

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

Inst	n	δ	SimExact		SimLNS		SimSA-VaR						GAP _{c×a}	GAP _{c×b}
			V-RPD ^a	T(s)	V-RPD ^b	T(s)	D-RPD	V-RPD ^c	SD	T(s)	ρ_S	ρ_L		
1	25	0.1	22.28	259.05	20.83	22.20	0.13	19.87	6882.84	9.13	339	3064	-10.83%	-4.60%
2	25	0.1	22.10	244.85	23.45	18.18	1.95	20.33	6011.91	9.70	337	3106	-8.00%	-13.28%
3	25	0.1	27.49	178.94	25.13	14.76	1.10	24.52	7290.97	10.75	372	3627	-10.79%	-2.40%
4	25	0.1	21.96	472.48	21.88	17.68	0.88	21.89	7632.90	9.75	430	3467	-0.29%	0.07%
5	25	0.1	22.20	342.72	22.40	14.86	1.00	21.11	7020.37	9.66	386	3272	-4.90%	-5.76%
6	25	0.1	27.46	304.41	22.12	18.00	1.08	22.22	6737.86	8.24	332	3274	-19.11%	0.42%
7	25	0.1	22.10	4480.63	22.13	15.84	0.36	20.56	7208.87	8.69	356	3230	-6.99%	-7.11%
8	25	0.1	21.26	482.83	22.51	16.22	1.10	19.72	7332.22	8.50	322	3347	-7.28%	-12.42%
9	25	0.1	25.68	446.01	20.21	15.85	0.29	20.48	7819.54	9.02	355	3268	-20.27%	1.33%
10	25	0.1	33.41	347.60	26.60	19.98	1.85	23.60	7120.25	9.87	372	3389	-29.37%	-11.30%
11	25	0.1	28.84	470.55	22.50	14.55	1.89	20.64	7240.37	9.05	407	3231	-28.41%	-8.23%
12	25	0.1	27.63	226.53	20.11	17.41	0.61	18.64	7091.04	8.17	356	3182	-32.54%	-7.31%
13	25	0.1	33.24	363.98	19.14	15.65	0.98	18.54	5448.91	8.41	252	2582	-44.22%	-3.13%
14	25	0.1	29.50	440.17	27.41	17.63	3.97	26.86	4476.93	11.25	434	3496	-8.95%	-2.01%
15	25	0.1	22.06	332.77	22.74	16.79	1.91	21.33	5895.34	8.77	315	2906	-3.33%	-6.20%
16	25	0.1	24.80	496.11	24.51	17.52	2.46	23.43	5334.66	9.26	333	3383	-5.52%	-4.41%
17	25	0.1	26.20	317.91	23.63	14.97	1.50	20.81	6758.96	7.77	314	3064	-20.57%	-11.93%
18	25	0.1	36.67	286.41	23.27	16.45	1.56	22.23	6483.12	10.02	432	3471	-39.38%	-4.47%
19	25	0.1	21.94	311.76	22.08	16.90	1.23	21.69	6898.71	9.05	390	3426	-1.15%	-1.75%
20	25	0.1	21.44	468.68	21.78	16.07	0.08	20.47	7573.49	9.30	369	3063	-4.54%	-6.05%
21	25	0.1	26.74	4484.27	19.02	16.33	0.59	20.07	7643.41	8.48	355	3113	-24.92%	5.55%
22	25	0.1	31.12	392.43	30.73	21.66	4.16	27.83	4789.66	11.38	466	4374	-10.56%	-9.43%
23	25	0.1	21.44	413.26	22.55	16.24	1.04	19.46	6300.97	8.51	314	3045	-9.24%	-13.70%
24	25	0.1	25.10	254.44	20.97	16.57	1.39	20.21	6987.50	8.16	351	2999	-19.47%	-3.60%
25	25	0.1	20.73	459.73	19.86	16.60	0.69	19.97	7193.97	8.16	304	2992	-3.65%	0.57%
26	25	0.5	48.63	311.55	45.48	104.76	0.30	44.74	15496.74	80.35	1554	14466	-8.00%	-1.63%
27	25	0.5	51.26	313.30	52.48	85.02	2.25	49.17	14197.51	100.79	1784	15608	-4.07%	-6.31%
28	25	0.5	51.90	221.73	53.17	37.13	1.75	49.66	15724.01	103.44	1712	15712	-4.32%	-6.60%
29	25	0.5	47.66	536.15	47.40	79.33	0.77	47.52	16525.58	85.87	1650	14990	-0.30%	0.26%
30	25	0.5	49.98	414.90	47.48	34.47	1.00	47.06	15518.73	80.81	1700	14754	-5.83%	-0.87%
31	25	0.5	55.45	387.04	49.57	108.42	1.36	49.83	15270.44	90.71	1745	15394	-10.14%	0.53%
32	25	0.5	46.77	4546.77	46.69	61.76	0.24	46.39	16047.69	79.61	1624	14668	-0.81%	-0.63%
33	25	0.5	48.32	551.90	47.39	91.35	0.98	45.91	16426.46	100.63	1729	15309	-4.99%	-3.12%
34	25	0.5	47.49	434.33	44.80	85.75	0.47	45.45	17059.30	85.27	1666	14425	-4.29%	1.45%
35	25	0.5	53.51	393.82	53.46	87.45	1.66	51.40	15855.73	93.66	1653	15328	-3.94%	-3.84%
36	25	0.5	51.36	528.79	49.83	34.45	1.96	46.16	16244.88	84.67	1647	15028	-10.12%	-7.37%
37	25	0.5	49.83	265.28	45.03	92.32	0.12	46.61	16436.75	89.54	1766	15515	-6.46%	3.52%
38	25	0.5	56.62	407.64	46.82	62.15	2.13	47.18	13833.36	89.10	1671	15231	-16.67%	0.77%
39	25	0.5	63.49	567.28	65.36	132.66	3.97	60.62	10896.33	138.47	2120	18869	-4.52%	-7.25%
