

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

Inst	n	δ	SimExact		SimLNS		SimSA-CVaR						$GAP_{c \times a}$	$GAP_{c \times b}$
			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	27.41	259.05	25.09	6855.18	0.13	24.70	6882.84	9.13	339	3064	-9.91%	-1.56%
2	25	0.1	27.74	244.85	28.80	6222.70	1.95	26.37	6011.91	9.70	337	3106	-4.93%	-8.43%
3	25	0.1	31.57	178.94	30.83	7459.22	1.10	29.33	7290.97	10.75	372	3627	-7.11%	-4.86%
4	25	0.1	26.92	472.48	28.05	7674.44	0.88	26.57	7632.90	9.75	430	3467	-1.29%	-5.25%
5	25	0.1	27.74	342.72	26.22	7009.14	1.00	25.21	7020.37	9.66	386	3272	-9.09%	-3.83%
6	25	0.1	32.95	304.41	27.89	6729.53	1.08	28.05	6737.86	8.24	332	3274	-14.86%	0.56%
7	25	0.1	27.14	4480.63	26.35	7104.03	0.36	24.15	7208.87	8.69	356	3230	-11.03%	-8.36%
8	25	0.1	26.70	482.83	24.98	6966.64	1.10	24.50	7332.22	8.50	322	3347	-8.23%	-1.93%
9	25	0.1	29.60	446.01	25.16	7618.68	0.29	25.09	7819.54	9.02	355	3268	-15.24%	-0.26%
10	25	0.1	37.29	347.60	32.05	7560.56	1.85	28.17	7120.25	9.87	372	3389	-24.46%	-12.10%
11	25	0.1	33.47	470.55	28.31	7622.39	1.89	25.79	7240.37	9.05	407	3231	-22.96%	-8.92%
12	25	0.1	32.08	226.53	23.39	6805.93	0.61	23.62	7091.04	8.17	356	3182	-26.37%	0.97%
13	25	0.1	37.43	363.98	24.26	5505.41	0.98	23.60	5448.91	8.41	252	2582	-36.96%	-2.73%
14	25	0.1	36.07	440.17	34.48	4688.41	3.97	32.19	4476.93	11.25	434	3496	-10.76%	-6.64%
15	25	0.1	28.45	332.77	25.05	5749.41	1.91	26.69	5895.34	8.77	315	2906	-6.17%	6.56%
16	25	0.1	31.58	496.11	30.41	5628.00	2.46	27.34	5334.66	9.26	333	3383	-13.41%	-10.09%
17	25	0.1	30.31	317.91	27.93	6985.78	1.50	24.45	6758.96	7.77	314	3064	-19.33%	-12.45%
18	25	0.1	40.42	286.41	30.04	6649.67	1.56	26.81	6483.12	10.02	432	3471	-33.67%	-10.73%
19	25	0.1	27.37	311.76	27.16	6718.23	1.23	26.70	6898.71	9.05	390	3426	-2.43%	-1.69%
20	25	0.1	27.05	468.68	26.27	7680.68	0.08	26.49	7573.49	9.30	369	3063	-2.07%	0.83%
21	25	0.1	31.12	4484.27	24.15	7275.22	0.59	24.72	7643.41	8.48	355	3113	-20.55%	2.39%
22	25	0.1	38.11	392.43	36.12	4940.58	4.16	34.36	4789.66	11.38	466	4374	-9.84%	-4.87%
23	25	0.1	26.29	413.26	26.29	6457.14	1.04	24.55	6300.97	8.51	314	3045	-6.62%	-6.59%
24	25	0.1	29.77	254.44	23.79	6737.09	1.39	25.04	6987.50	8.16	351	2999	-15.90%	5.27%
25	25	0.1	25.39	459.73	26.32	7438.54	0.69	25.04	7193.97	8.16	304	2992	-1.38%	-4.86%
26	25	0.5	61.33	311.55	58.79	15329.05	0.30	57.65	15496.74	80.35	1554	14466	-6.01%	-1.95%
27	25	0.5	65.50	313.30	63.09	13221.42	2.25	62.04	14197.51	100.79	1784	15608	-5.28%	-1.66%
28	25	0.5	64.19	221.73	66.00	14828.06	1.75	63.70	15724.01	103.44	1712	15712	-0.76%	-3.48%
29	25	0.5	61.33	536.15	61.19	16618.60	0.77	59.93	16525.58	85.87	1650	14990	-2.28%	-2.06%
30	25	0.5	63.17	414.90	60.31	15529.03	1.00	58.14	15518.73	80.81	1700	14754	-7.96%	-3.60%
31	25	0.5	69.17	387.04	67.00	15734.80	1.36	62.17	15270.44	90.71	1745	15394	-10.13%	-7.21%
32	25	0.5	59.97	4546.77	58.22	15441.52	0.24	58.29	16047.69	79.61	1624	14668	-2.81%	0.12%
33	25	0.5	61.37	551.90	61.57	16392.76	0.98	59.30	16426.46	100.63	1729	15309	-3.38%	-3.68%
34	25	0.5	59.12	434.33	58.11	16800.23	0.47	58.52	17059.30	85.27	1666	14425	-1.00%	0.72%
35	25	0.5	66.37	393.82	67.49	16337.73	1.66	64.22	15855.73	93.66	1653	15328	-3.24%	-4.84%
36	25	0.5	64.01	528.79	60.13	15006.67	1.96	59.94	16244.88	84.67	1647	15028	-6.37%	-0.31%
37	25	0.5	62.59	265.28	58.61	15910.12	0.12	59.18	16436.75	89.54	1766	15515	-5.45%	0.97%
38	25	0.5	68.91	407.64	60.22	13340.00	2.13	59.46	13833.36	89.10	1671	15231	-13.71%	-1.25%
39	25	0.5	81.97	567.28	83.48	11587.05	3.97	77.27	10896.33	138.47	2120	18869	-5.74%	-7.44%
