Appendix: Individual Level Parametric Estimation with CRRA Specification

This appendix is supplementary to the structural estimations of individual belief and curvature parameters (α and ρ) in section 6. In Table 1 and 2, we report the starting values of α and ρ for NLLS estimations of both expected utility and subjective expected utility model. These values are calculated from OLS estimates based on the interior optimal conditions solved for a DM's constrained maximization problem. Table 3 and 4 are the expected utility estimations of curvature parameter ρ_{Risk}, ρ_{diff}, their P values, and the calculated ρ_{VoI}. We additionally report estimates of belief parameter α and its P value for the subjective utility model in Table 5 and 6.

The OLS regression based on the interior optimal condition for a typical DM is:

$$\ln(x_i/y_i) = \beta_0^i + \beta_1^i \ln(q) + \epsilon_i,$$

where ϵ_i is assumed to follow a normal distribution with zero mean and variance of σ_i^2. Based on the regressed parameters $\hat{\beta}_0^i$ and $\hat{\beta}_1^i$, we can calculate the curvature parameter $\rho^i = 1/\hat{\beta}_1^i$ and the belief parameter $\alpha^i = \exp(-\hat{\beta}_0^i/\hat{\beta}_1^i)$. We ran the OLS regression separately for $i \in \{\text{Risk}, \text{VoI}\}$.

We use ρ_{Risk} and ρ_{diff} in Table 1 and 2 as ρ_{Risk} and ρ_{diff}'s starting values for the estimation of curvature parameters in EU and SEU with NLLS method.

For this version of NLLS estimation with subjective expected utility model, the DM has the same belief parameter α for Risk and VoI problems. We use α_{Risk} in Table 1 and 2 as α's starting values for the estimation algorithm. These estimation results are robust to alternative sets of starting values of α including α_{VoI} and various combinations of α_{Risk} and α_{VoI}.

Table 1: OLS estimation based on interior optimal condition

ID	α_{Risk}	ρ_{Risk}	α_{VoI}	ρ_{VoI}	ρ_{diff}
1	0.009	3.732	0.026	2.250	−1.481
4	0.000	5.186	0.274	4.286	−0.900
5	0.870	0.955	0.841	1.393	0.438
7	0.573	1.970	0.718	1.354	−0.616
8	0.955	1.418	0.854	1.698	0.280
9	1.038	3.532	0.924	6.641	3.109
10	0.294	3.368	0.835	3.354	−0.014
14	0	69.470	0.020	7.239	−62.231
15	0.887	1.151	0.843	0.739	−0.412
16	0.109	2.683	0.838	0.612	−2.071
17	1.060	0.697	0.670	2.200	1.503
19	1.115	0.698	0.084	3.829	3.131
20	0.117	1.762	0.129	0.938	−0.824
21	0.006	4.488	0.165	2.515	−1.973
23	0.776	0.481	0.857	0.409	−0.071
24	0.646	2.039	0.000	5.791	3.752
25	0.705	1.217	0.127	3.924	2.707
27	0.022	4.762	0.109	4.757	−0.005
28	0.597	2.358	0.026	4.471	2.113
29	0.035	4.489	0.015	5.463	0.973
30	0.805	1.354	0.228	2.301	0.947
31	1.074	0.597	1.024	0.432	−0.165
32	0.000	33.747	0.009	12.808	−20.939
33	0.462	1.729	0	52.122	50.393
34	1.100	0.292	1.032	0.414	0.122
37	0.919	0.332	1.093	0.426	0.094
38	0.571	2.544	0.949	1.054	−1.490
39	0.300	2.994	0.732	1.891	−1.103
40	0.148	5.410	1.165	14.328	8.919
42	0.207	3.905	0.756	2.912	−0.992
43	0.681	0.796	0.610	0.905	0.109
44	0.050	8.129	0.129	6.815	−1.315

Table 2: OLS estimation based on interior optimal condition (cnt)

ID	α_{Risk}	ρ_{Risk}	α_{VoI}	ρ_{VoI}	ρ_{diff}
45	0.637	0.742	1.023	0.946	0.204
47	0.613	0.878	0.494	1.011	0.134
50	0.712	1.871	0.190	3.789	1.918
51	0.501	0.924	0.398	1.190	0.266
52	0.427	1.706	0.607	1.323	−0.382
53	0.256	2.253	0.136	3.129	0.876
54	0.617	1.164	0.707	0.873	−0.291
55	0.576	0.630	0	14.516	13.886
56	0.521	1.654	0.638	1.556	−0.098
57	0.466	2.219	0.796	1.190	−1.029
58	0.036	3.677	0.002	14.523	10.846
59	1.021	0.707	0.851	1.009	0.302
62	0.511	1.479	0.211	3.508	2.029
63	0.530	1.306	0.938	0.868	−0.438
64	1.323	0.649	0.114	13.296	12.647
65	0.697	2.145	0	56.730	54.585
66	0.627	0.945	0.629	1.890	0.945
67	0.180	2.388	0.448	1.810	−0.578
70	0.282	3.126	0.497	3.489	0.363
72	0.377	1.549	0.771	0.972	−0.577
73	0.512	1.114	0.090	2.160	1.046
77	0.043	4.635	0.005	6.990	2.355
79	0.534	0.939	0.018	2.287	1.348
80	0.001	6.752	0.545	2.122	−4.630
81	0.745	1.660	0.849	1.548	−0.112
82	0.088	4.480	0.000	9.302	4.821
83	1.094	0.414	1.282	0.586	0.172
84	0.166	3.334	0.275	1.852	−1.482
86	0.807	1.571	0.984	0.638	−0.933
88	0.000	9.888	0.101	2.596	−7.292
90	0.000	11.006	0.147	3.905	−7.101
91	0.022	6.153	0.252	3.538	−2.616