40	25	0.5	50.80	406.68	48.28	81.14	1.87	48.81	13943.59	90.92	1716	14968	-3.90%	1.11%
41	25	0.5	55.68	583.49	54.27	112.75	2.12	53.67	12644.57	105.32	1858	17121	-3.61%	-1.10%
42	25	0.5	49.59	364.33	48.05	56.82	1.91	46.79	15244.26	84.31	1657	14279	-5.66%	-2.62%
43	25	0.5	55.03	321.92	49.78	78.56	1.56	49.52	14456.86	96.24	1736	15674	-10.01%	-0.53%
44	25	0.5	49.37	380.80	48.99	68.68	1.27	48.75	15368.30	88.95	1667	15502	-1.26%	-0.49%
45	25	0.5	47.44	534.74	45.77	65.25	0.08	45.08	16856.23	83.40	1545	14178	-4.97%	-1.52%
46	25	0.5	48.94	4520.87	44.72	78.76	0.58	46.45	17187.08	77.09	1692	14492	-5.07%	3.87%
47	25	0.5	63.56	519.14	63.78	118.49	4.33	60.74	10724.01	165.89	2191	19617	-4.44%	-4.77%
48	25	0.5	48.37	482.05	46.26	79.29	1.22	44.80	14314.88	90.99	1773	14572	-7.38%	-3.17%
49	25	0.5	51.85	311.20	47.88	72.47	1.27	45.51	15904.14	81.29	1675	14509	-12.23%	-4.95%
50	25	0.5	46.92	526.07	46.43	63.77	0.64	46.48	16531.26	87.65	1644	14587	-0.93%	0.11%
51	25	2.0	91.24	1107.83	89.49	821.65	0.10	89.85	30046.35	1006.32	5314	48307	-1.52%	0.40%
52	25	2.0	96.59	1308.60	97.70	1051.69	1.68	95.91	27367.89	1157.90	5879	51920	-0.71%	-1.83%
53	25	2.0	95.76	936.16	95.06	234.37	0.86	95.39	29908.81	1011.87	5657	50361	-0.38%	0.35%
54	25	2.0	90.92	1417.75	90.53	818.78	0.68	90.08	30947.17	1091.09	5337	47385	-0.93%	-0.50%
55	25	2.0	92.32	1361.00	91.30	532.75	1.69	91.85	29651.31	916.55	5126	47882	-0.51%	0.60%
56	25	2.0	96.41	1363.07	95.21	996.17	1.32	92.97	28562.12	1028.58	5406	48290	-3.56%	-2.35%
57	25	2.0	87.93	5464.84	87.93	652.78	0.46	87.28	29956.02	917.27	5025	46344	-0.74%	-0.74%
58	25	2.0	90.28	1488.45	91.65	614.90	1.08	90.04	31205.76	1141.98	5578	49710	-0.27%	-1.76%

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

Inst	n	δ	SimExact		SimLNS		SimSA-VaR						GAP _{c×a}	GAP _{c×b}
			V-RPD ^a	T(s)	V-RPD ^b	T(s)	D-RPD	V-RPD ^c	SD	T(s)	ρ_S	ρ_L		
59	25	2.0	90.23	1070.69	89.31	620.01	0.06	89.78	32879.65	939.26	5132	47195	-0.50%	0.52%
60	25	2.0	94.85	1089.17	95.34	850.34	1.87	94.30	29441.19	990.55	5382	48099	-0.58%	-1.10%
61	25	2.0	94.30	1332.26	93.15	226.39	1.02	91.33	31164.12	1020.21	5505	49327	-3.15%	-1.96%
62	25	2.0	93.99	964.11	89.26	804.00	0.09	90.20	31086.13	1177.02	5345	49820	-4.03%	1.05%
63	25	2.0	96.22	1045.22	92.53	658.27	1.81	92.51	26311.33	1053.56	5622	48554	-3.85%	-0.02%
64	25	2.0	123.18	2775.06	125.18	1857.26	3.97	122.43	22607.21	2174.88	7638	68419	-0.61%	-2.20%
65	25	2.0	98.47	1542.58	95.50	969.86	3.65	97.06	27765.05	1150.73	6091	52756	-1.43%	1.63%
66	25	2.0	108.87	1995.46	106.89	1146.62	2.21	107.83	24910.48	1566.38	6158	57627	-0.95%	0.88%
67	25	2.0	92.72	1122.74	91.68	208.80	2.00	91.84	29578.09	968.46	5399	48002	-0.96%	0.16%
68	25	2.0	100.47	970.54	96.95	695.53	1.10	96.35	27602.31	1071.91	5838	50928	-4.11%	-0.63%
69	25	2.0	96.33	1477.40	93.13	839.61	0.75	94.27	29352.18	1014.97	5289	49864	-2.14%	1.22%
70	25	2.0	88.02	1391.97	86.70	187.86	0.03	86.27	31879.42	854.28	5128	45852	-1.99%	-0.50%
71	25	2.0	90.19	5087.40	86.57	694.37	0.70	84.34	31610.06	829.43	5106	44746	-6.48%	-2.58%
72	25	2.0	123.03	2597.16	126.07	1446.32	4.08	122.75	21722.96	2256.72	7661	68189	-0.23%	-2.63%
73	25	2.0	91.06	1447.12	90.05	775.61	0.88	89.78	27578.19	1005.44	5217	48168	-1.41%	-0.30%
74	25	2.0	92.81	1112.03	91.94	977.13	1.20	89.20	30500.57	921.33	5298	48104	-3.89%	-2.98%
75	25	2.0	89.54	1432.91	87.80	679.46	0.41	88.92	31237.95	937.86	4988	47015	-0.69%	1.28%
76*	50	0.1	23.42	4497.95	22.46	38.83	2.23	21.12	5919.83	14.39	308	2884	-9.84%	-5.99%
77*	50	0.1	23.26	4497.03	22.61	42.29	1.78	21.79	6789.23	17.35	419	3435	-6.29%	-3.62%
