The Dynamic Bowser Routing Problem

Electronic Addendum 5

In this electronic addendum we provide detailed results of our computational study carried out using our exact SDP models (Table 1), and SDP sample waning heuristic (Tables 2 and 3). In the table heading, T denotes the site topology; ITL denotes the initial tank level; CP denotes the consumption pattern; p denotes the fuel stockout penalty cost. In Table 1 "Det" denotes the deterministic dynamic programming model, "Sto" denotes the stochastic dynamic programming model. In Tables 2 and 3 "Sto" denotes the stochastic dynamic programming model, and "Sim" denotes the sample waning heuristic approach.

T	ITL	CP	p	ETC		Time		States		T	ITL	CP	p	ETC		Time		States	
				Det	Sto	Det	Sto	Det	Sto					Det	Sto	Det	Sto	Det	Sto
A	ITL1	CP1	100	3098.14	3214.66	1	668	393	161145	D	ITL1	CP1	100	2815.95	2951.75	1	1166	431	196129
A	ITL1	CP1	500	13898.14	14480.73	1	648	393	161145	D	ITL1	CP1	500	12415.95	13094.95	1	1183	431	196129
A	ITL1	CP2	100	1898.14	2061.18	1	691	393	161145	D	ITL1	CP2	100	2200.00	2219.03	1	1186	564	196129
A	ITL1	CP2	500	7898.14	8713.32	1	678	393	161145	D	ITL1	CP2	500	9415.95	9431.32	1	1194	564	196129
A	ITL1	CP3	100	2002.13	2010.16	1	685	452	161145	D	ITL1	CP3	100	1415.95	1481.63	1	1186	507	196129
A	ITL1	CP3	500	8402.13	8442.29	1	688	452	161145	D	ITL1	CP3	500	5415.95	5744.36	1	1170	507	196129
A	ITL2	CP1	100	2575.90	2581.98	1	1272	415	303498	D	ITL2	CP1	100	2015.95	2153.27	1	2473	431	412720
A	ITL2	CP1	500	11375.90	11371.11	1	1287	415	303498	D	ITL2	CP1	500	8415.95	9102.36	1	2483	431	412720
A	ITL2	CP2	100	1475.90	1447.75	1	1281	415	303498	D	ITL2	CP2	100	1400.00	1423.23	1	2463	564	412720
A	ITL2	CP2	500	5875.90	5679.79	1	1290	415	303498	D	ITL2	CP2	500	5415.95	5473.95	1	2473	564	412720
A	ITL2	CP3	100	1402.13	1464.75	1	1277	427	303498	D	ITL2	CP3	100	615.95	771.33	1	2486	507	412720
A	ITL2	CP3	500	5402.13	5716.75	1	1279	427	303498	D	ITL2	CP3	500	1415.95	2193.74	1	2487	507	412720
A	ITL3	CP1	100	1875.90	1892.32	1	2270	415	539824	D	ITL3	CP1	100	1815.95	1958.53	1	3498	445	597376
A	ITL3	CP1	500	7875.90	7921.89	1	2257	415	539824	D	ITL3	CP1	500	7415.95	8128.24	1	3512	445	597376
A	ITL3	CP2	100	875.90	973.67	1	2264	426	539824	D	ITL3	CP2	100	1200.00	1227.21	1	3586	375	597376
A	ITL3	CP2	500	2875.90	3336.50	1	2247	426	539824	D	ITL3	CP2	500	4415.95	4664.37	1	3539	375	597376
A	ITL3	CP3	100	875.90	911.02	1	2228	427	539824	D	ITL3	CP3	100	515.95	676.41	1	3535	451	597376