40	25	0.5	65.23	406.68	63.69	13955.28	1.87	62.41	13943.59	90.92	1716	14968	-4.32%	-2.00%
41	25	0.5	70.72	583.49	70.59	12026.45	2.12	68.85	12644.57	105.32	1858	17121	-2.64%	-2.46%
42	25	0.5	62.53	364.33	61.85	15429.32	1.91	59.07	15244.26	84.31	1657	14279	-5.53%	-4.51%
43	25	0.5	67.05	321.92	69.10	15177.09	1.56	63.89	14456.86	96.24	1736	15674	-4.71%	-7.54%
44	25	0.5	63.28	380.80	63.71	15521.01	1.27	62.10	15368.30	88.95	1667	15502	-1.86%	-2.53%
45	25	0.5	59.91	534.74	58.72	16826.58	0.08	57.42	16856.23	83.40	1545	14178	-4.16%	-2.22%
46	25	0.5	59.98	4520.87	56.46	16290.26	0.58	58.66	17187.08	77.09	1692	14492	-2.20%	3.89%
47	25	0.5	80.28	519.14	81.04	11300.54	4.33	79.43	10724.01	165.89	2191	19617	-1.07%	-1.99%
48	25	0.5	61.84	482.05	59.28	14398.78	1.22	58.57	14314.88	90.99	1773	14572	-5.28%	-1.20%
49	25	0.5	64.81	311.20	61.46	16031.35	1.27	58.67	15904.14	81.29	1675	14509	-9.46%	-4.53%
50	25	0.5	61.17	526.07	59.95	16547.21	0.64	59.74	16531.26	87.65	1644	14587	-2.34%	-0.35%
51	25	2.0	117.54	1107.83	116.95	29488.21	0.10	116.03	30046.35	1006.32	5314	48307	-1.29%	-0.78%
52	25	2.0	127.04	1308.60	126.09	27518.77	1.68	126.98	27367.89	1157.90	5879	51920	-0.05%	0.71%
53	25	2.0	124.84	936.16	122.76	29797.63	0.86	122.91	29908.81	1011.87	5657	50361	-1.55%	0.12%
54	25	2.0	118.64	1417.75	118.64	30045.14	0.68	118.36	30947.17	1091.09	5337	47385	-0.24%	-0.23%
55	25	2.0	118.71	1361.00	117.73	29428.05	1.69	117.76	29651.31	916.55	5126	47882	-0.80%	0.03%
56	25	2.0	124.55	1363.07	121.98	28823.77	1.32	120.65	28562.12	1028.58	5406	48290	-3.14%	-1.09%
57	25	2.0	114.71	5464.84	116.99	30471.81	0.46	113.21	29956.02	917.27	5025	46344	-1.31%	-3.23%
58	25	2.0	120.91	1488.45	117.91	31102.48	1.08	120.58	31205.76	1141.98	5578	49710	-0.27%	2.27%

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

Inst	n	δ	SimExact		SimLNS		SimSA-CVaR						$\text{GAP}_{c \times a}$	$\text{GAP}_{c \times b}$
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
59	25	2.0	116.22	1070.69	116.63	32075.32	0.06	116.13	32879.65	939.26	5132	47195	-0.07%	-0.42%
60	25	2.0	121.63	1089.17	123.84	29978.49	1.87	121.30	29441.19	990.55	5382	48099	-0.26%	-2.05%
61	25	2.0	121.97	1332.26	120.80	31348.27	1.02	118.77	31164.12	1020.21	5505	49327	-2.62%	-1.67%
62	25	2.0	121.91	964.11	117.14	29871.47	0.09	119.20	31086.13	1177.02	5345	49820	-2.22%	1.76%
63	25	2.0	124.29	1045.22	121.68	26210.93	1.81	121.93	26311.33	1053.56	5622	48554	-1.90%	0.20%
64	25	2.0	166.62	2775.06	163.35	22329.40	3.97	165.45	22607.21	2174.88	7638	68419	-0.70%	1.29%
65	25	2.0	127.93	1542.58	126.52	27045.08	3.65	127.68	27765.05	1150.73	6091	52756	-0.20%	0.92%
66	25	2.0	143.38	1995.46	142.80	25135.00	2.21	140.53	24910.48	1566.38	6158	57627	-1.99%	-1.59%
67	25	2.0	121.14	1122.74	119.61	29463.87	2.00	120.13	29578.09	968.46	5399	48002	-0.84%	0.44%
68	25	2.0	131.25	970.54	127.52	27640.88	1.10	127.76	27602.31	1071.91	5838	50928	-2.66%	0.19%
69	25	2.0	125.13	1477.40	121.71	28913.23	0.75	123.04	29352.18	1014.97	5289	49864	-1.68%	1.09%
70	25	2.0	115.47	1391.97	111.70	31568.56	0.03	114.81	31879.42	854.28	5128	45852	-0.57%	2.78%
71	25	2.0	115.03	5087.40	112.71	31855.10	0.70	111.69	31610.06	829.43	5106	44746	-2.90%	-0.90%
72	25	2.0	164.36	2597.16	165.27	22058.60	4.08	162.74	21722.96	2256.72	7661	68189	-0.99%	-1.53%
73	25	2.0	120.15	1447.12	115.82	26868.09	0.88	119.96	27578.19	1005.44	5217	48168	-0.16%	3.58%
74	25	2.0	120.20	1112.03	119.35	29883.69	1.20	117.91	30500.57	921.33	5298	48104	-1.90%	-1.20%
75	25	2.0	116.64	1432.91	114.55	31046.38	0.41	114.78	31237.95	937.86	4988	47015	-1.59%	0.20%
76*	50	0.1	27.60	4497.95	27.63	6355.44	2.23	26.92	5919.83	14.39	308	2884	-2.49%	-2.59%
