1 Structure `First_simulation_exercise`

The folder `First_simulation_exercise` contains four subfolders:

- `DGP1`, which generates the data and computes the estimates for DGP1;
- `DGP2`, which generates the data and computes the estimates for DGP2;
- `DGP3`, which generates the data and computes the estimates for DGP3;
- `Table`, which constructs Table C.2.

Both the folders `DGP1` and `DGP2` contain seven subfolders:

- `generate_data`, which generates the data;
- `1`, ..., `6`, which compute the estimated identified sets under specifications [1],..., [6], respectively.

The folders `DGP3` contains 5 subfolders:

- `generate_data`, which generates the data;
- `3`, ..., `6`, which compute the estimated identified sets under specifications [3],..., [6], respectively;

In what follows, we discuss the content of the folder `DGP1`. Analogous arguments apply to the folders `DGP2` and `DGP3`. Then, we discuss the content of the folder `Table`. Gurobi and MOSEK should be downloaded and installed before running the codes. See `https://www.gurobi.com/academia/academic-program-and-licenses/` and `https://www.mosek.com/downloads/`.

2 DGP1

Step 1 Open the folder `generate_data`. Save locally the Matlab array `probs_allyears_data.mat` created in the empirical application. Run the Matlab script `main0.m` which generates the data, the empirical match probabilities (`PYX_cond.mat`, `PXY_cond.mat`), and the Logit estimates of U and V (`U_CS.mat`, `V_CS.mat`). The Matlab script `main0.m` calls the ancillary scripts `discrete.m` and `sup.m`, which are used to generate the individual types, and `equilibrium.m`, which is used to simulate the equilibrium. The script `discrete.m` requires the function `elcm.m` which can be downloaded from `https://uk.mathworks.com/matlabcentral/fileexchange/55618-enhanced-lcm-least-common-multiple-of-n-arguments-of-n-elements?s_tid=prof_contriblnk`.

Step 2 Open the folder `1`. Open the folder `M`. Save locally the Matlab arrays `PYX_cond.mat` and `U_CS.mat`. Run the Matlab script `main.m` which constructs the estimated identified set of U and stores it in the matrix `IdSetM_final.mat`. The Matlab script `main.m` calls the ancillary scripts `changecoord.m`, `Oneside1_ind.m`, `pairIndices.m`, and `useful_anyparam1_ind.m`, which are used to run the linear programs.

Open the folder `W`. Save locally the Matlab arrays `PXY_cond.mat` and `V_CS.mat`. Run the Matlab script `main.m` which constructs the estimated identified set of V and stores it in the matrix `IdSetW_final.mat`. The Matlab script `main.m` calls the ancillary scripts `changecoord.m`, `Oneside1_ind.m`, `pairIndices.m`, and `useful_anyparam1_ind.m`, which are used to run the linear programs.

Step 3 Go back to the folder `DGP1` and save locally the Matlab arrays `IdSetM_final.mat`, `IdSetW_final.mat`, `U_CS.mat`, `V_CS.mat`, `PYX_cond.mat`, and `PXY_cond.mat`. Run the Matlab script `compose.m` which computes:

- The Logit estimates of Φ (`Phi.mat`), $D(\Phi)$ (`D_CS.mat`), $C(U)$ and $C(V)$ (`Av_CS.mat`).
- The estimated identified sets of U (`U.mat`), V (`V.mat`), $D(\Phi)$ (`D_interval.mat`), $C(U)$ and $C(V)$ (`Av_interval.mat`).

Step 4 Repeat Steps 2-3 for the folders `2-6`.

3 DGP2 and DGP3

Repeat the steps outlined in Section 2 for the folders `DGP2` and `DGP3`.

4 Table

Run the Matlab script `gen_table` which reproduces Table C.2. The script calls the ancillary scripts `fill_function.m`, `load_function.m`, `load_function_CS.m`, `load_function_true.m`, and `load_function_true_indep.m`, which help fill the table. It also calls the script `matrix2latex.m` which creates a LaTex file and can be downloaded from `https://uk.mathworks.com/matlabcentral/fileexchange/4894-matrix2latex?s_tid=mwa_osa_a`. Table C.2 in the paper has been slightly reformatted to fit the paper format.