Monetary Policy and Inequality under Labor Market Frictions and Capital-Skill Complementarity

Readme for the replication codes of the empirical exercise

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1 Data

1.1 Data availability statements

All data used in the main text and appendix of our manuscript are publicly available from the data sources below:

- Current Population Survey (CPS) by United States Census Bureau and US Bureau of Labor Statistics (2018)
  - NBER extracts of the CPS Merged Outgoing Rotation Groups
  - downloadable from `http://data.nber.org/morg/annual/` (one *.dta file for each year 1979-2016)
- FRED by Federal Reserve Bank of St. Louis
  - inflation and CPI deflator series `CPIAUCSL`, available at `https://fred.stlouisfed.org/series/CPIAUCSL` (U.S. Bureau of Labor Statistics, 2020*a*), unit can be changed by clicking "Edit graph" and selecting "Index" or "Percentage change from year ago"
  - unemployment series `UNRATE`, available at `https://fred.stlouisfed.org/series/UNRATE` (U.S. Bureau of Labor Statistics, 2020*b*)
  - Fed funds rate `FEDFUNDS`, available at `https://fred.stlouisfed.org/series/FEDFUNDS` (Board of Governors of the Federal Reserve System , US)
- Romer and Romer narrative monetary policy shocks (Ramey)

  - available at `https://econweb.ucsd.edu/~vramey/research.html#data` from Ramey (2016)
  - Under the section *"Data and Programs for "Macroeconomic Shocks and Their Propagation" 2016 Handbook of Macroeconomics, June 2016"*, click *"Monetary Shocks"*, which should download a zip file `Ramey_HOM_monetary.zip`
  - Inside the zip file find `Monetarydat.xls`, inside which the *"Monthly"* sheet contains variable $RRSHOCK$ in column J, which is what we need from 1979 onwards.
- Romer and Romer narrative monetary policy shocks (Coibion et al) – only needed for the Online Appendix
  - available at `https://sites.google.com/site/ocoibion/` from Coibion et al. (2017)
  - Download the zip file by clicking to *"Codes and data"* for the *"Innocent Bystanders?"* paper: `Inequality_CGKS_replication_folder.zip`
  - Inside the zip file navigate to `source files / RR MPshocks Updated.xls`, where the *"Makemonthly"* sheet contains the variable $RR\ Updated\ Shocks, Quarterly\ frequency$ in column M which we use from 1979-2008
- Romer and Romer narrative monetary policy shocks (Miranda-Agrippino) – only needed for the Online Appendix
  - The data were downloaded from the author's website at `http://silviamirandaagrippino.com/code-data` (Miranda-Agrippino, 2018) in December 2018.
  - The use of these series is referenced in Miranda-Agrippino and Rey (2015) in their Appendix D.2. on page 61.
  - However, shock series are no longer available for public download, as the author removed them from her website, therefore we include the data, as originally downloaded by us, in this repository.

1.2 Dataset list

- `labor market data prep / data files / morgYY.dta`
  - source: CPS
  - YY denotes years from 79-16
  - provided in the project repository if file limitations allow (almost 2GB altogether)
- `SVAR analysis / DATASET_DMP_IRIS.xlsx`

  - Combines multiple data sources (CPS, FRED, Ramey), with some data already treated in previous steps, and some within the Excel file. It serves as the main input for the SVAR analysis.
  - Sources and series names are listed on the *"Sources"* sheet. File is provided in the project repository.

- `SVAR online appendix / DATA_DMP_Q.xlsx`
  - Apart from transforming monthly data from `SVAR analysis / DATASET_DMP_IRIS.xlsx` into quarterly frequency (by using the middle month of the quarter), this file also includes the quarterly Romer and Romer shock series updated by Coibion et al. (2017), which can be found on *"shocks"* sheet under the name $TRSHOCK$.
  - File is provided in the project repository.