78*	50	0.1	20.80	4498.19	19.74	41.25	0.45	20.05	7557.67	15.99	393	3237	-3.62%	1.56%
79*	50	0.1	25.49	4497.70	20.93	41.13	2.72	20.15	5265.60	14.08	312	2644	-20.97%	-3.73%
80*	50	0.1	20.45	4499.46	19.96	41.98	0.54	20.29	7378.48	15.13	339	3147	-0.79%	1.65%
81*	50	0.1	21.09	4497.12	21.69	44.42	0.64	19.67	6699.41	16.73	383	3027	-6.70%	-9.32%
82*	50	0.1	20.57	4498.80	20.95	41.83	1.27	20.33	6436.45	15.31	360	3016	-1.20%	-2.95%
83*	50	0.1	20.81	4499.17	20.12	43.16	0.55	19.61	7006.03	16.04	372	3241	-5.79%	-2.54%
84*	50	0.1	22.16	4497.57	21.23	43.97	1.42	21.18	7194.16	14.75	356	3267	-4.43%	-0.27%
85*	50	0.1	25.37	4497.86	21.75	41.87	2.24	21.30	5841.61	15.41	293	2911	-16.05%	-2.07%
86*	50	0.1	21.02	4495.45	20.65	42.79	1.27	19.87	7328.10	13.98	332	3054	-5.50%	-3.78%
87*	50	0.1	22.97	4498.38	20.53	43.52	1.05	20.95	7395.68	38.50	354	3173	-8.81%	2.06%
88*	50	0.1	24.21	4496.62	21.07	44.73	1.76	21.72	6833.14	15.46	391	3312	-10.29%	3.10%
89*	50	0.1	20.69	4499.43	20.20	42.41	1.48	20.66	7150.62	14.61	316	3007	-0.15%	2.28%
90*	50	0.1	22.51	4498.84	22.84	41.94	1.68	22.28	6473.67	14.27	364	3268	-1.01%	-2.46%
91*	50	0.1	24.12	4498.29	20.99	43.68	1.43	21.01	7275.46	14.85	361	3077	-12.87%	0.10%
92*	50	0.1	22.25	4498.41	20.43	44.68	1.13	20.64	7120.97	16.97	347	3216	-7.20%	1.03%
93*	50	0.1	22.33	4497.34	20.25	41.67	1.57	19.79	6880.84	13.87	306	2847	-11.40%	-2.30%
94*	50	0.1	22.22	4499.35	20.46	41.84	1.79	20.74	6203.42	14.46	359	2982	-6.66%	1.37%
95*	50	0.1	19.46	4500.12	19.31	41.95	1.17	19.11	7542.71	15.73	310	2979	-1.83%	-1.03%
96*	50	0.1	23.23	4501.01	21.51	42.46	2.24	21.20	6460.93	15.26	303	3234	-8.74%	-1.41%
97*	50	0.1	21.31	4498.81	20.68	42.63	1.31	19.57	6610.52	13.14	353	2958	-8.16%	-5.36%
98*	50	0.1	21.78	4498.98	18.10	42.67	0.73	17.07	6356.31	15.05	321	3281	-21.62%	-5.65%
99*	50	0.1	20.68	4484.08	20.51	42.14	1.45	19.27	6903.78	14.75	377	3139	-6.81%	-6.05%
100*	50	0.1	22.59	4484.72	21.03	43.15	0.80	19.75	6817.36	16.38	353	3018	-12.54%	-6.08%
101*	50	0.5	49.69	4573.64	48.24	57.94	2.29	49.57	14136.65	93.39	1560	14976	-0.23%	2.77%
102*	50	0.5	51.00	4586.62	50.23	118.52	1.76	48.14	14988.13	103.55	1698	15389	-5.61%	-4.15%
103*	50	0.5	47.29	4575.77	47.36	99.90	0.52	44.88	16835.62	100.64	1718	14845	-5.09%	-5.22%
104*	50	0.5	51.37	4578.43	49.44	107.90	2.43	49.35	13217.38	103.50	1733	15190	-3.93%	-0.19%
105*	50	0.5	46.37	4582.45	45.33	122.83	0.47	43.49	16039.40	89.32	1594	13934	-6.21%	-4.05%
106*	50	0.5	47.73	4573.84	47.10	96.03	0.69	45.61	15165.65	102.20	1646	14241	-4.43%	-3.15%
107*	50	0.5	47.63	4586.28	46.71	92.85	1.47	46.06	14721.66	98.98	1376	14452	-3.29%	-1.39%
108*	50	0.5	47.78	4584.96	46.89	105.47	0.65	47.73	16234.40	113.41	1781	15708	-0.09%	1.80%
109*	50	0.5	47.56	4576.40	48.05	104.09	1.51	47.07	15924.52	99.81	1637	14694	-1.03%	-2.03%
110*	50	0.5	52.63	4578.49	51.37	130.71	2.32	50.03	14168.19	121.95	1727	15552	-4.93%	-2.60%
111*	50	0.5	47.35	4571.90	47.87	103.35	1.22	45.83	16632.44	93.11	1593	14516	-3.21%	-4.25%
112*	50	0.5	48.50	4569.20	46.85	97.97	1.15	47.27	16591.96	326.90	1644	14672	-2.54%	0.89%
113*	50	0.5	49.37	4569.43	48.85	129.54	1.81	48.55	15499.33	112.30	1658	15593	-1.66%	-0.61%
114*	50	0.5	48.31	4586.62	46.94	102.26	1.22	47.48	16405.58	91.28	1711	14568	-1.72%	1.14%
115*	50	0.5	50.13	4581.82	48.85	103.86	1.72	49.40	14691.57	98.89	1743	15259	-1.45%	1.13%
116*	50	0.5	50.51	4576.76	48.49	128.34	1.37	47.98	16703.21	89.31	1647	14867	-5.00%	-1.06%