77*	50	0.1	27.99	4497.03	29.56	7143.08	1.78	26.27	6789.23	17.35	419	3435	-6.13%	-11.12%
78*	50	0.1	26.16	4498.19	24.90	7585.85	0.45	23.88	7557.67	15.99	393	3237	-8.72%	-4.11%
79*	50	0.1	29.84	4497.70	27.25	5750.43	2.72	26.08	5265.60	14.08	312	2644	-12.60%	-4.30%
80*	50	0.1	24.16	4499.46	24.36	7233.60	0.54	23.50	7378.48	15.13	339	3147	-2.71%	-3.54%
81*	50	0.1	26.01	4497.12	25.50	6891.79	0.64	24.88	6699.41	16.73	383	3027	-4.32%	-2.44%
82*	50	0.1	25.44	4498.80	25.17	6505.59	1.27	24.20	6436.45	15.31	360	3016	-4.86%	-3.84%
83*	50	0.1	26.09	4499.17	26.49	7190.51	0.55	24.89	7006.03	16.04	372	3241	-4.62%	-6.05%
84*	50	0.1	27.31	4497.57	25.00	6804.84	1.42	25.66	7194.16	14.75	356	3267	-6.06%	2.62%
85*	50	0.1	30.11	4497.86	27.29	5971.91	2.24	26.68	5841.61	15.41	293	2911	-11.39%	-2.23%
86*	50	0.1	26.04	4495.45	25.35	7513.67	1.27	24.84	7328.10	13.98	332	3054	-4.60%	-2.02%
87*	50	0.1	28.06	4498.38	25.08	7085.65	1.05	25.40	7395.68	38.50	354	3173	-9.45%	1.28%
88*	50	0.1	29.25	4496.62	26.65	6759.29	1.76	26.33	6833.14	15.46	391	3312	-9.97%	-1.19%
89*	50	0.1	25.35	4499.43	24.52	6964.09	1.48	24.73	7150.62	14.61	316	3007	-2.45%	0.83%
90*	50	0.1	27.67	4498.84	27.67	6062.46	1.68	27.37	6473.67	14.27	364	3268	-1.10%	-1.09%
91*	50	0.1	29.09	4498.29	25.92	7185.73	1.43	24.85	7275.46	14.85	361	3077	-14.58%	-4.12%
92*	50	0.1	26.97	4498.41	27.49	7500.35	1.13	25.01	7120.97	16.97	347	3216	-7.27%	-9.00%
93*	50	0.1	27.67	4497.34	25.79	7092.66	1.57	26.23	6880.84	13.87	306	2847	-5.20%	1.71%
94*	50	0.1	27.12	4499.35	26.03	6242.38	1.79	25.60	6203.42	14.46	359	2982	-5.60%	-1.63%
95*	50	0.1	24.21	4500.12	23.59	7554.09	1.17	23.78	7542.71	15.73	310	2979	-1.79%	0.79%
96*	50	0.1	28.04	4501.01	28.78	6379.42	2.24	26.45	6460.93	15.26	303	3234	-5.67%	-8.11%
97*	50	0.1	26.78	4498.81	25.32	6663.79	1.31	24.89	6610.52	13.14	353	2958	-7.05%	-1.71%
98*	50	0.1	26.07	4498.98	22.60	6413.84	0.73	22.06	6356.31	15.05	321	3281	-15.38%	-2.39%
99*	50	0.1	25.48	4484.08	24.59	6835.93	1.45	24.54	6903.78	14.75	377	3139	-3.68%	-0.20%
100*	50	0.1	27.12	4484.72	25.56	6987.64	0.80	25.83	6817.36	16.38	353	3018	-4.77%	1.06%
101*	50	0.5	62.64	4573.64	61.35	13871.66	2.29	61.74	14136.65	93.39	1560	14976	-1.45%	0.63%
102*	50	0.5	65.97	4586.62	64.14	15328.04	1.76	64.45	14988.13	103.55	1698	15389	-2.30%	0.49%
103*	50	0.5	61.09	4575.77	61.23	17361.76	0.52	59.31	16835.62	100.64	1718	14845	-2.90%	-3.13%
104*	50	0.5	64.90	4578.43	63.63	13149.05	2.43	63.27	13217.38	103.50	1733	15190	-2.52%	-0.56%
105*	50	0.5	58.90	4582.45	58.18	16030.10	0.47	58.24	16039.40	89.32	1594	13934	-1.12%	0.12%
106*	50	0.5	61.40	4573.84	58.97	15275.73	0.69	58.78	15165.65	102.20	1646	14241	-4.26%	-0.32%
107*	50	0.5	61.98	4586.28	60.66	14832.62	1.47	60.63	14721.66	98.98	1376	14452	-2.17%	-0.04%
108*	50	0.5	61.72	4584.96	62.47	16287.35	0.65	61.62	16234.40	113.41	1781	15708	-0.17%	-1.36%
109*	50	0.5	60.79	4576.40	59.96	15859.19	1.51	60.23	15924.52	99.81	1637	14694	-0.92%	0.45%
110*	50	0.5	67.26	4578.49	66.40	14251.99	2.32	65.41	14168.19	121.95	1727	15552	-2.76%	-1.50%
111*	50	0.5	61.06	4571.90	60.89	16872.65	1.22	60.64	16632.44	93.11	1593	14516	-0.69%	-0.42%
112*	50	0.5	61.48	4569.20	59.04	16195.10	1.15	59.74	16591.96	326.90	1644	14672	-2.84%	1.17%
113*	50	0.5	63.27	4569.43	61.94	15166.31	1.81	63.13	15499.33	112.30	1658	15593	-0.22%	1.91%
114*	50	0.5	61.55	4586.62	60.65	16473.39	1.22	59.85	16405.58	91.28	1711	14568	-2.75%	-1.31%
115*	50	0.5	63.92	4581.82	62.96	14510.87	1.72	63.40	14691.57	98.89	1743	15259	-0.82%	0.70%
116*	50	0.5	63.41	4576.76	60.94	16541.06	1.37	60.51	16703.21	89.31	1647	14867	-4.58%	-0.71%

