

# README

## *Monetary Policy, Redistribution, and Risk Premia*

Rohan Kekre\*     Moritz Lenel†

## 1 Overview

This replication package contains three sets of codes to replicate all tables and figures in the paper. These codes are split into three folders:

1. **Empirical Macro**: estimates impulse responses in section 3.1, “macro” moments in section 3.3, and moments in appendix B.1
2. **Empirical Micro**: estimates “micro” moments in section 3.3 and moments in appendices B.2 and D.2
3. **Quantitative Model**: produces all model results in section 3 and appendix D

The next three sections provide a description of files and programs in each folder as well as instructions to reproduce all tables and figures in the paper.

## 2 Empirical Macro

### 2.1 Description of files and programs

- `data/quarterly.dta`: Stata file containing quarterly data used in analysis
- `data/monthly.dta`: Stata file containing monthly data used in analysis
- `computeMoments.do`: computes all macro moments in section 3.3 and organizes data for `estimateIRFs.m`
- `estimateIRFs.m`: estimates all impulse responses in section 3.1 and associated moments in appendix B.1
- `genIRFIV.m`: helper function for `estimateIRFs.m`
- `runRobustness.m`: helper function for `estimateIRFs.m`

---

\*Chicago Booth and NBER. Email: rohan.kekre@chicagobooth.edu.

†Princeton. Email: lenel@princeton.edu.

## 2.2 Instructions to reproduce tables and figures

1. To reproduce macro moments in section 3.3 and organize data for VAR analysis, run `computeMoments.do` (after setting the directory of the `data` and `output` subfolders on the local machine in line 10). This program will produce two datasets `data/var.csv` and `data/iv.csv` used to estimate impulse responses in the next step.
2. To reproduce impulse responses in section 3.1 and associated moments in appendices B.1.1 and B.1.2, run `estimateIRFs.m`.
3. To reproduce impulse responses in appendix B.1.3, set `includeRelFund = 1` in line 18 of `estimateIRFs.m` and re-run this program.

All output files will appear in the subdirectory named `output`.

## 2.3 List of tables and figures and corresponding output

Table/Figure #	Program	Output file
Figure 1	<code>estimateIRFs.m</code>	<code>baseline.eps</code>
Table I	<code>estimateIRFs.m</code>	<code>baseline.txt</code> , l. 112-119
Table V, l. 1-4, “Target”	<code>computeMoments.do</code>	<code>macromoments.xlsx</code> , l. 1-4
Table V, l. 5-6, “Target”	<code>estimateIRFs.m</code>	<code>baseline.txt</code> , l. 9-10
Table VI, l. 1-3, “Data”	<code>computeMoments.do</code>	<code>macromoments.xlsx</code> , l. 5-7
Table A.I	<code>estimateIRFs.m</code>	<code>baseline.txt</code> , l. 129-152
Table A.II	<code>estimateIRFs.m</code>	<code>baseline.txt</code> , l. 1-7, 121-127
Figure A.1	<code>estimateIRFs.m</code>	<code>funds.eps</code>

## 3 Empirical Micro

### 3.1 Description of files and programs

- `data/scf2016.dta`: Stata file containing data for 2016 SCF, combining data from summary extract file and imputed defined benefit wealth (shared by John Sabelhaus)
- `data/scf0709.dta`: Stata file containing data for 2007-09 SCF panel, combin-

ing data from summary extract file and imputed defined benefit wealth (shared by John Sabelhaus)

- `computeMoments2016.do`: computes all micro moments in section 3.3 and in appendix D.2
- `plotFigure2016.m`: plots figure in appendix D.2
- `computeMoments0709.do`: computes all micro moments in appendix B.2

### 3.2 Instructions to reproduce tables and figures

1. To reproduce micro moments in section 3.3 and in appendix D.2, run `computeMoments2016.do` (after setting the directory of the `data` and `output` subfolders on the local machine in line 12). To produce Figure A.4 in appendix D.2, then run `plotFigure2016.m`.
2. To reproduce micro moments in appendix B.2, run `computeMoments0709.do` (after setting the directory of the `data` and `output` subfolders on the local machine in line 13).

All output files will appear in the subdirectory named `output`.