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Inst	n	δ	SimExact		SimLNS		SimSA-VaR						GAP _{c×a}	GAP _{c×b}
			V-RPD ^a	T(s)	V-RPD ^b	T(s)	D-RPD	V-RPD ^c	SD	T(s)	ρ_S	ρ_L		
117*	50	0.5	50.24	4574.11	48.66	122.59	1.40	46.70	16028.67	108.03	1675	14998	-7.05%	-4.02%
118*	50	0.5	48.64	4579.04	46.46	95.86	1.38	46.95	16292.78	66.76	1496	14611	-3.49%	1.05%
119*	50	0.5	50.19	4587.51	47.55	121.46	2.06	47.95	14373.77	96.18	1646	14593	-4.46%	0.85%
120*	50	0.5	45.39	4572.78	45.28	99.24	1.11	44.95	17359.40	97.13	1594	14495	-0.97%	-0.73%
121*	50	0.5	50.43	4590.81	49.29	99.96	1.78	49.35	15014.29	107.34	1765	15914	-2.13%	0.13%
122*	50	0.5	48.14	4579.62	46.96	97.56	1.91	46.68	15477.20	98.73	1539	14737	-3.02%	-0.59%
123*	50	0.5	49.59	4573.25	43.63	130.53	1.01	44.72	14710.10	120.29	1835	16053	-9.82%	2.51%
124*	50	0.5	48.79	4518.42	48.13	107.53	1.65	47.53	15916.25	93.50	1650	15151	-2.57%	-1.24%
125*	50	0.5	47.11	4512.43	45.99	119.19	0.63	47.00	16020.70	100.40	1701	15259	-0.24%	2.18%
126*	50	2.0	95.49	5568.60	93.85	247.01	2.06	93.90	27053.84	991.11	5533	49373	-1.67%	0.06%
127*	50	2.0	95.18	5720.70	96.66	716.41	1.49	94.94	29012.55	1098.92	5605	51027	-0.25%	-1.78%
128*	50	2.0	90.59	5560.47	89.88	977.22	0.45	90.40	32594.82	1021.44	5446	49389	-0.22%	0.57%
129*	50	2.0	103.60	5642.49	95.75	1079.51	2.53	97.64	25940.94	1213.84	5609	51708	-5.75%	1.97%
130*	50	2.0	87.51	5548.79	85.46	776.70	0.48	86.89	31195.23	1010.11	5217	47105	-0.70%	1.67%
131*	50	2.0	89.56	5546.15	89.10	847.05	0.76	88.69	29435.74	1135.25	5278	48335	-0.97%	-0.45%
132*	50	2.0	91.96	5698.33	92.42	809.53	1.60	91.83	28889.52	1107.42	5684	49725	-0.14%	-0.64%
133*	50	2.0	95.27	5752.30	91.79	742.70	0.53	92.96	31121.76	1123.12	5705	51443	-2.43%	1.28%
134*	50	2.0	89.27	5582.01	87.55	630.66	1.60	88.79	30272.90	1169.47	5462	47818	-0.54%	1.42%
135*	50	2.0	99.22	5734.17	99.00	899.43	2.28	99.06	27670.36	1296.34	5815	52625	-0.16%	0.06%
136*	50	2.0	89.52	5524.11	87.76	756.16	1.28	88.02	31409.07	2202.20	5218	46711	-1.68%	0.29%
137*	50	2.0	89.68	5523.06	88.99	625.97	0.99	88.42	31146.56	984.65	5427	47428	-1.41%	-0.64%
138*	50	2.0	96.44	5642.95	93.37	865.18	1.73	95.79	29920.87	1262.67	5945	51348	-0.68%	2.59%
139*	50	2.0	90.66	5646.83	91.19	889.41	1.18	90.64	31478.29	1063.49	5345	48378	-0.02%	-0.61%
140*	50	2.0	96.46	5768.14	96.44	567.39	1.67	95.18	28166.60	1058.68	5426	50408	-1.33%	-1.30%
141*	50	2.0	94.66	5551.85	91.43	864.20	1.48	92.37	32122.83	1074.30	5542	48977	-2.41%	1.03%
142*	50	2.0	94.71	5668.47	94.63	843.45	1.27	92.94	31127.33	1158.76	5465	49614	-1.87%	-1.79%
143*	50	2.0	92.93	5636.68	92.31	509.46	1.23	92.08	31564.92	1130.70	5357	49053	-0.91%	-0.25%
144*	50	2.0	97.60	5825.90	96.80	1017.64	2.06	96.47	28946.40	1250.83	5599	52599	-1.15%	-0.34%
145*	50	2.0	88.48	5425.86	86.19	781.52	0.77	87.60	33058.65	975.14	5414	47377	-0.99%	1.64%
146*	50	2.0	97.57	5769.41	98.35	812.95	1.91	97.28	28825.83	1286.72	5786	52035	-0.30%	-1.09%
147*	50	2.0	92.33	5628.70	91.25	794.94	2.62	91.71	29470.74	992.40	5389	47903	-0.67%	0.50%
148*	50	2.0	93.70	4970.25	90.42	1244.89	1.36	90.88	28155.53	1376.46	5983	52150	-3.01%	0.51%
149*	50	2.0	92.41	4810.62	91.11	721.51	1.60	91.41	30165.65	1209.96	5489	49249	-1.09%	0.33%
150*	50	2.0	88.99	4757.95	88.23	630.28	0.84	87.55	29638.32	1075.95	5297	47149	-1.63%	-0.77%
151*	75	0.1	22.49	4494.21	19.33	81.18	1.64	20.45	6969.35	20.55	353	3039	-9.08%	5.80%
152*	75	0.1	21.97	4489.05	21.06	82.60	1.72	20.51	6196.50	21.51	325	3076	-6.67%	-2.64%
153*	75	0.1	21.71	4491.80	22.89	82.96	1.07	20.69	6481.96	23.82	321	3144	-4.66%	-9.58%
