This file describes the programs used to replicate the findings in " Overborrowing and Systemic Externalities in the Business Cycle" by Javier Bianchi.

The model is solved in Fortran. There are two folders. A folder named “fortran” that contains the codes to solve the model. A folder named “matlab” to produce the figures and tables of the paper. To reproduce results, put “fortran” and “matlab”” in the same folder, execute the fortran codes and then execute the matlab codes. Below, I describe the content of each folder.

1) Fortran Folder:

main.F90: calls the routines to solve the model

common_par.f90: contains the value of the parameters in the model

process.f90: discretizes VAR(1) process. Uses tauchen-hussey routine (tauchenussey.f ) based on codes written by Ronald Gallant and paramvar.txt that contains the output of the VAR(1)

brent.f90, mnbrak.f90, zbrent.f90, zbrac.f90: optimization routines taken from Numerical Recipes

nrtype.f90 and nrutil.f90: supporting modules from Numerical Recipes

grid_generate.f90: generates the grid for bonds

bindingc.f90, eulereq2, sub_optim.f90 : computes decentralized equilibrium

storedata.f90: supporting module with routines to store data to be downloaded in Matlab files

plannervf: computes constrained social planner’s problem

taxplan.f90: calculates optimal tax on debt, uses tax.f90

simulation.f90, sub_timeseries.f90: simulate the model, calculate ergodic distribution

Programs should be compiled in the following order:

nrtype.f90 common_par.f90 storedata.f90 nrutil.f90 grid_generate.f90 sub_timeseries.f90 sub_optim.f90 eulereq2.f90 externalit.f90 plannervf.F90 interp.f90 process.f90 simulation.f90 bindingc.f90 valuef.f90 tax.f90 tauchenhussey.f brent.f90 mnbrak.f90 zbrent.f90 zbrac.f90 taxplan.f90 main.f90

The fortran folder also contains a folder named “output” which stores the computations.

2) Matlab Folder

Execute the code main.m to reproduce all the figures and tables of the paper. Other files include:

load_data.m: downloads the output from fortran computations

data_analysis.m: analyzes the data from data_arg.txt, which is data for Argentina from 1965-2007 used to estimate VAR for output and calculate second moments. Uses hpfilter.m (which is the hpfilter written by Ivalo Izvorski).

output.m: and comparison.m: analyzes output from Fortran computations

plotspaper.m : reproduces figures of the paper

tablespaper.m : reproduces tables of the paper