A	ITL3	CP3	500	2875.90	2967.06	1	2264	427	539824	D	ITL3	CP3	500	915.95	1719.17	1	3527	451	597376
B	ITL1	CP1	100	2978.24	3000.66	1	1128	634	246725	E	ITL1	CP1	100	2843.23	2972.58	1	2117	943	335529
B	ITL1	CP1	500	13378.24	13490.35	1	1115	634	246725	E	ITL1	CP1	500	12443.23	13090.00	1	2118	943	335529
B	ITL1	CP2	100	1678.24	1763.42	1	1115	604	246725	E	ITL1	CP2	100	1643.23	1788.59	1	2129	1003	335529
B	ITL1	CP2	500	6878.24	7387.79	1	1107	604	246725	E	ITL1	CP2	500	6443.23	7170.02	1	2136	1003	335529
B	ITL1	CP3	100	1578.24	1641.60	1	1114	644	246725	E	ITL1	CP3	100	1781.25	1864.69	1	2135	1255	335529
B	ITL1	CP3	500	6378.24	6695.07	1	1123	644	246725	E	ITL1	CP3	500	7381.25	7548.34	1	2144	1255	335529
B	ITL2	CP1	100	2178.24	2313.00	1	1868	614	401160	E	ITL2	CP1	100	2162.49	2288.62	1	3879	1190	593595
B	ITL2	CP1	500	9378.24	10052.03	1	1855	614	401160	E	ITL2	CP1	500	9443.23	9770.73	2	3876	1190	593595
B	ITL2	CP2	100	1178.24	1287.76	1	1875	584	401160	E	ITL2	CP2	100	1043.23	1172.65	1	3884	1250	593595
B	ITL2	CP2	500	4378.24	4925.85	1	1840	584	401160	E	ITL2	CP2	500	3443.23	4101.77	1	3920	1250	593595
B	ITL2	CP3	100	1178.24	1304.92	1	1848	680	401160	E	ITL2	CP3	100	981.25	1154.57	2	3840	1099	593595
B	ITL2	CP3	500	4378.24	5011.66	1	1827	680	401160	E	ITL2	CP3	500	3381.25	4247.86	1	3906	1099	593595
B	ITL3	CP1	100	1478.24	1634.80	1	3109	614	681063	E	ITL3	CP1	100	1462.49	1610.42	1	6589	1250	1007461
B	ITL3	CP1	500	5878.24	6661.02	1	3099	614	681063	E	ITL3	CP1	500	5943.23	6474.64	2	6646	1250	1007461
B	ITL3	CP2	100	741.18	866.53	1	3079	634	681063	E	ITL3	CP2	100	443.23	656.76	1	6627	1205	1007461
B	ITL3	CP2	500	2378.24	3121.06	1	3117	634	681063	E	ITL3	CP2	500	443.23	1571.35	1	6642	1205	1007461
B	ITL3	CP3	100	578.24	740.52	1	3107	680	681063	E	ITL3	CP3	100	481.25	668.84	1	6617	1102	1007461
B	ITL3	CP3	500	1378.24	2189.63	1	3103	680	681063	E	ITL3	CP3	500	881.25	1819.19	1	6702	1102	1007461
C	ITL1	CP1	100	3094.91	3189.25	1	2407	816	325209	F	ITL1	CP1	100	3091.00	3119.37	1	1251	465	180781
C	ITL1	CP1	500	13894.91	14366.59	1	2406	816	325209	F	ITL1	CP1	500	15091.00	14937.48	1	1266	465	180781
C	ITL1	CP2	100	1594.91	1827.38	1	2409	863	325209	F	ITL1	CP2	100	1982.34	2056.58	1	1251	465	180781
C	ITL1	CP2	500	6394.91	7557.24	1	2416	863	325209	F	ITL1	CP2	500	9182.34	9553.56	1	1280	465	180781
C	ITL1	CP3	100	1819.92	1836.10	1	2410	1034	325209	F	ITL1	CP3	100	1691.00	1696.86	1	1260	477	180781
C	ITL1	CP3	500	7441.04	7699.78	1	2403	1034	325209	F	ITL1	CP3	500	8091.00	8120.30	1	1272	477	180781