154*	75	0.1	19.90	4490.85	18.32	82.42	0.00	18.90	6771.97	22.41	367	3215	-5.01%	3.13%
155*	75	0.1	20.29	4492.05	19.45	82.66	1.67	19.60	6446.40	21.35	294	2799	-3.41%	0.77%
156*	75	0.1	19.75	4491.46	19.95	86.64	0.79	19.31	6866.65	23.11	315	3145	-2.23%	-3.25%
157*	75	0.1	23.15	4490.76	20.32	85.05	1.66	19.35	6483.80	21.64	325	2985	-16.42%	-4.80%
158*	75	0.1	21.02	4491.67	20.27	82.66	1.80	19.65	5989.26	22.14	293	2827	-6.50%	-3.05%
159*	75	0.1	20.66	4491.79	20.86	83.17	1.93	20.58	7233.77	22.39	350	3094	-0.39%	-1.34%
160*	75	0.1	21.23	4491.94	20.30	80.33	2.12	20.67	6189.61	22.19	343	3010	-2.64%	1.83%
161*	75	0.1	21.62	4489.75	21.50	87.50	1.89	20.66	6013.41	22.85	341	3090	-4.45%	-3.92%
162*	75	0.1	22.26	4491.53	20.92	76.97	0.99	19.33	6775.02	26.65	345	3037	-13.16%	-7.59%
163*	75	0.1	20.00	4489.80	19.25	80.16	0.56	19.07	6756.13	24.78	325	2919	-4.66%	-0.95%
164*	75	0.1	22.31	4491.98	19.64	95.53	1.20	20.39	6804.92	33.03	354	3114	-8.59%	3.82%
165*	75	0.1	22.90	4492.03	22.50	81.16	2.47	22.12	6207.41	34.52	352	3105	-3.43%	-1.70%
166*	75	0.1	22.03	4490.98	21.06	81.42	1.64	19.94	6707.54	32.92	312	2930	-9.53%	-5.32%
167*	75	0.1	22.75	4492.46	22.70	82.04	1.79	22.54	7038.36	33.38	392	3414	-0.92%	-0.69%
168*	75	0.1	21.33	4493.10	21.13	87.88	2.11	20.51	6416.98	34.30	352	3039	-3.85%	-2.92%
169*	75	0.1	24.78	4491.09	20.64	85.95	1.05	19.87	6709.76	33.70	322	3197	-19.81%	-3.74%
170*	75	0.1	24.43	4492.54	21.90	81.04	1.92	21.65	6637.39	30.11	368	3105	-11.38%	-1.16%
171*	75	0.1	21.49	4492.77	21.18	85.73	2.34	20.84	6647.68	28.27	356	3022	-3.00%	-1.62%
172*	75	0.1	20.78	4489.54	19.64	82.40	1.47	20.12	7002.43	38.50	310	2894	-3.19%	2.45%
173*	75	0.1	21.87	4492.95	21.06	85.04	1.96	20.96	6577.54	21.85	359	3162	-4.16%	-0.47%
174*	75	0.1	22.24	4491.81	20.25	80.50	1.05	20.58	7274.38	23.40	375	3134	-7.48%	1.62%

Continued on the next page

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

Inst	n	δ	SimExact		SimLNS		SimSA-VaR						GAP _{c×a}	GAP _{c×b}
			V-RPD ^a	T(s)	V-RPD ^b	T(s)	D-RPD	V-RPD ^c	SD	T(s)	ρ_S	ρ_L		
175*	75	0.1	21.05	4490.49	21.53	83.08	1.30	20.99	6040.93	49.65	315	3147	-0.27%	-2.48%
176*	75	0.5	47.58	4522.78	47.05	141.20	1.77	47.28	16026.28	113.43	1589	14758	-0.63%	0.47%
177*	75	0.5	50.63	4526.83	49.09	178.75	1.71	49.36	14742.64	126.89	1687	15927	-2.50%	0.55%
178*	75	0.5	49.23	4534.28	49.22	157.46	1.13	48.89	15137.05	130.06	1677	15567	-0.69%	-0.68%
179*	75	0.5	46.65	4529.26	44.86	161.27	0.15	45.43	15396.64	112.28	1626	15149	-2.61%	1.27%
180*	75	0.5	47.74	4535.02	46.75	138.95	1.61	47.13	15384.24	106.13	1727	14719	-1.27%	0.82%
181*	75	0.5	48.16	4533.80	48.00	154.21	0.86	46.94	15709.57	117.41	1624	14997	-2.53%	-2.21%
182*	75	0.5	50.16	4526.85	47.09	119.09	1.65	49.29	15413.65	121.64	1722	15371	-1.73%	4.67%
183*	75	0.5	47.93	4533.23	46.22	142.41	1.46	47.11	14280.09	112.31	1631	14749	-1.71%	1.94%
184*	75	0.5	47.79	4530.61	46.84	170.25	1.07	47.46	16630.97	107.74	1638	14961	-0.68%	1.32%
185*	75	0.5	49.72	4532.65	48.14	145.65	2.12	48.58	14479.56	86.00	1717	15045	-2.29%	0.91%
186*	75	0.5	51.18	4538.02	48.85	187.14	1.97	49.78	14394.00	145.90	1750	15989	-2.72%	1.92%
187*	75	0.5	49.63	4536.46	48.26	100.34	0.99	47.61	15875.27	136.21	1762	15194	-4.06%	-1.35%
188*	75	0.5	46.35	4528.64	45.81	143.48	0.86	46.32	15965.15	116.31	1599	14810	-0.08%	1.11%
189*	75	0.5	49.39	4533.40	48.86	117.67	1.05	46.07	15359.82	143.09	1525	14641	-6.74%	-5.71%
190*	75	0.5	50.32	4535.88	48.92	184.16	3.03	48.63	14137.01	175.03	1727	14579	-3.35%	-0.58%