- `SVAR online appendix / DATASET_DMP_IRIS.xlsx`
  - Mainly a replication of `SVAR analysis / DATASET_DMP_IRIS.xlsx`.
  - Additionally it includes extended Romer and Romer shock series (Miranda-Agrippino, 2018) which were used in Miranda-Agrippino and Rey (2015), under the name $RRSHOCKMA$.

2 Computational requirements

2.1 Software requirements

- Stata (version 16)
  - the `sencode` command needs to be installed for this code to run (ssc install sencode)
  - the `sdecode` command needs to be installed for this code to run (ssc install sdecode)
  - alternatively, the user can run the `labor market data prep / stata_config_file.do` file as well, which is supposed to install these packages
- RStudio (version 1.2.5001)
- Java (Version 8 update 231, build 1.8.0_231-b11)
- MS Excel 2013
- Matlab (release 2018b)
  - IRIS Toolbox 20150127: This is an open-source toolbox which we use for X13-ARIMA-SEATS seasonal adjustment. It runs on Matlab. Further information about the toolbox can be found at `https://iris.igpmn.org/` or at `https://github.com/IRIS-Solutions-Team/IRIS-Toolbox`. In this code we have used an older version of

the toolbox, released on 27 January 2015, and **it is important that our codes are run with this IRIS version!** Since this might no longer be available for download, we have included the IRIS Toolbox release 20150127 in this repository. Documentation corresponding to this version (IRIS Solutions Team, 2015) can be obtained by typing `irisman` into the Matlab command window after an IRIS session has been started up (see later), which should bring up the file `help/IRIS_Man.pdf` from the toolbox folder.

- VAR toolbox: For the SVAR analysis we use a toolbox which is based on Cesa-Bianchi (2015), but modified by the authors. It is included in this repository.

2.2 Memory and runtime requirements

The code was run on a Dell computer with the following specifications:

- operation system: Windows 8.1 pro (64-bit)
- processor: Intel 4-Core i7-4510U CPU @ 2.00GHz
- RAM: 8.00 GB
- if downloading the raw CPS data from their original source (NBER website), instead of using what we attached, then it can take up to an hour, depending on the internet connection – it also occuppies almost 2GB of storage

All computations and figure generation are finished within 30 minutes.

2.3 Description of programs

2.3.1 Labor market data preparation

Everything within the `labor market data prep` subfolder:

- `IRIS_Tbx_20150127` folder: contains the particular release of the IRIS toolbox used for these codes
- `data files` folder: should contain the raw Stata data files from the Current Population Survey (United States Census Bureau and US Bureau of Labor Statistics, 2018) between 1979-2016, in the format `morgYY.dta` where YY denotes the year. If these files are not in this folder (due to size limitations), they should be directly downloaded from `http://data.nber.org/morg/annual/`
- functions to manipulate the raw data:
  - `stata_config_file.do`: SSC installs the Stata packages "sencode" and "sdecode".

  - `data preparation.do`: This Stata do file does most of the preparation of the raw CPS labor market data, as detailed in Appendix A of our manuscript. It calls the `morgYY.dta` files from the `data files` folder saves the results into the `clean data` folder, under the names `morg1979-2016_final.dta` and `morg1979-2016_final.xlsx`.
  - `kalman.R`: This R file applies the Kalman-filter to some of the sectoral wage data in order to replace data-outliers with Kalman-smoothed predictions. It calls `morg1979-2016_final.xlsx` from the `clean data` folder. Then it saves the results into the `clean data` folder into Excel files named of the pattern `hrlwage_{ed, noed}_industry_{industry no.}_kalman.xlsx`
  - `SA_labor_iris.m`: This Matlab file applies seasonal adjustment to monthly labor market series by using the IRIS Toolbox's X13-ARIMA-SEATS package. After starting an IRIS session, it loads data from the `clean data` folder, and then applies the seasonal adjustment. The result is saved as `SA_data_iris.csv` and as `SA_data_iris.xlsx`