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			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	64.36	4574.11	62.50	16510.56	1.40	63.21	16028.67	108.03	1675	14998	-1.79%	1.14%
118*	50	0.5	62.78	4579.04	60.04	16002.87	1.38	60.26	16292.78	66.76	1496	14611	-4.01%	0.37%
119*	50	0.5	63.85	4587.51	61.02	14164.07	2.06	61.77	14373.77	96.18	1646	14593	-3.25%	1.23%
120*	50	0.5	58.82	4572.78	57.92	16732.41	1.11	57.24	17359.40	97.13	1594	14495	-2.68%	-1.17%
121*	50	0.5	65.51	4590.81	64.76	14788.64	1.78	62.59	15014.29	107.34	1765	15914	-4.46%	-3.35%
122*	50	0.5	61.64	4579.62	60.63	15203.58	1.91	60.09	15477.20	98.73	1539	14737	-2.52%	-0.89%
123*	50	0.5	62.78	4573.25	57.69	14458.59	1.01	58.19	14710.10	120.29	1835	16053	-7.31%	0.87%
124*	50	0.5	60.85	4518.42	60.99	15707.86	1.65	60.67	15916.25	93.50	1650	15151	-0.29%	-0.52%
125*	50	0.5	60.32	4512.43	59.28	15508.51	0.63	59.70	16020.70	100.40	1701	15259	-1.03%	0.71%
126*	50	2.0	125.97	5568.60	123.58	26877.56	2.06	123.23	27053.84	991.11	5533	49373	-2.18%	-0.29%
127*	50	2.0	126.72	5720.70	127.16	29213.57	1.49	125.83	29012.55	1098.92	5605	51027	-0.71%	-1.05%
128*	50	2.0	119.69	5560.47	117.44	32294.81	0.45	119.53	32594.82	1021.44	5446	49389	-0.14%	1.78%
129*	50	2.0	130.58	5642.49	127.53	25625.47	2.53	129.63	25940.94	1213.84	5609	51708	-0.73%	1.65%
130*	50	2.0	116.43	5548.79	115.39	30872.98	0.48	114.79	31195.23	1010.11	5217	47105	-1.41%	-0.52%
131*	50	2.0	118.88	5546.15	118.03	29157.73	0.76	118.47	29435.74	1135.25	5278	48335	-0.35%	0.37%
132*	50	2.0	122.21	5698.33	122.39	28740.35	1.60	121.20	28889.52	1107.42	5684	49725	-0.82%	-0.97%
133*	50	2.0	122.85	5752.30	122.35	30604.14	0.53	122.28	31121.76	1123.12	5705	51443	-0.47%	-0.05%
134*	50	2.0	119.39	5582.01	116.78	29617.25	1.60	117.06	30272.90	1169.47	5462	47818	-1.95%	0.24%
135*	50	2.0	133.30	5734.17	131.77	27631.63	2.28	132.63	27670.36	1296.34	5815	52625	-0.50%	0.65%
136*	50	2.0	118.26	5524.11	117.03	31739.26	1.28	116.86	31409.07	2202.20	5218	46711	-1.18%	-0.14%
137*	50	2.0	119.86	5523.06	117.51	31175.90	0.99	119.10	31146.56	984.65	5427	47428	-0.63%	1.36%
138*	50	2.0	128.30	5642.95	123.94	29028.07	1.73	123.70	29920.87	1262.67	5945	51348	-3.59%	-0.20%
139*	50	2.0	121.41	5646.83	121.04	31532.36	1.18	119.37	31478.29	1063.49	5345	48378	-1.68%	-1.39%
140*	50	2.0	128.68	5768.14	129.31	28244.79	1.67	126.56	28166.60	1058.68	5426	50408	-1.64%	-2.12%
141*	50	2.0	124.03	5551.85	121.01	31616.01	1.48	122.11	32122.83	1074.30	5542	48977	-1.55%	0.91%
142*	50	2.0	126.22	5668.47	123.86	31367.40	1.27	123.38	31127.33	1158.76	5465	49614	-2.25%	-0.39%
143*	50	2.0	122.88	5636.68	120.17	31329.23	1.23	122.53	31564.92	1130.70	5357	49053	-0.28%	1.97%
144*	50	2.0	130.45	5825.90	129.78	28881.34	2.06	126.89	28946.40	1250.83	5599	52599	-2.72%	-2.22%
145*	50	2.0	117.30	5425.86	113.30	32260.04	0.77	116.60	33058.65	975.14	5414	47377	-0.60%	2.91%
146*	50	2.0	128.81	5769.41	130.11	29053.95	1.91	126.75	28825.83	1286.72	5786	52035	-1.60%	-2.58%
147*	50	2.0	122.87	5628.70	121.28	29780.51	2.62	122.45	29470.74	992.40	5389	47903	-0.34%	0.97%
148*	50	2.0	125.54	4970.25	120.75	28165.33	1.36	120.17	28155.53	1376.46	5983	52150	-4.28%	-0.48%
149*	50	2.0	122.92	4810.62	121.66	30181.03	1.60	120.66	30165.65	1209.96	5489	49249	-1.84%	-0.82%
150*	50	2.0	118.60	4757.95	116.01	29637.63	0.84	117.25	29638.32	1075.95	5297	47149	-1.14%	1.07%
151*	75	0.1	26.87	4494.21	25.28	6952.04	1.64	25.41	6969.35	20.55	353	3039	-5.44%	0.49%
152*	75	0.1	27.40	4489.05	27.44	6516.61	1.72	25.98	6196.50	21.51	325	3076	-5.18%	-5.29%
153*	75	0.1	27.17	4491.80	26.54	6697.55	1.07	26.94	6481.96	23.82	321	3144	-0.83%	1.51%