C	ITL2	CP1	100	2419.92	2527.79	1	4286	914	596276	F	ITL2	CP1	100	2291.00	2322.38	1	2690	465	366945
C	ITL2	CP1	500	10894.91	11065.99	1	4273	914	596276	F	ITL2	CP1	500	11091.00	10952.12	1	2663	465	366945
C	ITL2	CP2	100	994.91	1202.99	1	4290	961	596276	F	ITL2	CP2	100	1182.34	1280.59	1	2660	465	366945
C	ITL2	CP2	500	3394.91	4434.49	1	4276	961	596276	F	ITL2	CP2	500	5182.34	5673.60	1	2666	465	366945
C	ITL2	CP3	100	1200.00	1253.19	1	4271	1056	596276	F	ITL2	CP3	100	1082.34	1068.86	1	2663	473	366945
C	ITL2	CP3	500	5441.04	5479.95	1	4279	1056	596276	F	ITL2	CP3	500	4682.34	4827.71	1	2618	473	366945
C	ITL3	CP1	100	1779.91	1844.63	1	6928	987	1004493	F	ITL3	CP1	100	1591.00	1656.20	1	4468	465	609382
C	ITL3	CP1	500	7394.91	7650.71	1	6949	987	1004493	F	ITL3	CP1	500	7591.00	7606.52	1	4474	465	609382
C	ITL3	CP2	100	394.91	670.73	1	6952	964	1004493	F	ITL3	CP2	100	882.34	954.64	1	4483	475	609382
C	ITL3	CP2	500	394.91	1773.57	1	6974	964	1004493	F	ITL3	CP2	500	3682.34	3991.22	1	4475	475	609382
C	ITL3	CP3	100	813.94	887.95	2	6983	982	1004493	F	ITL3	CP3	100	482.34	592.31	1	4461	473	609382
C	ITL3	CP3	500	2413.94	2881.26	1	6975	982	1004493	F	ITL3	CP3	500	1682.34	2464.55	1	4468	473	609382

Table 1: Computational results for the deterministic dynamic programming and exact stochastic dynamic programming model in which fuel consumption is stochastic.

T	ITL	CP	p	ETC		Time		States	
T	ITL	CP	p	ETC	Time	States	T	ITL	CP
				Sto	Sim	Sto	Sim	Sto	Sim
A	ITL1	CP1	100	3214.66	3396.10	668	7	161145	996
A	ITL1	CP1	500	14480.73	15476.90	648	6	161145	996
A	ITL1	CP2	100	2061.18	2269.50	691	5	161145	996
A	ITL1	CP2	500	8713.32	9843.90	678	6	161145	996
A	ITL1	CP3	100	2010.16	2735.54	685	5	161145	996
A	ITL1	CP3	500	8442.29	12085.14	688	5	161145	996
A	ITL2	CP1	100	2581.98	2649.70	1272	25	303498	5717
A	ITL2	CP1	500	11371.11	11744.90	1287	24	303498	5717
A	ITL2	CP2	100	1447.75	1529.30	1281	25	303498	5717
A	ITL2	CP2	500	5679.79	6142.90	1290	25	303498	5717
A	ITL2	CP3	100	1464.75	1971.34	1277	25	303498	5717
A	ITL2	CP3	500	5716.75	8264.14	1279	25	303498	5717
A	ITL3	CP1	100	1892.32	1956.10	2270	50	539824	13164
A	ITL3	CP1	500	7921.89	8276.90	2257	51	539824	13164
A	ITL3	CP2	100	973.67	987.38	2264	50	539824	13164
A	ITL3	CP2	500	3336.50	3427.28	2247	51	539824	13164
A	ITL3	CP3	100	911.02	1298.86	2228	51	539824	13164
A	ITL3	CP3	500	2967.06	4909.14	2264	49	539824	13164
B	ITL1	CP1	100	3000.66	3102.64	1128	13	246725	2654
B	ITL1	CP1	500	13490.35	14000.24	1115	13	246725	2654