- `clean data` folder: includes the results of preparing the CPS labor market data
  - `SA_data_iris.csv` (or `SA_data_iris.xlsx`) is the main file to be used in the later stage of our empirical analysis (SVAR)
  - for reference the non-seasonally adjusted data is also saved in `NA_data_iris.csv`
  - the remaining files, i.e. `morg1979-2016_final.xlsx`, and `hrlwage_{ed, noed}_industry_{indust no.}_kalman.xlsx` (and their *.csv and *.dta counterparts) were just needed as intermediate steps for switching between the above programs

WARNING: Users should note, that the folder names `clean data` and `data files` might automatically be hyphenated by some repositories (e.g. by openICPSR), in which case these references might need to be manually adjusted in the codes.

2.3.2 SVAR analysis

Everything within the `SVAR analysis` subfolder:

- `VAR_Toolbox`: contains auxiliary Matlab functions to run the SVAR analysis
- `proxySVAR`: contains auxiliary Matlab functions to run the SVAR analysis
- `auxfiles`: contains some auxiliary Matlab functions
- `charts`: contains the figures of impulse response functions
- files containing input data:
  - `DATASET_DMP_IRIS.xlsx`: contains the input data used in the SVAR analysis, which is used by...

  - ...`Import_data_DMP.m` which, in turn, saves it in the right format into...
  - ...`DATASET.mat` which is used for running the SVAR estimation and replicating the IRF figures
- `replicate_figureNN.m` are codes run the SVAR estimation for the aggregate and each sectoral data (NN denotes figure number in our manuscript)
  - they use `DATASET.mat` as input, and save the resulting figures in the `charts` subfolder
- `svar_master.m` runs all the Matlab files to generate and save the figures

2.3.3 Online appendix SVAR figures

Everything within the `SVAR online appendix` subfolder:

This subfolder includes the same files as those above needed for replicating SVAR results from the main manuscript, but it also has some more:

- `locproj.m`, `locproj_conf.m` and `locproj_cv.m` are files by Brownlees (2018) to implement local projection methods (they can be downloaded from `https://github.com/ctbrownlees/MATLAB-package-lproj`)
- `functions` subfolder contains auxiliary Matlab files for the SVAR analysis
- `DATA_DMP_Q.xlsx` contains the labor market, macro and shock data transformed from monthly into quarterly frequency for the local projection exercise. This uses already existing monthly data from `DATASET_DMP_IRIS.xlsx`, and also includes the quarterly Romer and Romer monetary policy shock series from Coibion et al. (2017).
- `DATASET_DMP_IRIS.xlsx` is a copy of the file with the same name in the `SVAR analysis` subfolder, but appended by additional series, like extended Romer and Romer shocks $RRSHOCKMA$ from Miranda-Agrippino and Rey (2015) which are used only in the Online Appendix.
- `mainLP_DMP.m` runs the local projection exercise and generates some figures in the Online Appendix (saved in `charts` subfolder)
- `svar_appendix_master.m` runs all the codes needed to replicate the SVAR figures in the Online Appendix:
  - the individual files are `replicate_figureN_online.m`, with N denoting the figure number

