

# Alternative Procedures for Estimating Random Coefficient Logit Demand Models

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January 26, 2023

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

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

$E[\beta_i^0]$	$s_0$	Method	Conv	CPU(std)	GlobOpt	FailsNr	CPU-GOpt
-4	0.94	Contraction	100	78(21)	79	1	345
		Spectral	100	75(17)	78	1	342
		Squarem	100	75(17)	78	1	342
		ABLP	100	52(22)	79	0	230
		MPEC	94	204(285)	68	0	1237
-2	0.86	Contraction	100	80(25)	85	0	291
		Spectral	100	69(14)	85	0	251
		Squarem	100	70(17)	85	0	255
		ABLP	94	69(44)	74	1	354
		MPEC	95	198(269)	68	0	1200
0	0.73	Contraction	100	98(45)	76	3	474
		Spectral	100	64(15)	76	2	310
		Squarem	100	70(17)	74	3	359
		ABLP	94	80(42)	69	3	472
		MPEC	95	168(246)	61	2	1232
2	0.54	Contraction	100	157(102)	85	0	572
		Spectral	100	64(15)	84	0	241
		Squarem	100	75(36)	84	0	283
		ABLP	79	105(52)	69	4	619
		MPEC	98	132(168)	69	0	779
4	0.34	Contraction	100	480(337)	94	0	1179
		Spectral	95	71(26)	89	0	222
		Squarem	100	96(52)	94	0	236
		ABLP	70	119(47)	66	5	762
		MPEC	95	162(231)	74	0	831

Table 1: Results when  $\beta_1$  varies; 50 markets, 25 products; derivative-free outer loop.