88	9.60	16277.93	154.41	1702	15612	-3.61%	-2.77%
265*	100	0.5	10.14	4549.85	9.68	192.46	1.67	9.65	15714.49	140.63	1690	15621	-4.81%	-0.34%
266*	100	0.5	10.80	4545.56	10.63	255.13	2.40	10.04	14617.61	168.06	1827	15558	-7.03%	-5.56%
267*	100	0.5	10.49	4559.86	8.99	253.38	1.77	8.85	14946.95	141.16	1683	15221	-15.67%	-1.56%
268*	100	0.5	10.51	4550.41	9.61	241.43	1.86	9.30	15564.44	140.90	1709	15157	-11.56%	-3.25%
269*	100	0.5	10.09	4548.13	9.88	293.33	2.28	9.93	15597.81	146.44	1672	15144	-1.58%	0.48%
270*	100	0.5	9.84	4548.32	9.66	244.62	1.61	9.71	14782.81	144.99	1812	15100	-1.32%	0.56%
271*	100	0.5	10.31	4548.53	9.95	271.29	2.07	10.29	14950.28	157.29	1779	15517	-0.26%	3.40%
272*	100	0.5	9.90	4548.13	8.03	271.12	1.47	8.40	16003.87	137.01	1678	15098	-15.17%	4.61%
273*	100	0.5	11.04	4549.55	10.39	243.75	1.93	10.13	15073.94	174.72	1856	15855	-8.23%	-2.50%
274*	100	0.5	9.30	4543.77	8.33	215.11	1.15	8.25	16491.50	110.37	1711	14837	-11.36%	-1.01%
275*	100	0.5	9.68	4545.01	9.29	269.29	1.69	9.07	16082.21	154.53	1751	15144	-6.27%	-2.35%
276*	100	2.0	16.70	4894.01	16.51	1266.17	2.39	16.46	28398.62	1577.77	5871	51468	-1.42%	-0.29%
277*	100	2.0	15.97	4865.05	14.96	1218.52	2.10	15.02	28770.65	1484.09	5397	50722	-5.97%	0.37%
278*	100	2.0	15.91	4842.57	14.18	1204.20	1.18	14.29	28627.52	1525.33	5851	50480	-10.17%	0.82%
279*	100	2.0	15.78	4863.30	15.25	1314.69	1.91	15.25	29330.34	1305.41	5169	48016	-3.38%	0.01%
280*	100	2.0	14.93	4851.83	14.38	1030.31	1.77	14.35	31240.80	1300.77	5315	47592	-3.90%	-0.22%
281*	100	2.0	15.73	4861.97	14.58	1184.55	0.96	14.10	29254.54	1531.21	5574	50334	-10.38%	-3.28%
282*	100	2.0	16.64	4944.96	15.95	1180.66	1.80	15.62	29346.39	1696.58	5929	50735	-6.13%	-2.04%
283*	100	2.0	14.91	4896.42	15.25	1388.73	1.97	14.75	30049.34	1567.83	5588	50286	-1.05%	-3.28%
284*	100	2.0	16.10	4912.16	15.30	1103.22	2.20	16.08	31149.02	2218.10	5787	51347	-0.14%	5.07%
285*	100	2.0	14.54	4923.95	13.92	1484.30	1.39	14.53	30257.82	1584.17	5342	48788	-0.01%	4.38%
286*	100	2.0	16.25	4932.51	15.60	1513.43	0.96	15.60	28902.85	2089.42	5860	55029	-4.03%	0.00%
287*	100	2.0	14.73	4887.47	14.56	1126.60	1.23	14.24	30667.72	1374.43	5219	48660	-3.34%	-2.21%
288*	100	2.0	17.17	4897.83	15.59	1780.81	1.46	15.39	30839.61	1488.28	5828	52013	-10.39%	-1.30%
289*	100	2.0	15.79	4857.50	15.44	755.77	1.94	15.03	30141.16	1200.59	5257	48590	-4.86%	-2.71%
290*	100	2.0	15.46	4910.24	15.80	500.89	1.75	15.02	29398.14	1318.53	5494	49684	-2.89%	-4.93%

Continued on the next page

Table 1: Result of SimExact x SimLNS x SimSA-Expected (continued)

Inst	n	δ	SimExact		SimLNS		SimSA-Expected						$\text{GAP}_{c \times a}$	$\text{GAP}_{c \times b}$
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
291*	100	2.0	16.43	4885.83	17.04	1340.15	2.36	16.40	28561.41	1570.43	5550	53099	-0.19%	-3.73%
292*	100	2.0	15.83	4870.97	15.41	1057.76	1.44	14.93	28357.37	1398.43	5652	49136	-5.71%	-3.10%
293*	100	2.0	16.46	4867.31	15.68	1111.27	1.82	15.09	29487.89	1196.13	5293	49060	-8.31%	-3.76%
294*	100	2.0	15.96	4889.40	15.63	1196.63	2.10	15.78	29864.26	1276.50	5346	50280	-1.15%	0.99%
295*	100	2.0	15.90	4865.36	15.41	1168.51	1.62	15.50	28422.02	1480.64	5615	50495	-2.51%	0.55%
296*	100	2.0	16.04	4888.11	16.37	1185.39	2.19	15.55	27945.16	1265.46	5320	49386	-3.08%	-5.01%
297*	100	2.0	15.40	4870.32	14.18	1165.92	1.46	14.31	30398.45	915.94	5198	48981	-7.06%	0.91%
298*	100	2.0	17.20	4900.46	16.43	1526.23	1.90	16.06	28413.12	1437.34	5655	50801	-6.66%	-2.28%
299*	100	2.0	14.92	4872.60	13.64	1032.99	1.27	13.86	31675.79	1325.05	5207	49471	-7.12%	1.59%
300*	100	2.0	15.54	4858.85	14.55	1283.80	1.52	14.94	30489.59	1220.04	5262	49011	-3.86%	2.69%