154*	75	0.1	24.02	4490.85	24.97	6703.52	0.00	23.82	6771.97	22.41	367	3215	-0.84%	-4.59%
155*	75	0.1	26.15	4492.05	25.52	6536.49	1.67	24.81	6446.40	21.35	294	2799	-5.13%	-2.78%
156*	75	0.1	27.01	4491.46	25.28	6883.66	0.79	26.04	6866.65	23.11	315	3145	-3.59%	3.01%
157*	75	0.1	27.64	4490.76	25.36	6584.61	1.66	25.23	6483.80	21.64	325	2985	-8.69%	-0.49%
158*	75	0.1	26.44	4491.67	24.89	6126.49	1.80	24.97	5989.26	22.14	293	2827	-5.55%	0.31%
159*	75	0.1	25.10	4491.79	24.97	7167.24	1.93	24.78	7233.77	22.39	350	3094	-1.28%	-0.75%
160*	75	0.1	27.13	4491.94	25.97	6311.78	2.12	26.72	6189.61	22.19	343	3010	-1.52%	2.88%
161*	75	0.1	26.32	4489.75	26.59	6312.10	1.89	26.03	6013.41	22.85	341	3090	-1.11%	-2.14%
162*	75	0.1	27.14	4491.53	25.86	7065.72	0.99	24.86	6775.02	26.65	345	3037	-8.42%	-3.87%
163*	75	0.1	24.45	4489.80	24.43	6945.43	0.56	24.20	6756.13	24.78	325	2919	-1.03%	-0.92%
164*	75	0.1	27.30	4491.98	26.41	6955.61	1.20	24.59	6804.92	33.03	354	3114	-9.90%	-6.89%
165*	75	0.1	27.61	4492.03	26.79	6085.63	2.47	26.94	6207.41	34.52	352	3105	-2.41%	0.57%
166*	75	0.1	27.80	4490.98	24.84	6688.40	1.64	25.71	6707.54	32.92	312	2930	-7.52%	3.49%
167*	75	0.1	26.08	4492.46	26.75	6738.08	1.79	25.83	7038.36	33.38	392	3414	-0.94%	-3.43%
168*	75	0.1	25.95	4493.10	25.82	6466.14	2.11	25.44	6416.98	34.30	352	3039	-1.98%	-1.45%
169*	75	0.1	29.18	4491.09	24.86	6560.61	1.05	25.04	6709.76	33.70	322	3197	-14.17%	0.73%
170*	75	0.1	30.19	4492.54	26.83	6625.75	1.92	27.31	6637.39	30.11	368	3105	-9.55%	1.77%
171*	75	0.1	25.96	4492.77	26.87	6811.84	2.34	25.76	6647.68	28.27	356	3022	-0.76%	-4.13%
172*	75	0.1	26.06	4489.54	24.38	6985.30	1.47	25.57	7002.43	38.50	310	2894	-1.88%	4.86%
173*	75	0.1	27.37	4492.95	25.40	6330.58	1.96	25.57	6577.54	21.85	359	3162	-6.60%	0.67%
174*	75	0.1	27.30	4491.81	24.99	7221.93	1.05	24.63	7274.38	23.40	375	3134	-9.77%	-1.46%

Continued on the next page

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

Inst	n	δ	SimExact		SimLNS		SimSA-CVaR						$\text{GAP}_{c \times a}$	$\text{GAP}_{c \times b}$
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
175*	75	0.1	26.19	4490.49	26.35	6114.37	1.30	25.90	6040.93	49.65	315	3147	-1.09%	-1.69%
176*	75	0.5	61.31	4522.78	60.79	15877.03	1.77	61.22	16026.28	113.43	1589	14758	-0.15%	0.71%
177*	75	0.5	65.19	4526.83	65.64	14973.01	1.71	63.90	14742.64	126.89	1687	15927	-1.98%	-2.65%
178*	75	0.5	66.24	4534.28	63.75	15176.84	1.13	65.19	15137.05	130.06	1677	15567	-1.58%	2.27%
179*	75	0.5	60.91	4529.26	57.69	15074.85	0.15	59.46	15396.64	112.28	1626	15149	-2.37%	3.07%
180*	75	0.5	61.23	4535.02	61.25	15257.31	1.61	61.03	15384.24	106.13	1727	14719	-0.33%	-0.36%
181*	75	0.5	61.81	4533.80	60.45	15591.60	0.86	60.97	15709.57	117.41	1624	14997	-1.35%	0.87%
182*	75	0.5	63.21	4526.85	60.28	14945.48	1.65	61.83	15413.65	121.64	1722	15371	-2.18%	2.57%
183*	75	0.5	61.50	4533.23	61.15	14303.95	1.46	59.28	14280.09	112.31	1631	14749	-3.62%	-3.06%
184*	75	0.5	61.44	4530.61	59.65	16303.24	1.07	60.94	16630.97	107.74	1638	14961	-0.82%	2.16%
185*	75	0.5	63.43	4532.65	62.37	14403.71	2.12	62.24	14479.56	86.00	1717	15045	-1.87%	-0.21%
186*	75	0.5	65.78	4538.02	64.91	14395.78	1.97	62.96	14394.00	145.90	1750	15989	-4.27%	-3.00%
187*	75	0.5	63.06	4536.46	62.83	16247.09	0.99	61.75	15875.27	136.21	1762	15194	-2.07%	-1.72%
188*	75	0.5	60.10	4528.64	58.77	15651.85	0.86	60.06	15965.15	116.31	1599	14810	-0.07%	2.19%
189*	75	0.5	62.71	4533.40	61.21	15532.73	1.05	60.80	15359.82	143.09	1525	14641	-3.05%	-0.67%
190*	75	0.5	65.14	4535.88	62.71	14027.32	3.03	64.73	14137.01	175.03	1727	14579	-0.63%	3.22%