Table 3: NLLS estimation with Expected Utility ($\alpha = 1$)

ID	ρ_{Risk}	$\text{P}(\rho_{\text{Risk}})$	ρ_{diff}	$\text{P}(\rho_{\text{diff}})$	ρ_{VoI}
1	0.801	0	−0.209	0.028	0.591
4	0.664	0	1.479	0.005	2.143
5	0.862	0	0.366	0.001	1.228
7	1.378	0	−0.299	0.045	1.078
8	1.370	0	0.144	0.666	1.514
9	3.638	0	2.620	0.007	6.258
10	1.730	0	1.213	0.033	2.943
14	1.981	0	−0.181	0.540	1.801
15	1.053	0.000	−0.400	0.092	0.653
16	0.990	0.000	−0.451	0.049	0.539
17	0.730	0	0.950	0.037	1.680
19	0.762	0	0.551	0.051	1.313
20	0.663	0.000	−0.299	0.012	0.363
21	0.915	0	0.137	0.361	1.053
23	0.402	0	−0.036	0.598	0.366
24	1.525	0	−0.819	0.000	0.706
25	0.959	0	0.553	0.005	1.512
27	1.202	0	0.550	0.058	1.753
28	1.687	0	−0.520	0.039	1.167
29	1.254	0	0.029	0.849	1.283
30	1.160	0	−0.085	0.455	1.075
31	0.632	0	−0.192	0.020	0.441
32	2.418	0	0.342	0.440	2.761
33	1.083	0.000	0.781	0.161	1.864
34	0.315	0	0.109	0.098	0.425
37	0.312	0	0.146	0.057	0.458
38	1.776	0	−0.763	0.006	1.013
39	1.551	0	−0.027	0.846	1.524
40	2.187	0	14.057	0.200	16.244
42	1.761	0	0.635	0.027	2.396
43	0.613	0.000	0.042	0.784	0.655
44	2.452	0	0.186	0.543	2.637

Table 4: NLLS estimation with Expected Utility ($\alpha = 1$) (cnt)

ID	ρ_{Risk}	$\text{P}(\rho_{\text{Risk}})$	ρ_{diff}	$\text{P}(\rho_{\text{diff}})$	ρ_{VoI}
45	0.550	0	0.413	0.028	0.963
47	0.637	0	0.018	0.823	0.655
50	1.482	0.000	0.179	0.639	1.660
51	0.603	0	0.093	0.079	0.695
52	1.029	0.000	−0.074	0.744	0.955
53	1.097	0	0.134	0.336	1.232
54	0.847	0	−0.159	0.089	0.689
55	0.442	0	−0.003	0.965	0.439
56	1.100	0	0.054	0.493	1.155
57	1.396	0	−0.385	0.000	1.012
58	1.029	0	1.470	0.002	2.499
59	0.718	0	0.179	0.049	0.897
62	0.974	0	0.620	0.008	1.594
63	0.877	0	−0.049	0.737	0.827
64	0.828	0	4.136	0.371	4.965
65	1.677	0	1.066	0.035	2.743
66	0.695	0	0.697	0.033	1.391
67	1.028	0	0.089	0.529	1.117
70	1.581	0	0.686	0.045	2.267
72	0.883	0	−0.074	0.675	0.810
73	0.734	0	0.022	0.852	0.757
77	1.355	0	0.011	0.956	1.365
79	0.632	0.000	−0.076	0.654	0.556
80	1.010	0	0.434	0.035	1.444
81	1.352	0	0.022	0.877	1.374
82	1.559	0	−0.226	0.321	1.333
83	0.445	0	0.280	0.044	0.725
84	1.396	0	−0.468	0.020	0.928
86	1.347	0.000	−0.718	0.061	0.630
88	1.131	0	−0.193	0.191	0.938
90	1.566	0	0.010	0.965	1.576
91	1.562	0	0.153	0.498	1.715

Table 5: NLLS estimation with Subjective Expected Utility ($\alpha > 1$)