3 Instructions

3.1 Labor market data preparation

1. Make sure that the CPS data from 1979-2016 is in the `labor market data prep/data files` folder with name pattern `morgYY.dta`.
   - If not, download them one-by-one from `http://data.nber.org/morg/annual/`
2. Run `data preparation.do` on Stata
   - You might have to change the base folder in line 9 to the one where you have downloaded this folder on your computer. Make sure it ends with the current subfolder where this do file is located, i.e. `labor market data prep`
   - If not yet in your Stata, install the sencode and sdecode commands before running this file by typing: `ssc install sencode` and `ssc install sdecode`. Alternatively, run the `stata_config_file.do` configuration file, which does the same.
   - This file uses `data files/morgYY.dta` files, so make sure they are there.
   - This files saves `clean data/morg1979-2016_final.xlsx` which will be needed later
3. Run `kalman.R` on RStudio
   - Install any missing packages. Some packages needed for the code to run might be missing, but RStudio offers to install them when loading the script.
   - This file uses `clean data/morg1979-2016_final.xlsx` so make sure it is there.
   - This file generates the Kalman-smoothed sectoral wage series `clean data/hrlwage_{ed, noed}_industry_{industry no.}_kalman.xlsx` which will be used later
4. Run `SA_labor_iris.m` on Matlab (current folder set to `labor market data prep`)
   - This adds the 2015-01-27 release of the IRIS Toolbox to the current Matlab path. The command "`irisstartup`" starts up an IRIS session. If you have already started up an IRIS session earlier, then this part of the code can be commented out.
   - This file calls `clean data / morg1979-2016_final.xlsx` and `clean data / hrlwage_{ed, noed}_industry_{industry no.}_kalman.xlsx`, so make sure they are in the same folder.
   - This file generates `clean data / SA_data_iris.csv` (and also `clean data / SA_data_iris.xlsx` with idential content) which will be needed in the SVAR analysis stage.

3.2 SVAR analysis

1. Collect and prepare all the input data in the Excel file `SVAR analysis / DATASET_DMP_IRIS.xlsx`
   - for labor market variables use `labor market data prep / clean data / SA_data_iris.csv` to paste it into the *"SA_data_IRIS_csv"* sheet
   - for other macro variables use the sources indicated above and copy them into this Excel in their respective columns
   - some data transformation are done within Excel on the *"data transformations"* and *"computing backward MA"* sheets – the structure of the *"DATASET"* sheet is important to stay the same, such that data can be imported into Matlab in the correct way
   - **Note!** The exact copy of `SVAR analysis / DATASET_DMP_IRIS.xlsx` which we used, is included in this repository.
2. Run `svar_master.m` on Matlab (with current folder set to `SVAR analysis`) to do all the SVAR analysis and replicate the figures
   - Runs `Import_data_DMP.m`
     - This imports data from `DATASET_DMP_IRIS.xlsx`, restructures it, then saves it in `DATASET.mat`
   - Runs `replicate_figureNN.m` on Matlab (where NN denotes the figure number)
     - These files use `DATASET.mat`, and then run the SVAR analysis to plot impulse responses.
     - The figures are then saved to the `charts` subfolder under the name pattern `MAbaselineVAR.eps` or `MAsectorNVAR.eps`

3.3 Online Appendix – SVAR results

1. Construct the file `SVAR online appendix / DATA_DMP_Q.xlsx`
   - The sheet called: "Mdata_from_DATASET_DMP_IRIS" inserts the monthly data from for the DATASET_DMP_IRIS.xls file for the following variables: UR, FFR, INF_Y, RWAGE_S, WPREMIUM, EMP_S, RAT_EMP defined as in the file DATASET_DMP_IRIS.xls. Then LRWAGE_S is the natural logarithm of RWAGE_S.
   - Those series are transformed into quarterly series by choosing the 2nd, 5th, 8th and 11th month for every year, i.e., by using the middle month of the quarter (Excel's filter feature can be used for this). Copy the filtered results into the "transform monthly to quarterly" sheet.

- The clean data for UR, FFR, INF, WPREMIUM, EMP_S, RAT_EMP and LR-WAGE_S, together with a linear trend called "ltrend" are copied in the sheet named "data".
- The sheet called "shocks" includes the quarterly Romer and Romer shock series updated by Coibion et al. (2017), with the name TRSHOCK.