### 3.3 List of tables and figures and corresponding output

Table/Figure #	Program	Output file
Table II	<code>computeMoments2016.do</code>	<code>heterogeneity2016.xlsx</code> , l. 2-5
Table III	<code>computeMoments2016.do</code>	<code>hbusretired2016.xlsx</code>
Table A.III	<code>computeMoments0709.do</code>	<code>heterogeneity0709.xlsx</code>
Figure A.4	<code>plotSensitivity2016.m</code>	<code>sensitivity2016.eps</code>

## 4 Quantitative Model

### 4.1 Description of files and programs

- `SolutionAlgorithm.pdf`: detailed description of the solution algorithm

- **src/params:** Matlab script producing .csv files that define the model parameterizations
- **src/fortran:** Fortran codes solving the model
- **src/matlab:** Matlab codes creating tables and figures
- **bin:** compilation scripts for Linux, Windows and macOS PCs as well as Unix-based distributed computing environments
- **output:** collects all figures and tables as presented in the paper and its appendix

## 4.2 Instructions to reproduce tables and figures

The working directory to execute all code and programs is **bin**. The example bash script **linux\_run.sh** executes all of the following steps within that folder:

1. Within **bin**, run **src/params/create\_param\_files.m** to create the .csv files that characterize the nine different calibrations that the numerical results in the paper are based on.
2. Within **bin**, compile the solution program based on the provided Fortran source code. See **linux\_run.sh** for an example on the relevant files that need to be linked in the compilation process. After compilation, run the program for every parameterization by providing indexes 1-9 as options to the executable.
3. Once the main program has been run for every parameterization, run **src/matlab/main.m** from within **bin** to produce tables and figures. Then compile **results.tex** in **output** within its own folder.

**Note on the compilation of the Fortran code:** The provided compilation scripts (in particular **linux\_run.sh**) serve only as examples. They need to be adapted to any particular computing environment. We compiled the program using the Intel Fortran compiler which is freely available as part of the Intel oneAPI HPC toolkit. We used Matlab version R2021a to create tables and figures. The Fortran program uses the proprietary numerical library of the Numerical Algorithm Group (NAG). Most routines used in the code can be easily replaced by open source alternatives and

we might provide an open source version of our code in the future. We are also working on a Julia translation of our numerical solution. This and codes for our related projects can be found at <https://github.com/KekreLenel/MPR>.

### 4.3 List of tables and figures and corresponding output

The Latex file `output/results.tex` collects all figures and tables. The matlab file `src/matlab/main.m` produces all figures and tables by calling various functions and scripts. The following table references the Matlab files ultimately producing the tables and figure files, all of which are located in `src/matlab/`. Figures and tables are saved in `output/figures` and `output/tables` (create those folders before running `main.m`).

Table/Figure #	Program	Output file
Table V	<code>create_moment_tables.m</code>	<code>Targeted_Moments_1.tex</code>
Table VI	<code>create_moment_tables.m</code>	<code>Untargeted_Moments_1.tex</code>
Figures 2-4	<code>plot_irfs.m</code>	<code>monetary_fig_split{1-3}.eps</code>
Table VII	<code>create_CS_tables.m</code>	<code>Campbell_Shiller.tex</code>
Table VIII/IX	<code>create_decomp_tables.m</code>	<code>decomp_tab_1/2.tex</code>
Figure A.2	<code>plot_irfs.m</code>	<code>TFP_compact.eps</code>
Figure A.3	<code>plot_irfs.m</code>	<code>dis_compact.eps</code>
Table A.IV	<code>create_moment_tables.m</code>	<code>Targeted_Moments_8.tex</code>
Figure A.5	<code>plot_irfs.m</code>	<code>interm_compact.eps</code>
Table A.VI	<code>create_CS_tables.m</code>	<code>Campbell_Shiller_interm.tex</code>
Table A.VI	<code>create_moment_tables.m</code>	<code>Targeted_Moments_6.tex</code>
Figure A.5	<code>plot_irfs.m</code>	<code>idio_compact.eps</code>
Table A.VII	<code>create_CS_tables.m</code>	<code>Campbell_Shiller_idio.tex</code>