Online supplement

Sensitivity Analysis

Let us comment on the required nodes used in the Gauss-Hermite quadrature. We started the estimation with $m = 2$ nodes per dimension. Then, we used the result of the estimation as initial values for the next iteration step (for $m = 3$). We show on Table 1 the estimates obtained by maximum likelihood when the number of nodes per dimension used in the Gauss-Hermite quadrature equals m. We also show the computational time in hours. It has to be noted that the whole process was realized with parallel computing on 10 cores. This allows to fasten the computations, especially when the number of nodes are large. Indeed, with low number of nodes, the parallel computing actually tends to decrease the performance. This explains why the cases with $m = 2$ and $m = 3$ are slower than $m = 4$. We see also that we were able to estimate the parameters with 10 nodes per dimension, leading to $m^7 = 10\,000\,000$ nodes. We also see that starting at $m = 7$ the estimates are stable.

m	$\widehat{\varsigma}^2_{Household}$	$\widehat{\varsigma}^2_{Home}$	$\widehat{\varsigma}^2_{Motor}$	$\widehat{\varsigma}^2_{TPL}$	$\widehat{\varsigma}^2_{MD}$	$\widehat{\varsigma}^2_{MD:TPL}$	Time [h]
2	0.1460	0.1739	0.1529	0.3076	0.1294	0.1348	0.2107
3	0.1248	0.1868	0.1118	0.3233	0.1290	0.1315	0.2107
4	0.1239	0.1882	0.1124	0.3200	0.1288	0.1320	0.1075
5	0.1236	0.1878	0.1141	0.3201	0.1277	0.1333	0.2492
6	0.1238	0.1875	0.1142	0.3208	0.1272	0.1336	0.4252
7	0.1238	0.1872	0.1141	0.3213	0.1272	0.1336	0.8104
8	0.1238	0.1872	0.1141	0.3213	0.1272	0.1336	1.4762
9	0.1238	0.1872	0.1141	0.3213	0.1272	0.1336	2.9923
10	0.1238	0.1872	0.1141	0.3213	0.1272	0.1336	5.7935

Table 1: Estimates obtained with m nodes per dimension in the Gauss-Hermite quadrature. Computational time shown in hours.