2. Run `mainLP_DMP.m` for the local projection exercise
   - As input, this file uses `SVAR online appendix / DATA_DMP_Q.xlsx`
   - It saves the figures in the `charts` subfolder
3. Run `svar_appendix_master.m` to replicate the SVAR figures of the Online Appendix
   - This will execute the `replicate_figureNN_online.m` files, which replicate the figures one-by-one, and save them in the `charts` subfolder

4 List of figures and numbers

Numbers:

- Most numbers cited in the main text are just read off of charts and figures.
- Other numeric results are replicated below:
  - `SVAR analysis / Import data DMP.m` (line 59 and 61) prints correlation coefficients in the Matlab command window: between unemployment rate and employment ratio, and unemployment rate and skill premium, as cited in the second paragraph of Chapter I

Figures: listed in Tables 1 and 2.

Table 1: List of figures appearing in the main text of the manuscript and in its Appendix

Figures	**Program**	**Line no.**	**Output file**
Figure 1	`replicate_figure1.m`	35	`MAbaselineVAR.eps`
Figure B1	`replicate_figure9a.m`	39	`MAsector1VAR.eps`
Figure B2	`replicate_figure9b.m`	39	`MAsector2VAR.eps`
Figure B3	`replicate_figure9c.m`	39	`MAsector3VAR.eps`
Figure B4	`replicate_figure9d.m`	39	`MAsector4VAR.eps`
Figure B5	`replicate_figure9e.m`	39	`MAsector5VAR.eps`
Figure B6	`replicate_figure9f.m`	39	`MAsector6VAR.eps`

Table 2: List of figures appearing in the Online Appendix

Figures	Program	Line no.	Output file
O.A. Figure 1	`replicate_figure1_online.m`	34	`MAextsampleVAR.png`
O.A. Figure 2a	`replicate_figure2a_online.m`	39	`MAsector1extsample.png`
O.A. Figure 2b	`replicate_figure2b_online.m`	39	`MAsector2extsample.png`
O.A. Figure 2c	`replicate_figure2c_online.m`	39	`MAsector3extsample.png`
O.A. Figure 2d	`replicate_figure2d_online.m`	39	`MAsector4extsample.png`
O.A. Figure 2e	`replicate_figure2e_online.m`	39	`MAsector5extsample.png`
O.A. Figure 2f	`replicate_figure2f_online.m`	39	`MAsector6extsample.png`
O.A. Figure 3	`replicate_figure3_online.m`	23	`MACholesky_whole.png`
O.A. Figure 4a	`mainLP_DMP.m`	124	`localproj_wage_LRWAGE_S.png`
O.A. Figure 4b	`mainLP_DMP.m`	124	`localproj_wage_WPREMIUM.png`
O.A. Figure 4c	`mainLP_DMP.m`	124	`localproj_wage_EMP_S.png`
O.A. Figure 4d	`mainLP_DMP.m`	124	`localproj_wage_RAT_EMP.png`
O.A. Figure 5	`replicate_figure5_online.m`	33	`MAcompoVAR.png`
O.A. Figure 6	`replicate_figure6_online.m`	34	`baselineVAR.png`

5 Repository

The repository with the above described replication codes is available at `https://github.com/gergomotyovszki/DMP-monpol-and-CSC---empirical-replication`

References

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Monetary Policy and Inequality under Labor Market Frictions and Capital-Skill Complementarity

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1 Computational requirements

1.1 Software requirements

- Matlab (Release 2018b)
  - Optimization toolbox
  - Symbolic toolbox
  - Portions of the code were originally written and run in Matlab 2015b. These portions are also compatible with Matlab 2018b, but then they result in slightly different font sizes and zooming properties for some of the figures compared to the 2015b versions used in the manuscript. (However, more recent portions of the code are sometimes not backward compatible with 2015b and they do require 2018b).
- IRIS Toolbox (release 2015-01-27)
  - This is an open-source toolbox similar to Dynare, for macroeconomic modelling, forecasting and time series analysis. In particular, for solving DSGE models with perturbation methods (Schmitt-Grohé and Uribe, 2004). It runs on Matlab.
  - Further information about the toolbox can be found at `https://iris.igpmn.org/` or at `https://github.com/IRIS-Solutions-Team/IRIS-Toolbox`
  - In this code we have used an older version of the toolbox, released on 27 January 2015, and **it is important that our codes are run with this IRIS version!** Since this might no longer be available for download, we have included the IRIS

Toolbox release 20150127 in this repository. Documentation corresponding to this version (IRIS Solutions Team, 2015) can be obtained by typing `irisman` into the Matlab command window after an IRIS session has been started up (see later), which should bring up the file `help/IRIS_Man.pdf` from the toolbox folder.