191*	75	0.5	62.71	4529.91	62.08	15778.58	1.33	62.55	15813.40	158.32	1566	14950	-0.26%	0.76%
192*	75	0.5	63.23	4536.05	62.52	15196.64	1.84	62.54	15569.84	176.17	1745	15515	-1.10%	0.03%
193*	75	0.5	61.63	4534.42	61.49	14708.81	2.11	60.96	14680.28	178.71	1682	14733	-1.09%	-0.87%
194*	75	0.5	65.79	4530.29	61.10	15370.10	1.20	61.77	15439.40	195.58	1802	15453	-6.12%	1.09%
195*	75	0.5	65.72	4535.54	63.98	15017.67	2.17	64.51	15314.18	168.13	1658	15110	-1.84%	0.83%
196*	75	0.5	63.64	4537.22	60.70	15234.76	1.92	62.99	15675.91	137.04	1742	15426	-1.02%	3.77%
197*	75	0.5	62.07	4531.54	59.76	16391.75	1.40	61.76	16685.61	388.27	1768	15073	-0.51%	3.34%
198*	75	0.5	65.44	4539.02	63.04	15169.62	2.18	64.84	15179.39	117.99	1718	15318	-0.91%	2.86%
199*	75	0.5	61.34	4533.15	60.51	16524.19	1.03	60.33	16352.73	108.73	1523	14499	-1.65%	-0.30%
200*	75	0.5	65.19	4534.14	66.37	14620.72	1.49	64.98	14288.60	338.30	1809	16019	-0.32%	-2.10%
201*	75	2.0	124.80	4773.49	121.92	30543.33	1.36	121.86	30247.97	997.52	5356	47739	-2.36%	-0.05%
202*	75	2.0	130.84	4827.19	131.39	28720.49	1.71	129.15	28406.68	1332.38	5934	52283	-1.29%	-1.70%
203*	75	2.0	127.99	4898.71	126.49	29035.59	1.09	122.68	28634.86	1191.97	5472	50393	-4.15%	-3.02%
204*	75	2.0	121.26	4811.57	118.72	29028.31	0.11	118.25	29183.52	1056.88	5181	49017	-2.48%	-0.40%
205*	75	2.0	127.42	4857.72	121.96	29610.96	1.56	125.03	29748.56	1075.74	5334	48886	-1.88%	2.52%
206*	75	2.0	122.95	4840.08	122.90	30265.64	0.79	121.66	29950.39	1108.86	5394	49302	-1.05%	-1.01%
207*	75	2.0	126.56	4808.45	121.14	28910.00	1.46	121.58	29327.12	1093.03	5412	50329	-3.93%	0.37%
208*	75	2.0	122.28	4824.77	120.70	27227.62	1.42	122.02	26821.76	1027.47	5158	47526	-0.21%	1.10%
209*	75	2.0	122.70	4789.65	118.55	30897.42	1.50	121.82	31352.89	1085.13	5102	48040	-0.72%	2.76%
210*	75	2.0	128.28	4850.71	124.25	27513.70	2.11	125.41	27901.63	1144.55	5314	50356	-2.24%	0.93%
211*	75	2.0	129.14	4929.55	129.14	27688.46	1.45	128.98	27701.99	1486.33	5924	52754	-0.13%	-0.13%
212*	75	2.0	127.03	4836.51	124.50	30729.01	1.05	122.34	30291.27	1449.31	5697	50235	-3.69%	-1.73%
213*	75	2.0	122.54	4828.50	119.52	30118.29	1.07	119.36	30134.46	1829.85	5322	47847	-2.59%	-0.14%
214*	75	2.0	120.71	4823.23	122.41	29873.97	1.00	120.52	29617.15	1203.05	5376	48885	-0.15%	-1.54%
215*	75	2.0	125.39	4863.72	124.21	27055.00	2.51	122.16	27051.66	1866.60	5397	48710	-2.58%	-1.65%
216*	75	2.0	122.00	4813.42	122.57	30182.18	1.31	121.01	30438.95	1983.86	5381	49537	-0.81%	-1.27%
217*	75	2.0	124.49	4853.00	123.67	29211.47	1.77	122.28	29521.20	1919.50	5314	49503	-1.78%	-1.12%
218*	75	2.0	123.28	4829.50	124.65	28344.35	2.10	123.18	28211.86	1947.79	5238	48894	-0.08%	-1.18%
219*	75	2.0	128.71	4831.48	124.34	29567.09	1.18	123.79	29524.59	2251.69	5669	50392	-3.82%	-0.44%
220*	75	2.0	128.49	4850.26	124.06	29080.71	1.91	126.99	29637.81	1008.90	5835	50647	-1.16%	2.36%
221*	75	2.0	124.18	4850.31	124.75	29539.49	2.25	123.46	28841.30	1323.99	5347	47401	-0.58%	-1.04%
222*	75	2.0	121.89	4834.34	120.90	31472.15	1.80	121.12	31340.76	2105.27	5120	47203	-0.63%	0.18%
223*	75	2.0	129.19	4900.25	127.15	29177.62	1.95	128.37	29073.40	1205.39	5574	50566	-0.63%	0.96%
224*	75	2.0	121.84	4836.64	119.56	31122.66	1.37	118.04	31131.22	2848.53	5014	47818	-3.11%	-1.27%
225*	75	2.0	132.19	4882.21	128.65	27265.98	1.23	126.81	27441.14	4585.78	5847	52386	-4.07%	-1.43%
226*	100	0.1	27.74	4495.50	27.52	6375.85	2.41	27.66	6206.37	70.51	315	2986	-0.30%	0.51%
227*	100	0.1	27.23	4495.67	25.64	6389.68	1.88	25.46	6531.54	65.78	391	3151	-6.49%	-0.69%
228*	100	0.1	26.85	4497.49	25.51	6571.50	1.20	24.48	6445.11	68.58	354	3076	-8.83%	-4.04%