191*	75	0.5	48.28	4529.91	47.69	142.54	1.33	47.47	15813.40	158.32	1566	14950	-1.68%	-0.47%
192*	75	0.5	49.93	4536.05	49.61	172.24	1.84	48.94	15569.84	176.17	1745	15515	-1.99%	-1.37%
193*	75	0.5	48.28	4534.42	48.34	178.94	2.11	46.59	14680.28	178.71	1682	14733	-3.51%	-3.62%
194*	75	0.5	51.56	4530.29	47.36	163.87	1.20	46.91	15439.40	195.58	1802	15453	-9.02%	-0.94%
195*	75	0.5	51.26	4535.54	49.11	185.12	2.17	48.88	15314.18	168.13	1658	15110	-4.63%	-0.46%
196*	75	0.5	50.49	4537.22	48.28	158.17	1.92	49.43	15675.91	137.04	1742	15426	-2.10%	2.40%
197*	75	0.5	47.87	4531.54	48.06	167.65	1.40	47.48	16685.61	388.27	1768	15073	-0.80%	-1.19%
198*	75	0.5	50.88	4539.02	48.49	134.41	2.18	48.49	15179.39	117.99	1718	15318	-4.70%	-0.01%
199*	75	0.5	47.38	4533.15	46.58	119.84	1.03	45.81	16352.73	108.73	1523	14499	-3.32%	-1.66%
200*	75	0.5	50.52	4534.14	124.37	718.67	1.49	50.38	14288.60	338.30	1809	16019	-0.27%	-59.49%
201*	75	2.0	92.08	4773.49	74.37	1078.55	1.36	89.01	30247.97	997.52	5356	47739	-3.34%	19.67%
202*	75	2.0	97.59	4827.19	100.77	814.50	1.71	96.74	28406.68	1332.38	5934	52283	-0.87%	-4.00%
203*	75	2.0	94.71	4898.71	97.79	895.09	1.09	92.90	28634.86	1191.97	5472	50393	-1.91%	-5.00%
204*	75	2.0	89.49	4811.57	92.91	1007.23	0.11	88.10	29183.52	1056.88	5181	49017	-1.55%	-5.17%
205*	75	2.0	92.50	4857.72	92.44	751.22	1.56	91.90	29748.56	1075.74	5334	48886	-0.65%	-0.59%
206*	75	2.0	92.70	4840.08	84.84	667.96	0.79	89.67	29950.39	1108.86	5394	49302	-3.28%	5.69%
207*	75	2.0	92.28	4808.45	79.75	666.36	1.46	91.79	29327.12	1093.03	5412	50329	-0.54%	15.09%
208*	75	2.0	89.37	4824.77	117.89	771.62	1.42	88.98	26821.76	1027.47	5158	47526	-0.44%	-24.53%
209*	75	2.0	88.88	4789.65	66.32	522.44	1.50	88.37	31352.89	1085.13	5102	48040	-0.57%	33.24%
210*	75	2.0	94.29	4850.71	87.76	1107.32	2.11	93.27	27901.63	1144.55	5314	50356	-1.09%	6.28%
211*	75	2.0	96.68	4929.55	121.62	309.98	1.45	96.24	27701.99	1486.33	5924	52754	-0.46%	-20.87%
212*	75	2.0	95.60	4836.51	91.14	961.97	1.05	91.26	30291.27	1449.31	5697	50235	-4.54%	0.13%
213*	75	2.0	90.40	4828.50	84.54	484.80	1.07	88.43	30134.46	1829.85	5322	47847	-2.18%	4.60%
214*	75	2.0	92.21	4823.23	74.51	869.14	1.00	91.09	29617.15	1203.05	5376	48885	-1.22%	22.24%
215*	75	2.0	94.26	4863.72	114.99	727.34	2.51	92.52	27051.66	1866.60	5397	48710	-1.85%	-19.54%
216*	75	2.0	92.23	4813.42	85.20	730.32	1.31	91.61	30438.95	1983.86	5381	49537	-0.67%	7.52%
217*	75	2.0	93.80	4853.00	86.48	732.99	1.77	93.63	29521.20	1919.50	5314	49503	-0.18%	8.27%
218*	75	2.0	91.72	4829.50	99.41	911.48	2.10	91.09	28211.86	1947.79	5238	48894	-0.68%	-8.37%
219*	75	2.0	95.20	4831.48	91.76	1058.93	1.18	92.62	29524.59	2251.69	5669	50392	-2.70%	0.94%
220*	75	2.0	95.29	4850.26	94.71	1006.18	1.91	94.99	29637.81	1008.90	5835	50647	-0.31%	0.30%
221*	75	2.0	91.55	4850.31	105.90	917.74	2.25	90.61	28841.30	1323.99	5347	47401	-1.02%	-14.44%
222*	75	2.0	91.02	4834.34	73.83	861.04	1.80	90.87	31340.76	2105.27	5120	47203	-0.16%	23.07%
223*	75	2.0	95.98	4900.25	110.25	674.52	1.95	93.06	29073.40	1205.39	5574	50566	-3.04%	-15.59%
224*	75	2.0	90.47	4836.64	5.25	136.26	1.37	88.68	31131.22	2848.53	5014	47818	-1.98%	1587.66%
225*	75	2.0	97.30	4882.21	31.17	131.87	1.23	96.39	27441.14	4585.78	5847	52386	-0.93%	209.25%
226*	100	0.1	22.30	4495.50	24.38	134.93	2.41	21.36	6206.37	70.51	315	2986	-4.23%	-12.38%
227*	100	0.1	22.03	4495.67	26.31	136.44	1.88	21.00	6531.54	65.78	391	3151	-4.69%	-20.18%
228*	100	0.1	21.91	4497.49	35.62	135.09	1.20	20.04	6445.11	68.58	354	3076	-8.55%	-43.74%
