Readme File for the Data Archive for: A Model of Endogenous Risk Intolerance and LSAPs: Asset Prices and Aggregate Demand in a "Covid-19" Shock

Ricardo J. Caballero
MIT and NBER. caball@mit.edu

Alp Simsek
MIT, NBER, and CEPR. asimsek@mit.edu

1 General structure of the data archive

This data archive contains two main folders:

- "empirical exercise": This folder contains the raw data as well as the Python code to replicate the empirical exercise of Figure 1.
- "numerical and calibration exercises ": This folder contains the Matlab codes to reproduce the figures related to the numerical and calibration analysis; specifically, Figures 2-8 in the main text and Figures A1 and B1-B2 in the appendices.

In the rest of this document, we describe the contents of these folders in detail and explain how to replicate the corresponding figures.

2 Replicating the empirical exercise

Figure 1 plots the CBOE volatility index (VIX). The "VIXCLS.xls" file contains the raw VIX data we obtained from St. Louis Fed (see https://fred.stlouisfed.org/series/VIXCLS for details). The "fig1.py" file reads from "VIXCLS.xls" and reproduce plots for Figure 1 in PDF, SVG, and EPS.

It requires several Python packages if a user does not already have them installed:

- "pandas" (for managing data);

- "xlrd" (for reading spreadsheet in the ".xls" format);
- "matplotlib" (for plotting);

3 Replicating the numerical and calibration exercises

We use Matlab to replicate figures related to the simulation or calibration exercise (Figures 2 to 8 in the main text and A1, B1, B2 in the appendices). This folder contains three groups of components:

- A list of Matlab files to execute the replication;
- a subfolder called "figures" to store replicated results. (Figures are saved in EPS format.);
- a subfolder called "calibration targets" which contains some auxiliary data sources that we used to guide our calibration exercise.

3.1 Working with Matlab files

3.1.1 Working Matlab files

The replication exercise of this section requires the "Optimization Toolbox" to be installed. All Matlab files should be kept in the root folder of this section.

To replicate all figures (Figure 2-8, A1, B1-B2), execute the Matlab file named " *ExecuteMe.m* ". This file starts with a line of code to claim the current working directory (cd ""). Users should update this line of code to their own directories. The replicated figures will be saved to the "figures" subfolder, as long as all other Matlab files are kept in the directory.

Essentially, " *ExecuteMe.m* " runs all files that contain "main" in their file names. Users can execute these files to replicate individual figures seperately, specifically:

- "*main_baseline.m* " : Figure 2 and Figure 3;
- "*main_LSAP.m* " : Figure 4 and Figure 5;
- "*main_calibration_baseline.m* " : Figure 6 and Figure B1;
- "*main_calibration_LSAP.m* " : Figure 7 and Figure B2;
- "*main_debtOverhang.m* " : Figure 8;
- "*main_LSAP_optimal.m* " : Figure A1.

All other Matlab files are secondary files and should also be kept in folder.

3.1.2 Secondary Matlab files

The "main" .m files use the following secondary files to parepare parameters and define functions for the simulations:

- "*loadVariables.m*" ,
- "*loadVariables_calibration.m*" ,
- "*loadVariables_M.m*" ,
- "*solveEquilibrium.m*" ,
- "*solveEquilibriumDebtOverhang.m*" ,
- "*solveOptimalLSAP.m*" .

The "*subtightplot.m*" file is used for sub-figure arrangment in Figure 8. It is a publicly available Matlab file that can be found at: *https://www.mathworks.com/matlabcentral/fileexchange/39664-subtightplot.*

3.2 The "calibration targets" folder

This folder contains the public data that we have used to guide our calibration. There are three different folders (FAUS data, Fed stress tests, NIPA data) each of which contains source files as well as a "*notes* "file that describes how we obtain our calibration targets from these files. Appendix B of the paper contains the details of our calibration exercise.