229*	100	0.1	25.65	4497.65	24.16	6446.57	2.39	25.60	6633.64	72.45	319	2971	-0.22%	5.95%
230*	100	0.1	26.74	4498.39	25.27	7238.48	1.85	23.97	7161.26	71.36	317	2996	-10.38%	-5.14%
231*	100	0.1	25.51	4496.17	25.04	6557.80	0.99	24.54	6693.20	63.35	352	3133	-3.80%	-2.00%
232*	100	0.1	27.20	4499.04	27.06	6749.83	1.92	27.13	6701.73	36.14	390	3181	-0.25%	0.27%

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

Inst	n	δ	SimExact		SimLNS		SimSA-CVaR						$\text{GAP}_{c \times a}$	$\text{GAP}_{c \times b}$
			E-RPD ^a	T(s)	E-RPD ^b	T(s)	D-RPD	E-RPD ^c	SD	T(s)	ρ_S	ρ_L		
233*	100	0.1	25.54	4498.73	25.60	6708.24	1.92	24.94	6774.90	33.90	325	3064	-2.36%	-2.57%
234*	100	0.1	26.35	4499.01	25.83	6746.64	1.92	26.11	6828.86	35.78	332	2991	-0.94%	1.07%
235*	100	0.1	25.75	4499.03	25.99	7058.39	1.91	24.90	6750.19	34.55	340	2948	-3.33%	-4.21%
236*	100	0.1	26.58	4497.94	26.57	6400.91	1.16	25.57	6275.76	34.89	339	3206	-3.79%	-3.78%
237*	100	0.1	25.98	4497.56	24.68	6912.77	1.59	24.24	6886.79	35.26	333	2942	-6.72%	-1.80%
238*	100	0.1	27.98	4499.76	26.61	6900.62	1.67	26.07	6828.06	33.36	356	3073	-6.81%	-2.02%
239*	100	0.1	26.12	4497.47	27.47	7138.91	2.21	26.11	7096.90	34.55	347	3213	-0.02%	-4.96%
240*	100	0.1	26.49	4497.40	25.30	6451.27	1.68	25.58	6620.76	33.59	352	3022	-3.45%	1.12%
241*	100	0.1	26.40	4495.84	26.78	6276.09	2.49	25.71	6050.70	35.35	299	2918	-2.63%	-4.00%
242*	100	0.1	27.58	4497.84	26.14	6565.22	1.73	25.51	6277.02	35.93	338	2918	-7.49%	-2.40%
243*	100	0.1	27.59	4498.30	27.00	6883.55	2.23	25.36	6482.69	36.73	359	2846	-8.08%	-6.08%
244*	100	0.1	25.80	4498.14	25.97	6625.09	2.21	24.87	6836.91	37.40	343	3194	-3.62%	-4.24%
245*	100	0.1	26.18	4497.42	27.02	6492.25	1.61	26.13	6354.55	34.81	325	3052	-0.18%	-3.28%
246*	100	0.1	25.92	4498.07	26.21	6227.09	2.29	25.90	6113.38	34.67	317	2863	-0.08%	-1.18%
247*	100	0.1	24.56	4496.82	23.27	6559.61	1.33	24.34	6890.90	36.17	357	3058	-0.87%	4.61%
248*	100	0.1	26.76	4497.84	28.38	6591.28	2.11	26.49	6611.22	34.28	336	3316	-0.99%	-6.68%
249*	100	0.1	25.88	4497.10	25.49	7228.78	1.37	24.97	7326.52	36.36	350	3181	-3.53%	-2.06%
250*	100	0.1	25.87	4496.38	26.22	7028.65	1.74	24.23	7002.62	35.07	332	3124	-6.35%	-7.62%
251*	100	0.5	66.79	4548.04	65.84	14748.13	2.46	66.28	14784.87	354.51	1670	15590	-0.77%	0.67%
252*	100	0.5	63.86	4546.62	63.83	14966.16	1.82	62.16	14891.09	297.81	1662	15000	-2.67%	-2.62%
253*	100	0.5	63.40	4542.60	60.35	14705.47	1.23	62.31	14742.09	320.94	1517	14775	-1.72%	3.25%
254*	100	0.5	63.49	4549.14	62.68	15492.65	2.19	61.85	15316.02	307.14	1535	14554	-2.59%	-1.33%
255*	100	0.5	62.23	4548.76	61.79	16602.36	1.87	61.18	16485.21	337.93	1726	14555	-1.69%	-0.99%
256*	100	0.5	62.39	4546.30	61.71	15277.99	0.95	62.33	15122.95	323.58	1696	14857	-0.09%	1.01%
257*	100	0.5	64.89	4554.62	64.50	15406.98	1.94	63.20	15536.90	159.54	1722	15621	-2.61%	-2.02%
258*	100	0.5	63.20	4551.08	62.70	15743.46	1.94	62.72	15681.81	151.22	1661	15026	-0.77%	0.03%
259*	100	0.5	63.32	4553.64	62.17	15752.39	2.16	63.25	16310.48	168.34	1672	15676	-0.12%	1.73%
260*	100	0.5	62.07	4553.91	60.69	15817.13	2.05	60.75	15852.46	157.78	1670	14817	-2.12%	0.11%
261*	100	0.5	65.40	4548.92	64.39	14876.64	0.96	63.95	14606.85	174.53	1718	15769	-2.22%	-0.69%
262*	100	0.5	62.34	4549.31	60.98	16075.53	1.50	62.24	16165.14	162.95	1621	14834	-0.15%	2.08%
263*	100	0.5	65.49	4551.98	63.54	15788.85	1.66	62.44	16097.92	152.20	1676	15608	-4.66%	-1.73%
264*	100	0.5	63.09	4547.48	63.34	16016.31	2.00	63.05	15946.63	150.76	1740	14909	-0.05%	-0.45%
265*	100	0.5	64.06	4549.85	63.18	15462.13	1.65	62.46	15446.11	158.98	1662	15143	-2.50%	-1.14%