B	ITL1	CP2	100	1763.42	2075.44	1115	14	246725	2654
B	ITL1	CP2	500	7387.79	7841.24	1107	14	246725	2654
B	ITL1	CP3	100	1641.60	2163.40	1114	14	246725	2654
B	ITL1	CP3	500	6695.07	10817.00	1123	14	246725	2654
B	ITL2	CP1	100	2313.00	2322.04	1868	38	401160	7099
B	ITL2	CP1	500	10052.03	10097.24	1855	37	401160	7099
B	ITL2	CP2	100	1287.76	1301.04	1875	38	401160	7099
B	ITL2	CP2	500	4925.85	4992.24	1840	37	401160	7099
B	ITL2	CP3	100	1304.92	1863.80	1848	37	401160	7099
B	ITL2	CP3	500	5011.66	9319.00	1827	37	401160	7099
B	ITL3	CP1	100	1634.80	1644.84	3109	78	681063	15325
B	ITL3	CP1	500	6661.02	6711.24	3099	79	681063	15325
B	ITL3	CP2	100	866.53	928.44	3079	78	681063	15325
B	ITL3	CP2	500	3121.06	3129.24	3117	78	681063	15325
B	ITL3	CP3	100	740.52	1173.00	3107	79	681063	15325
B	ITL3	CP3	500	2189.63	5865.00	3103	80	681063	15325
C	ITL1	CP1	100	3189.25	3360.84	2407	20	325209	2393
C	ITL1	CP1	500	14366.59	15312.84	2406	20	325209	2393
C	ITL1	CP2	100	1827.38	2171.31	2409	20	325209	2393
C	ITL1	CP2	500	7557.24	9645.93	2416	20	325209	2393
C	ITL1	CP3	100	1836.10	2555.31	2410	20	325209	2393
C	ITL1	CP3	500	7699.78	11196.91	2403	20	325209	2393
C	ITL2	CP1	100	2527.79	2579.04	4286	67	596276	13252
C	ITL2	CP1	500	11065.99	11403.84	4273	66	596276	13252
C	ITL2	CP2	100	1202.99	1404.22	4290	67	596276	13252
C	ITL2	CP2	500	4434.49	5783.92	4276	66	596276	13252
C	ITL2	CP3	100	1253.19	1692.38	4271	68	596276	13252
C	ITL2	CP3	500	5479.95	8094.84	4279	68	596276	13252
C	ITL3	CP1	100	1844.63	1887.07	6928	144	1004493	28691
C	ITL3	CP1	500	7650.71	7988.52	6949	145	1004493	28691
C	ITL3	CP2	100	670.73	672.30	6952	142	1004493	28691
C	ITL3	CP2	500	1773.57	1779.56	6974	138	1004493	28691
C	ITL3	CP3	100	887.95	1049.39	6983	142	1004493	28691
C	ITL3	CP3	500	2881.26	4059.52	6975	144	1004493	28691

T	ITL	CP	p	ETC		Time		States	
p	ETC	Time	States						
				Sto	Sim	Sto	Sim	Sto	Sim
D	ITL1	CP1	100	2951.75	2949.55	1166	9	196129	2099
D	ITL1	CP1	500	13094.95	13083.95	1183	9	196129	2099
D	ITL1	CP2	100	2219.03	2216.55	1186	9	196129	2099
D	ITL1	CP2	500	9431.32	9418.95	1194	9	196129	2099
D	ITL1	CP3	100	1481.63	2015.14	1186	9	196129	2099
D	ITL1	CP3	500	5744.36	8821.95	1170	9	196129	2099
D	ITL2	CP1	100	2153.27	2152.15	2473	30	412720	8122
D	ITL2	CP1	500	9102.36	9096.95	2483	29	412720	8122
D	ITL2	CP2	100	1423.23	1425.35	2463	29	412720	8122
D	ITL2	CP2	500	5473.95	5462.95	2473	29	412720	8122
D	ITL2	CP3	100	771.33	1264.32	2486	30	412720	8122
D	ITL2	CP3	500	2193.74	5076.69	2487	30	412720	8122
