

Alternative Procedures for Estimating Random Coefficient Logit Demand Models

László Pál

Zsolt Sándor

January 26, 2023

20 data sets for $E[\beta_i^0] = 0$ with $T = [25, 10, 5]$, $J = [50, 125, 250]$, $\text{Var}[\beta_i] = [.5 \ .5 \ .5 \ .5 \ .2]$, $\text{sigmaxi} = 1$, $\text{nn}=1331$, $\text{seed}=5500$

Five starting points in the estimation for each data set.

Conv: the number of converged cases over all trials (100)

CPU, Iter, FEVs: average major iterations, function evaluations over all trials (100)

GlobOpt: counts how many times a method find the global optimum (convergent cases)

FailsNr: counts the problems where a method do not find the best function value (convergent cases)

CPU-GOpt: an estimate of the computing time in seconds needed for obtaining the global minima

Mark.	Prod.	s_0	Method	Conv	CPU(std)	GlobOpt	FailsNr	CPU-GOpt
25	50	0.49	Contraction	100	149(141)	87	0	504
			Spectral	100	59(15)	88	0	192
			Squarem	100	58(18)	88	0	189
			ABLP	74	108(63)	62	7	771
			MPEC	94	145(217)	67	2	903
10	125	0.25	Contraction	100	379(325)	86	0	1332
			Spectral	100	91(24)	90	0	273
			Squarem	100	95(35)	88	0	310
			ABLP	61	191(96)	42	9	2422
			MPEC	96	200(344)	73	0	1055
5	250	0.12	Contraction	100	784(479)	82	1	3158
			Spectral	100	182(47)	82	1	733
			Squarem	100	207(79)	82	1	834
			ABLP	66	244(118)	54	7	2171
			MPEC	96	501(738)	71	0	2796

Table 1: Results for different market structures; $\beta_1 = 0$; derivative-based outer loop.