266*	100	0.5	64.61	4545.56	66.37	14795.21	2.37	63.91	14747.44	172.07	1814	15796	-1.10%	-3.71%
267*	100	0.5	62.47	4559.86	61.42	14616.19	1.54	62.11	15242.75	168.48	1646	15620	-0.59%	1.12%
268*	100	0.5	63.57	4550.41	61.97	15424.16	2.07	62.06	15489.92	158.07	1617	14866	-2.38%	0.13%
269*	100	0.5	63.89	4548.13	62.31	15419.43	2.21	62.96	15689.16	161.48	1801	15299	-1.46%	1.04%
270*	100	0.5	65.04	4548.32	63.47	14764.56	1.54	64.88	14856.65	146.91	1654	15349	-0.25%	2.21%
271*	100	0.5	64.77	4548.53	62.62	14562.64	2.28	64.63	14878.08	168.34	1691	15403	-0.21%	3.22%
272*	100	0.5	62.22	4548.13	60.00	15609.88	1.65	61.62	16096.86	157.47	1620	15151	-0.96%	2.70%
273*	100	0.5	66.25	4549.55	65.78	15154.10	1.90	66.14	15028.07	157.78	1598	15718	-0.18%	0.55%
274*	100	0.5	60.85	4543.77	59.81	16273.23	1.24	60.85	16581.21	154.82	1722	14917	-0.01%	1.73%
275*	100	0.5	63.33	4545.01	60.54	15835.06	1.72	62.33	15953.78	162.62	1751	14943	-1.58%	2.96%
276*	100	2.0	131.90	4894.01	130.76	28589.23	2.33	131.31	28541.72	4410.25	5529	51188	-0.45%	0.42%
277*	100	2.0	125.69	4865.05	127.96	28966.07	2.54	123.90	28987.24	3021.14	5393	50743	-1.42%	-3.17%
278*	100	2.0	125.46	4842.57	124.45	28758.55	1.21	125.34	28633.99	4372.42	5560	50267	-0.10%	0.71%
279*	100	2.0	124.37	4863.30	123.46	29831.43	2.13	122.23	29481.03	4294.90	5907	48379	-1.72%	-1.00%
280*	100	2.0	120.65	4851.83	122.84	32133.37	1.89	117.92	31383.28	4040.87	5388	47465	-2.26%	-4.01%
281*	100	2.0	123.12	4861.97	125.11	29484.61	0.97	122.68	29226.50	2353.47	5701	49383	-0.36%	-1.94%
282*	100	2.0	129.40	4944.96	129.21	29522.12	1.90	126.27	29828.63	1615.70	5777	51926	-2.42%	-2.28%
283*	100	2.0	124.55	4896.42	123.43	29685.06	1.98	124.10	29934.21	1502.10	5381	49763	-0.36%	0.54%
284*	100	2.0	127.85	4912.16	126.46	30718.30	2.18	127.05	30605.16	1499.76	5451	49551	-0.62%	0.47%
285*	100	2.0	124.02	4923.95	121.73	29885.42	1.95	121.86	29899.03	1388.25	5266	47705	-1.74%	0.10%
286*	100	2.0	132.44	4932.51	130.72	28398.70	0.99	130.01	28589.08	1887.23	5981	53658	-1.83%	-0.54%
287*	100	2.0	122.13	4887.47	123.41	31236.19	1.50	121.12	31045.69	1604.50	5741	49927	-0.83%	-1.85%
288*	100	2.0	128.27	4897.83	126.33	30478.65	1.83	124.69	30699.50	1606.88	5463	51010	-2.79%	-1.29%
289*	100	2.0	125.17	4857.50	123.72	30130.91	2.24	124.97	30328.23	1528.33	5232	48326	-0.16%	1.01%
290*	100	2.0	126.21	4910.24	124.73	29447.20	1.67	123.75	29510.96	1444.76	5591	49805	-1.95%	-0.79%

Continued on the next page

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

Inst	n	δ	SimExact		SimLNS		SimSA-CVaR						$\text{GAP}_{c \times a}$	$\text{GAP}_{c \times b}$
			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	128.56	4885.83	129.18	28159.67	2.38	128.33	28711.74	1860.92	5717	53284	-0.18%	-0.66%
292*	100	2.0	123.44	4870.97	126.31	28767.20	1.62	122.44	29200.94	1607.03	6091	51997	-0.82%	-3.07%
293*	100	2.0	124.82	4867.31	126.41	30267.86	1.98	124.09	29717.36	1521.14	5704	49193	-0.59%	-1.84%
294*	100	2.0	128.01	4889.40	125.26	29814.11	2.05	127.50	30178.72	1540.88	5639	51076	-0.40%	1.78%
295*	100	2.0	125.79	4865.36	123.90	28141.77	1.89	125.71	28694.12	1531.09	5595	50993	-0.06%	1.47%
296*	100	2.0	128.62	4888.11	124.45	27848.07	2.28	127.24	28153.78	1545.98	5430	49775	-1.07%	2.24%
297*	100	2.0	125.02	4870.32	119.27	29950.66	1.36	123.74	30576.73	1462.77	5897	49304	-1.03%	3.74%
298*	100	2.0	130.23	4900.46	128.62	28540.09	1.92	129.75	29029.32	1761.98	5745	52435	-0.37%	0.88%
299*	100	2.0	122.70	4872.60	119.32	31116.03	1.27	117.41	31580.35	1660.70	5251	48906	-4.31%	-1.60%
300*	100	2.0	125.58	4858.85	121.44	30177.57	1.77	125.15	29763.06	1340.87	5231	46915	-0.34%	3.05%