D	ITL3	CP1	100	1958.53	1957.15	3498	44	597376	11753
D	ITL3	CP1	500	8128.24	8121.95	3512	43	597376	11753
D	ITL3	CP2	100	1227.21	1264.55	3586	44	597376	11753
D	ITL3	CP2	500	4664.37	4658.95	3539	44	597376	11753
D	ITL3	CP3	100	676.41	1068.52	3535	44	597376	11753
D	ITL3	CP3	500	1719.17	4097.687474	3527	44	597376	11753
E	ITL1	CP1	100	2972.58	3071.67015	2117	15	335529	2479
E	ITL1	CP1	500	13090.00	13570.07015	2118	15	335529	2479
E	ITL1	CP2	100	1788.59	1988.87015	2129	15	335529	2479
E	ITL1	CP2	500	7170.02	8554.217066	2136	15	335529	2479
E	ITL1	CP3	100	1864.69	1942.5188	2135	14	335529	2479
E	ITL1	CP3	500	7548.34	8739.3188	2144	15	335529	2479
E	ITL2	CP1	100	2288.62	2392.070595	3879	75	593595	13763
E	ITL2	CP1	500	9770.73	10166.4706	3876	75	593595	13763
E	ITL2	CP2	100	1172.65	1369.961219	3884	77	593595	13763
E	ITL2	CP2	500	4101.77	5219.977653	3920	76	593595	13763
E	ITL2	CP3	100	1154.57	1901.4174	3840	75	593595	13763
E	ITL2	CP3	500	4247.86	6042.3188	3906	77	593595	13763
E	ITL3	CP1	100	1610.42	1619.0876	6589	164	1007461	29281
E	ITL3	CP1	500	6474.64	6806.410231	6646	159	1007461	29281
E	ITL3	CP2	100	656.76	732.503179	6627	161	1007461	29281
E	ITL3	CP2	500	1571.35	1881.302085	6642	160	1007461	29281
E	ITL3	CP3	100	668.84	1219.701224	6617	160	1007461	29281
E	ITL3	CP3	500	1819.19	4713.2174	6702	165	1007461	29281
F	ITL1	CP1	100	3119.37	3138.7393	1251	7	180781	990
F	ITL1	CP1	500	14937.48	14964.3393	1266	7	180781	990
F	ITL1	CP2	100	2056.58	2068.9393	1251	7	180781	990
F	ITL1	CP2	500	9553.56	9615.3393	1280	7	180781	990
F	ITL1	CP3	100	1696.86	1734.981217	1260	7	180781	990
F	ITL1	CP3	500	8120.30	8180.9987	1272	7	180781	990
F	ITL2	CP1	100	2322.38	2341.808231	2690	42	366945	5653
F	ITL2	CP1	500	10952.12	10986.20687	2663	44	366945	5653
F	ITL2	CP2	100	1280.59	1289.5393	2660	42	366945	5653
F	ITL2	CP2	500	5673.60	5718.3393	2666	43	366945	5653
F	ITL2	CP3	100	1068.86	1099.109727	2663	41	366945	5653
F	ITL2	CP3	500	4827.71	5100.07097	2618	40	366945	5653
F	ITL3	CP1	100	1656.20	1672.808231	4468	90	609382	12693
F	ITL3	CP1	500	7606.52	7641.206872	4474	91	609382	12693
F	ITL3	CP2	100	954.64	978.1937192	4483	89	609382	12693
F	ITL3	CP2	500	3991.22	4148.943851	4475	90	609382	12693
F	ITL3	CP3	100	592.31	624.4917244	4461	89	609382	12693
F	ITL3	CP3	500	2464.55	2739.881087	4468	89	609382	12693

Table 2: Computational results for the exact dynamic programming and the sample waning heuristic for the case in which fuel consumption is stochastic.

