Documentation for replication materials for "A Model of the Consumption Response to Fiscal Stimulus Payments" (2014) by Greg Kaplan and Gianluca Violante

This archive contains the Fortran90 code, Matlab code and Stata code that are necessary to reproduce all the figures and tables in the paper.

Step 1: Fortran Code

The model is written in Fortran90. All files needed to compile and run the code are in the subdirectory FortranCode. The parameters have been set to those required for the baseline model (the one referred to below as BMK). Instructions for running alternative configurations are described below.

The file Compile.sh contains an example compile line that shows the functions, modules and subroutines needed to compile the code. Compiler options will depend on the specific Fortran configuration. Note that the full model was run on the Big Memory Bowery cluster at the High Performance Computing unit at New York University. The model requires a large amount of memory to run and compile. It is unlikely that the code will compile on a standard desktop computer. Accordingly, we have reduced the number of simulations by a factor of 10 (parameters nsim and nsimtrans in Parameters.f90) and the periods for which the transition is solved by factor of 10 (npergovbc in Parameters.f90). All other parameters are set as in the paper.

The parameters for the model are set in three places:

(1) Parameters.f90
(2) SetParameters.f90
(3) An input parameter file that should be put in the InputDir directory. InputDir is a directory that needs to be specified in Parameters.f90

The subdirectory Input/ in the /FortranCode folder contains all the input files that are needed by the program. They should be placed in the directory InputDir. The subdirectory Input/ also contains a sample parameter file input_par.txt that is specified as for the baseline model. The parameters on each line of this file can be found in SetParameters.f90 on lines 166-188.

To reproduce the results in the paper, the model must be run under the following configurations, with the output from each run stored in a separate folder. Each configuration should be repeated for different fixed costs by modifying line 6 on the input file. To run the one-asset version of the model, set the fixed cost to -1.

The modifications required for each configuration are expressed relative to the baseline model (BMK).

- BMK: No modifications

- SUR1 (rebate anticipated by both groups): In Parameters.f90, set announcequ=2

- SUR2 (surprise rebate for both groups): In Parameters.f90, set BothRebateSurprises=1

- REBx for x={100,200,300,400,500,750,1000,1250,1500,2000,3000} (rebate size experiments): In input file set line 15 = x

- RECx for x={3,15,-3} (recession experiments): In Parameters.f90 set ModelRecession=1, in input file, set line 21 = x

- INCx for x={0.05,0.10,…,0.95} (income targeting experiments): In Parameters.f90 set IncRebate=1, in input file, set line 20 = x

Step 2: Stata Code

For each model, the following two Stata do-files must be run sequentially from within each output directory:

- MakeDataset.do
- RebateCalculations.do

MakeDataset.do converts the text output into a Stata dataset. RebateCalculations.do does a number of calculations using the model simulations, including the computation of the rebate coefficients.

Step 3: Produce Figures

- All figures excl. Figure 7.

These figures are created by running the Matlab file MakeFigures.m. In order to run this file output directories that contain the Fortran and Stata output need to be named correctly. All directories should be placed in a single enclosing directory. The path to this directory needs to be assigned to the variable InputBaseDir in line 22.

The naming convention for the sub-directories of InputBaseDir that contain the model output is: **TYPE**_uc0.0_fc**FC**

where TYPE is the name of one of the model configurations described above, eg BMK, and FC is the fixed cost, eg 1000. To reproduce the figures in the papers the following fixed costs need to be run: 125, 500, 750, 1000, 1500, 2000, 2500, 3000. The one-asset model also needs to be running by setting the fixed cost to -1.

- Figure 7 is created by running the Stata do-file RebateHeterogeneityFigs.do. The global variable SimsDir should be set to the path containing the output from the BMK model.

- Table 4. The numbers used to produce Table 4 can be found in the output file rebate_coefficients_log corresponding to the models BMK, SUR1 and SUR2 (for rows 1, 2 and 3 respectively). In order from left to right, the variables that correspond to the numbers in each row, are the scalars sc_dCgr1_t1_trunc20, sc_dCgr2_t1_trunc20, sc_dCgr1_t2_trunc20, sc_dCgr2_t2_trunc20,reb_truncsim_st20.

- Table 5. The numbers used to produce Table 5 can be found in the output file counterfactual_transition_path corresponding to the models BMK, SUR1 and SUR2

Replication of statistics from the SCF 2001

The files needed to construct the statistics computed from the 2001 *Survey of Consumer Finances* (Table 3 in the main paper, and Tables B1 and C1 in the online appendix) are in the folder SCF. The subfolder prog contains the STATA codes and the subfolder data contains the data sets needed to run the codes.

Instructions:

Run genmoredata.do to select variables from the survey and construct the data set scf2001_final.dta.

Run gendata.do to select the final sample, define all the aggregates we use in the paper, and generate the data set scf2001_defs.dta.

Run scf_HTM_gv.do to compute the fraction of HTM households according to various definitions.

Run genret.do to generate nominal returns and taxes by individual portfolio. This file uses nominal returns by asset class that are computed based on the data collected (from various sources) in the EXCEL file AssetReturnsData.

In all these codes, the paths where the code reads the data input need to be modified accordingly.

See the main paper and its Online Appendix for a description of the empirical strategy.