ID	α	P(α)	ρ_{Risk}	P(ρ_{Risk})	ρ_{diff}	P(ρ_{diff})	ρ_{VoI}
1	0.019	0.461	3.238	0.000	−0.821	0.007	2.416
4	0.001	0.810	4.173	0.061	10.592	0.077	14.765
5	0.860	0	0.963	0	0.408	0.001	1.370
7	0.663	0.000	1.805	0	−0.381	0.048	1.425
8	0.910	0.001	1.470	0.000	0.152	0.674	1.622
9	1.615	0	2.270	0.000	1.784	0.008	4.054
10	0.428	0.068	2.832	0.001	2.226	0.048	5.057
14	0.001	0.866	13.176	0.152	−0.554	0.658	12.622
15	0.855	0.001	1.181	0.001	−0.449	0.113	0.732
16	0.664	0.014	1.263	0.003	−0.546	0.080	0.717
17	1.532	0.000	0.488	0.000	0.663	0.057	1.151
19	1.146	0.008	0.680	0.004	0.504	0.095	1.184
20	0.126	0.366	1.719	0.010	−0.775	0.037	0.945
21	0.045	0.528	3.056	0.012	0.623	0.162	3.678
23	0.821	0.000	0.462	0.000	−0.040	0.609	0.422
24	0.010	0.504	7.891	0.000	−4.744	0.001	3.147
25	0.526	0.001	1.454	0.000	0.737	0.010	2.191
27	0.041	0.610	4.129	0.036	2.041	0.098	6.170
28	0.143	0.288	4.487	0.003	−1.640	0.031	2.846
29	0.024	0.417	4.893	0.000	0.066	0.832	4.958
30	0.486	0.000	1.853	0	−0.215	0.177	1.638
31	1.375	0.000	0.476	0.000	−0.143	0.029	0.333
32	0.000	0.905	17.931	0.265	3.266	0.370	21.197
33	0.227	0.492	2.390	0.091	1.336	0.282	3.726
34	1.373	0.000	0.237	0.000	0.085	0.108	0.322
37	0.976	0.000	0.318	0.000	0.149	0.068	0.467
38	0.860	0.000	1.968	0.000	−0.835	0.011	1.134
39	0.517	0.000	2.305	0	0.036	0.844	2.340
40	0.162	0.357	5.252	0.010	39.779	0.234	45.031
42	0.387	0.009	2.999	0.000	1.302	0.011	4.302
43	0.648	0.035	0.821	0.003	0.052	0.794	0.873
44	0.082	0.215	7.137	0.000	0.674	0.247	7.811

Table 6: NLLS estimation with Subjective Expected Utility ($\alpha > 1$)(cnt)

ID	α	P(α)	ρ_{Risk}	P(ρ_{Risk})	ρ_{diff}	P(ρ_{diff})	ρ_{VoI}
45	0.736	0.001	0.677	0.000	0.530	0.040	1.208
47	0.555	0.001	0.930	0.000	0.018	0.866	0.949
50	0.470	0.132	2.395	0.010	0.174	0.763	2.568
51	0.457	0.000	0.971	0	0.140	0.031	1.111
52	0.523	0.077	1.533	0.005	−0.091	0.783	1.442
53	0.199	0.062	2.482	0.000	0.258	0.274	2.741
54	0.671	0.000	1.105	0	−0.203	0.091	0.902
55	0.082	0.431	1.397	0.008	−0.186	0.275	1.211
56	0.577	0	1.562	0	0.090	0.329	1.652
57	0.684	0	1.785	0	−0.469	0.000	1.316
58	0.027	0.553	3.912	0.008	5.369	0.018	9.282
59	1.033	0.000	0.700	0.000	0.175	0.065	0.875
62	0.425	0.015	1.631	0.000	0.966	0.014	2.597
63	0.751	0.001	1.061	0.000	−0.042	0.814	1.019
64	2.586	0	0.250	0.002	1.492	0.394	1.742
65	0.372	0.096	3.051	0.001	1.453	0.084	4.503
66	0.628	0.016	0.945	0.000	0.947	0.055	1.892
67	0.295	0.044	1.971	0.000	0.235	0.324	2.206
70	0.350	0.060	2.844	0.000	1.321	0.043	4.165
72	0.591	0.027	1.225	0.001	−0.073	0.762	1.152
73	0.282	0.129	1.490	0.001	−0.029	0.890	1.461
77	0.018	0.632	5.620	0.019	−0.076	0.886	5.544
79	0.171	0.567	1.567	0.125	−0.293	0.488	1.275
80	0.057	0.467	3.142	0.006	1.889	0.029	5.031
81	0.797	0	1.587	0	0.032	0.845	1.618
82	0.012	0.701	7.044	0.043	−1.291	0.165	5.752
83	1.554	0.000	0.296	0.000	0.172	0.065	0.468
84	0.240	0.119	2.908	0.000	−0.949	0.026	1.959
86	0.953	0.000	1.395	0.005	−0.742	0.083	0.653
88	0.024	0.552	4.259	0.006	−0.531	0.182	3.728
90	0.029	0.568	5.679	0.012	0.370	0.531	6.049
91	0.096	0.307	4.301	0.001	0.643	0.203	4.944