T	ITL	CP	p	ETC		Time		States		T	ITL	CP	p	ETC		Time		States	
				Sto	Sim	Sto	Sim	Sto	Sim					Sto	Sim	Sto	Sim	Sto	Sim
A	ITL1	CP1	100	3880.09	3900.49	2	2	2521	556	D	ITL1	CP1	100	3077.37	3062.97	1	2	4925	914
A	ITL1	CP1	500	18280.09	18382.09	2	2	2521	556	D	ITL1	CP1	500	15077.37	15005.37	2	2	4925	914
A	ITL1	CP2	100	2630.09	2644.69	1	2	2521	556	D	ITL1	CP2	100	1827.37	1809.17	2	2	6589	1028
A	ITL1	CP2	500	11875.90	11973.90	1	2	2521	556	D	ITL1	CP2	500	8827.37	8736.37	2	2	6589	1028
A	ITL1	CP3	100	2484.02	2549.34	1	2	3049	608	D	ITL1	CP3	100	1877.37	1873.37	1	2	5997	1026
A	ITL1	CP3	500	11484.02	11429.13	1	2	3049	608	D	ITL1	CP3	500	8263.32	8164.32	1	2	5997	1026
A	ITL2	CP1	100	3080.09	3100.49	1	2	2937	594	D	ITL2	CP1	100	2777.37	2762.97	2	2	4749	770
A	ITL2	CP1	500	14280.09	14382.09	1	2	2937	594	D	ITL2	CP1	500	13547.19	13505.37	1	2	4749	770
A	ITL2	CP2	100	1830.09	1844.69	1	2	2937	594	D	ITL2	CP2	100	1527.37	1509.17	2	2	6413	884
A	ITL2	CP2	500	7953.00	8087.15	1	2	2937	594	D	ITL2	CP2	500	7327.37	7236.37	2	2	6413	884
A	ITL2	CP3	100	1742.14	1749.34	1	2	2825	580	D	ITL2	CP3	100	1577.37	1573.37	2	2	5821	882
A	ITL2	CP3	500	7984.02	8322.09	1	2	2825	580	D	ITL2	CP3	500	6763.32	6664.32	1	2	5821	882
A	ITL3	CP1	100	2380.09	2400.49	1	2	2937	594	D	ITL3	CP1	100	2077.37	2062.97	1	2	6413	884
A	ITL3	CP1	500	10780.09	10882.09	1	2	2937	594	D	ITL3	CP1	500	10077.37	10005.37	3	2	6413	884
A	ITL3	CP2	100	1203.00	1231.55	1	2	2969	598	D	ITL3	CP2	100	927.37	906.77	2	2	5509	940
A	ITL3	CP2	500	4625.90	4715.90	1	2	2969	598	D	ITL3	CP2	500	4327.37	4224.37	1	2	5509	940
A	ITL3	CP3	100	1042.14	1049.34	1	2	2825	580	D	ITL3	CP3	100	877.37	873.37	2	2	6413	908
A	ITL3	CP3	500	4484.02	4822.09	1	2	2825	580	D	ITL3	CP3	500	3513.32	3430.32	1	2	6413	908
B	ITL1	CP1	100	3530.56	3534.81	1	2	5889	1255	E	ITL1	CP1	100	3424.41	3407.92	3	2	11409	1881
B	ITL1	CP1	500	16239.25	16276.41	2	2	5889	1255	E	ITL1	CP1	500	15675.12	15583.62	3	2	11409	1881
B	ITL1	CP2	100	2295.25	2370.19	2	2	6673	1373	E	ITL1	CP2	100	2227.54	2214.72	4	2	11905	1943
B	ITL1	CP2	500	10045.25	10528.59	1	2	6673	1373	E	ITL1	CP2	500	9715.04	9650.72	4	3	11905	1943
B	ITL1	CP3	100	2066.60	2068.90	2	2	5953	1091	E	ITL1	CP3	100	2387.62	2385.42	4	2	11905	1975
B	ITL1	CP3	500	9666.60	9678.50	1	2	5953	1091	E	ITL1	CP3	500	10487.62	10476.62	4	2	11905	1975
B	ITL2	CP1	100	2825.02	2828.02	1	2	5705	1112	E	ITL2	CP1	100	2701.68	2677.02	4	2	11329	1872
B	ITL2	CP1	500	13125.02	13140.02	2	2	5705	1112	E	ITL2	CP1	500	12057.93	11934.62	4	2	11329	1872
B	ITL2	CP2	100	1600.00	1600.00	2	1	5713	1091	E	ITL2	CP2	100	1534.49	1514.02	3	3	11233	1852