229*	100	0.1	21.08	4497.65	18.13	136.50	2.39	20.49	6633.64	72.45	319	2971	-2.79%	13.01%
230*	100	0.1	21.83	4498.39	9.15	130.49	1.85	20.29	7161.26	71.36	317	2996	-7.05%	121.70%
231*	100	0.1	20.62	4496.17	23.18	135.68	0.99	20.15	6693.20	63.35	352	3133	-2.30%	-13.06%
232*	100	0.1	21.66	4499.04	27.01	131.22	1.92	21.60	6701.73	36.14	390	3181	-0.26%	-20.03%

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

Inst	n	δ	SimExact		SimLNS		SimSA-VaR						GAP _{c\timesa}	GAP _{c\timesb}
			V-RPD ^a	T(s)	V-RPD ^b	T(s)	D-RPD	V-RPD ^c	SD	T(s)	ρ_S	ρ_L		
233*	100	0.1	20.32	4498.73	22.91	136.64	1.92	20.17	6774.90	33.90	325	3064	-0.74%	-11.96%
234*	100	0.1	21.35	4499.01	8.23	131.60	1.92	20.95	6828.86	35.78	332	2991	-1.89%	154.47%
235*	100	0.1	21.06	4499.03	22.90	136.47	1.91	19.09	6750.19	34.55	340	2948	-9.37%	-16.64%
236*	100	0.1	21.57	4497.94	33.14	135.80	1.16	20.50	6275.76	34.89	339	3206	-4.97%	-38.15%
237*	100	0.1	20.99	4497.56	18.81	142.47	1.59	19.45	6886.79	35.26	333	2942	-7.35%	3.40%
238*	100	0.1	23.26	4499.76	16.86	132.65	1.67	20.84	6828.06	33.36	356	3073	-10.42%	23.58%
239*	100	0.1	21.79	4497.47	8.77	135.52	2.21	21.78	7096.90	34.55	347	3213	-0.05%	148.36%
240*	100	0.1	21.08	4497.40	16.81	134.93	1.68	21.07	6620.76	33.59	352	3022	-0.03%	25.34%
241*	100	0.1	21.43	4495.84	31.93	133.90	2.49	21.06	6050.70	35.35	299	2918	-1.75%	-34.04%
242*	100	0.1	21.94	4497.84	24.55	132.00	1.73	20.37	6277.02	35.93	338	2918	-7.17%	-17.02%
243*	100	0.1	22.12	4498.30	15.69	140.80	2.23	20.63	6482.69	36.73	359	2846	-6.73%	31.45%
244*	100	0.1	22.52	4498.14	13.90	134.51	2.21	21.89	6836.91	37.40	343	3194	-2.78%	57.47%
245*	100	0.1	22.23	4497.42	30.95	135.04	1.61	21.40	6354.55	34.81	325	3052	-3.74%	-30.85%
246*	100	0.1	20.88	4498.07	21.97	135.65	2.29	20.59	6113.38	34.67	317	2863	-1.40%	-6.30%
247*	100	0.1	20.14	4496.82	24.43	133.70	1.33	20.05	6890.90	36.17	357	3058	-0.41%	-17.92%
248*	100	0.1	23.27	4497.84	33.68	136.55	2.11	22.15	6611.22	34.28	336	3316	-4.81%	-34.22%
249*	100	0.1	20.14	4497.10	23.41	145.78	1.37	20.00	7326.52	36.36	350	3181	-0.68%	-14.59%
250*	100	0.1	20.92	4496.38	33.58	202.46	1.74	20.62	7002.62	35.07	332	3124	-1.40%	-38.59%
251*	100	0.5	50.99	4548.04	53.18	202.90	2.46	49.84	14784.87	354.51	1670	15590	-2.25%	-6.28%
252*	100	0.5	49.49	4546.62	47.39	169.05	1.82	47.45	14891.09	297.81	1662	15000	-4.12%	0.12%
253*	100	0.5	48.32	4542.60	53.87	203.49	1.23	46.57	14742.09	320.94	1517	14775	-3.63%	-13.56%
254*	100	0.5	49.08	4549.14	57.80	198.80	2.19	47.28	15316.02	307.14	1535	14554	-3.66%	-18.20%
255*	100	0.5	48.13	4548.76	34.60	205.71	1.87	46.92	16485.21	337.93	1726	14555	-2.50%	35.60%
256*	100	0.5	47.29	4546.30	46.19	202.67	0.95	46.32	15122.95	323.58	1696	14857	-2.06%	0.27%
257*	100	0.5	50.26	4554.62	53.27	199.27	1.94	49.76	15536.90	159.54	1722	15621	-0.99%	-6.58%
258*	100	0.5	49.24	4551.08	50.27	198.68	1.94	47.95	15681.81	151.22	1661	15026	-2.62%	-4.61%
259*	100	0.5	49.82	4553.64	49.08	228.74	2.16	49.77	16310.48	168.34	1672	15676	-0.10%	1.40%
260*	100	0.5	48.45	4553.91	33.26	207.55	2.05	46.78	15852.46	157.78	1670	14817	-3.45%	40.67%
261*	100	0.5	50.35	4548.92	67.44	201.87	0.96	49.09	14606.85	174.53	1718	15769	-2.50%	-27.20%
262*	100	0.5	48.73	4549.31	43.17	225.79	1.50	47.09	16165.14	162.95	1621	14834	-3.35%	9.08%
263*	100	0.5	50.88	4551.98	50.39	192.72	1.66	49.72	16097.92	152.20	1676	15608	-2.28%	-1.32%
264*	100	0.5	48.80	4547.48	44.61	148.35	2.00	48.13	15946.63	150.76	1740	14909	-1.36%	7.89%
265*	100	0.5	49.47	4549.85	40.18	227.79	1.65	48.53	15446.11	158.98	1662	15143	-1.88%	20.80%
