

# Alternative Procedures for Estimating Random Coefficient Logit Demand Models

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

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
-7	0.90	NumDerivSpectr	100	73(20)	86	0	256
		NumDerivSquar	100	81(30)	84	0	305
		BOBYQASpectr	100	84(34)	83	0	327
		BOBYQASquar	99	83(30)	83	0	324
		NelderMeadSpectr	72	183(81)	64	1	1237
		NelderMeadContr	64	390(252)	58	3	3106
-4	0.70	NumDerivSpectr	100	123(61)	86	0	432
		NumDerivSquar	98	176(321)	88	0	573
		BOBYQASpectr	99	121(44)	83	0	472
		BOBYQASquar	100	114(41)	83	0	444
		NelderMeadSpectr	81	278(121)	66	0	1780
		NelderMeadContr	53	714(272)	40	6	9655
0	0.25	NumDerivSpectr	99	256(126)	81	0	1065
		NumDerivSquar	100	474(633)	78	0	2162
		BOBYQASpectr	98	278(145)	77	0	1307
		BOBYQASquar	100	352(421)	79	0	1558
		NelderMeadSpectr	70	637(232)	51	1	6168
		NelderMeadContr	0	1010(9)	0	20	-Inf

Table 1: Results for different  $\beta_1$  values; 10 markets, 125 products; derivative-free outer loop.