B	ITL2	CP2	500	7129.19	7244.02	1	2	5713	1091	E	ITL2	CP2	500	6221.99	6119.62	3	2	11233	1852
B	ITL2	CP3	100	1400.00	1400.00	1	2	5049	990	E	ITL2	CP3	100	1687.62	1683.02	3	2	11137	1913
B	ITL2	CP3	500	6375.02	6378.02	1	2	5049	990	E	ITL2	CP3	500	6987.62	6964.62	3	3	11137	1913
B	ITL3	CP1	100	2514.25	2534.81	1	2	4961	937	E	ITL3	CP1	100	2001.68	1977.02	3	2	11233	1852
B	ITL3	CP1	500	11114.25	11276.41	1	2	4961	937	E	ITL3	CP1	500	8557.93	8434.62	3	3	11233	1852
B	ITL3	CP2	100	1316.60	1370.19	1	1	3929	842	E	ITL3	CP2	100	963.05	940.84	3	2	12857	2049
B	ITL3	CP2	500	5170.25	5528.59	1	2	3929	842	E	ITL3	CP2	500	3413.05	3300.84	3	2	12857	2049
B	ITL3	CP3	100	1066.60	1068.90	1	2	3721	716	E	ITL3	CP3	100	1033.41	1032.71	3	2	10553	1795
B	ITL3	CP3	500	4666.60	4678.50	1	2	3721	716	E	ITL3	CP3	500	3737.62	3713.62	3	2	10553	1795
C	ITL1	CP1	100	3534.30	3568.87	2	2	6223	1616	F	ITL1	CP1	100	3210.59	3225.39	4	2	9565	1488
C	ITL1	CP1	500	16134.30	16298.47	2	2	6223	1616	F	ITL1	CP1	500	15010.59	15084.59	4	2	9565	1488
C	ITL1	CP2	100	2379.91	2390.71	2	2	7867	1993	F	ITL1	CP2	100	2186.80	2209.44	5	2	12397	1821
C	ITL1	CP2	500	10585.06	10833.91	3	2	7867	1993	F	ITL1	CP2	500	9986.80	10095.84	5	2	12397	1821
C	ITL1	CP3	100	1979.91	1995.11	2	2	6951	1788	F	ITL1	CP3	100	1836.58	1853.26	4	2	12253	1774
C	ITL1	CP3	500	8710.06	8855.91	2	2	6951	1788	F	ITL1	CP3	500	8037.57	8103.67	5	2	12253	1774
C	ITL2	CP1	100	2734.30	2768.87	2	2	6223	1616	F	ITL2	CP1	100	2410.59	2425.39	4	2	10085	1532
C	ITL2	CP1	500	12134.30	12298.47	2	2	6223	1616	F	ITL2	CP1	500	11010.59	11084.59	4	2	10085	1532
C	ITL2	CP2	100	1629.91	1641.71	2	2	7035	1811	F	ITL2	CP2	100	1386.80	1409.44	5	3	12917	1865
C	ITL2	CP2	500	6960.06	7088.91	2	2	7035	1811	F	ITL2	CP2	500	5986.80	6095.84	5	2	12917	1865
C	ITL2	CP3	100	1329.91	1348.11	1	2	6371	1693	F	ITL2	CP3	100	1074.03	1094.21	4	2	10373	1558
C	ITL2	CP3	500	5460.06	5620.91	2	2	6371	1693	F	ITL2	CP3	500	4274.03	4370.21	4	2	10373	1558
C	ITL3	CP1	100	2229.91	2709.04	2	2	7075	1811	F	ITL3	CP1	100	1779.29	1810.74	5	2	12917	1865
C	ITL3	CP1	500	9759.30	11866.84	1	2	7075	1811	F	ITL3	CP1	500	7854.29	8011.54	5	2	12917	1865
C	ITL3	CP2	100	1169.62	1148.02	2	2	6207	1642	F	ITL3	CP2	100	1136.80	1157.24	4	2	10165	1528
C	ITL3	CP2	500	4769.62	4661.62	1	2	6207	1642	F	ITL3	CP2	500	4472.17	4834.84	4	2	10165	1528
C	ITL3	CP3	100	1029.91	1041.91	1	2	6039	1548	F	ITL3	CP3	100	550.33	567.37	4	2	11085	1627
C	ITL3	CP3	500	3759.30	4089.91	2	2	6039	1548	F	ITL3	CP3	500	1750.33	1826.57	4	2	11085	1627

Table 3: Computational results for the exact dynamic programming and the sample waning heuristic for the case in which asset location is stochastic.