266*	100	0.5	50.00	4545.56	55.83	212.95	2.37	49.87	14747.44	172.07	1814	15796	-0.27%	-10.68%
267*	100	0.5	49.45	4559.86	54.57	194.61	1.54	49.00	15242.75	168.48	1646	15620	-0.91%	-10.19%
268*	100	0.5	49.94	4550.41	48.16	204.70	2.07	48.57	15489.92	158.07	1617	14866	-2.76%	0.84%
269*	100	0.5	49.17	4548.13	41.35	206.71	2.21	48.86	15689.16	161.48	1801	15299	-0.63%	18.15%
270*	100	0.5	49.42	4548.32	47.97	205.28	1.54	48.47	14856.65	146.91	1654	15349	-1.93%	1.05%
271*	100	0.5	49.50	4548.53	61.93	211.51	2.28	49.18	14878.08	168.34	1691	15403	-0.63%	-20.58%
272*	100	0.5	47.99	4548.13	35.15	217.82	1.65	47.74	16096.86	157.47	1620	15151	-0.52%	35.80%
273*	100	0.5	51.16	4549.55	67.42	183.34	1.90	50.26	15028.07	157.78	1598	15718	-1.77%	-25.46%
274*	100	0.5	47.80	4543.77	41.60	211.50	1.24	46.98	16581.21	154.82	1722	14917	-1.72%	12.94%
275*	100	0.5	47.55	4545.01	69.93	861.00	1.72	47.39	15953.78	162.62	1751	14943	-0.33%	-32.23%
276*	100	2.0	98.25	4894.01	96.96	655.45	2.33	97.64	28541.72	4410.25	5529	51188	-0.62%	0.70%
277*	100	2.0	92.05	4865.05	91.34	901.38	2.54	92.03	28987.24	3021.14	5393	50743	-0.02%	0.76%
278*	100	2.0	91.40	4842.57	89.70	810.04	1.21	91.20	28633.99	4372.42	5560	50267	-0.22%	1.67%
279*	100	2.0	91.11	4863.30	90.15	783.50	2.13	90.89	29481.03	4294.90	5907	48379	-0.25%	0.82%
280*	100	2.0	89.37	4851.83	88.03	1061.69	1.89	89.26	31383.28	4040.87	5388	47465	-0.12%	1.40%
281*	100	2.0	91.92	4861.97	90.44	934.33	0.97	91.61	29226.50	2353.47	5701	49383	-0.33%	1.30%
282*	100	2.0	93.68	4944.96	93.83	1185.73	1.90	93.12	29828.63	1615.70	5777	51926	-0.60%	-0.76%
283*	100	2.0	91.92	4896.42	91.91	989.69	1.98	91.56	29934.21	1502.10	5381	49763	-0.39%	-0.39%
284*	100	2.0	94.89	4912.16	93.42	915.89	2.18	94.35	30605.16	1499.76	5451	49551	-0.57%	1.00%
285*	100	2.0	89.24	4923.95	90.16	1099.10	1.95	89.15	29899.03	1388.25	5266	47705	-0.10%	-1.12%
286*	100	2.0	96.18	4932.51	95.95	895.56	0.99	96.04	28589.08	1887.23	5981	53658	-0.14%	0.10%
287*	100	2.0	89.67	4887.47	90.57	1159.06	1.50	89.40	31045.69	1604.50	5741	49927	-0.30%	-1.29%
288*	100	2.0	94.65	4897.83	94.70	1070.55	1.83	93.62	30699.50	1606.88	5463	51010	-1.08%	-1.14%
289*	100	2.0	92.92	4857.50	91.67	822.17	2.24	92.71	30328.23	1528.33	5232	48326	-0.23%	1.14%
290*	100	2.0	92.32	4910.24	92.83	379.55	1.67	91.93	29510.96	1444.76	5591	49805	-0.43%	-0.97%

Continued on the next page

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

Inst	n	δ	SimExact		SimLNS		SimSA-VaR						$\text{GAP}_{c \times a}$	$\text{GAP}_{c \times b}$
			V-RPD ^a	T(s)	V-RPD ^b	T(s)	D-RPD	V-RPD ^c	SD	T(s)	ρ_S	ρ_L		
291*	100	2.0	96.97	4885.83	95.04	1124.71	2.38	96.18	28711.74	1860.92	5717	53284	-0.82%	1.20%
292*	100	2.0	91.52	4870.97	90.06	1051.83	1.62	90.55	29200.94	1607.03	6091	51997	-1.06%	0.54%
293*	100	2.0	94.24	4867.31	91.59	782.33	1.98	92.93	29717.36	1521.14	5704	49193	-1.40%	1.45%
294*	100	2.0	94.27	4889.40	93.45	990.62	2.05	92.66	30178.72	1540.88	5639	51076	-1.71%	-0.84%
295*	100	2.0	93.99	4865.36	91.90	966.28	1.89	93.54	28694.12	1531.09	5595	50993	-0.48%	1.78%
296*	100	2.0	92.98	4888.11	92.87	911.75	2.28	92.61	28153.78	1545.98	5430	49775	-0.40%	-0.28%
297*	100	2.0	90.29	4870.32	87.42	811.04	1.36	90.22	30576.73	1462.77	5897	49304	-0.09%	3.20%
298*	100	2.0	96.09	4900.46	94.86	1316.11	1.92	96.04	29029.32	1761.98	5745	52435	-0.05%	1.25%
299*	100	2.0	89.04	4872.60	87.12	747.31	1.27	88.91	31580.35	1660.70	5251	48906	-0.15%	2.04%
300*	100	2.0	90.05	4858.85	89.25	1123.54	1.77	88.78	29763.06	1340.87	5231	46915	-1.41%	-0.53%