- LaTeXcompiling engine: MiKTeX 2.8
  - IRIS Toolbox can detect and use LaTeX installations on the computer, which is useful for figure generation when figure titles and legends include Greek letters and mathematical objects. This is not a crucial requirement, but without this generated figures might display the actual code instead of proper symbols.

1.2 Memory and runtime requirements

The code was run on a Dell computer with the following specifications:

- operation system: Windows 8.1 pro (64-bit)
- processor: Intel 4-Core i7-4510U CPU @ 2.00GHz
- RAM: 8.00 GB

All computations and figure generation are finished within 30 minutes.

1.3 Description of programs

- the folder `IRIS_Tbx_20150127` contains the particular release of the IRIS toolbox required for these codes
- main functions
  - `DMP_monpol_CSC_main.m`: This is the main file which starts up an IRIS session, sets parameters for different calibration scenarios, solves the corresponding DSGE model for each of them, and simulate impulse response functions for various shocks, as well as implements the decomposition of the log-linearized wage bargaining equation. It calls `DMP_monpol_CSC_steady.m` and `DMP_monpol_CSC.model`, and finally it saves results in output files `DMP_results.mat` and `DMP_irf_results.mat`.
  - `DMP_monpol_CSC_steady.m`: This function calculates the steady state of the model according to our calculation and calibration strategy detailed in Section D.2. of our Online Appendix. As input, it uses exogenous parameters and steady-state targets (set in `DMP_monpol_CSC_main.m`). As output, it gives a structure variable, which includes all the parameters and solved steady state values for all model variables.
  - `DMP_monpol_CSC.model`: This is a file written in IRIS-specific model file language. It defines all the variables, parameters and dynamic equilibrium conditions of our

DSGE model, as described in Section D.1. of our Online Appendix. It is called by `DMP_monpol_CSC_main.m` to create an IRIS model object when solving the model.

  - `DMP_figures.m`: This file generates output displaying all the numerical results and figures used in the theoretical part of our paper. It uses saved results from `DMP_results.mat` and `DMP_irf_results.mat` (which in turn were generated by `DMP_monpol_CSC_main.m`), and then saves the resulting output into subfolders `charts` and `numbers`.
  - `calibration_table.tex`: This LaTeX file replicates Table 1 in our manuscript containing parameters and steady state values. It uses input stored in the `numbers` subfolder (which were saved there by `DMP_figures.m`)

- auxiliary functions
  - `hline.m` draws formatted horizontal lines on plots
  - `vline.m` draws formatted vertical lines on plots
  - `figureFullScreen.m` is used in the code `DMP_figures.m`, and sets the given figure object to be displayed at full screen mode, so that it is more readily examinable and is printed/saved in a larger size. It worked well on our Windows 8.1 computer, but it might generate error messages on certain Mac OS versions. The corresponding lines in `DMP_figures.m` can be commented out without any serious drawback, however, the printed/saved figures might be of different size from the ones used by us.

- results
  - `DMP_results.mat` and `DMP_irf_results.mat` contain all the numerical results of our theoretical analysis with our DSGE model (solved model objects, parameters, impulse responses etc – for various calibrations)
  - `charts` folder: contains all the figures generated by `DMP_figures.m` (These are to be subsequently used as inputs to our manuscript and Online Appendix).
  - `numbers` folder: contains all the baseline parameters and steady state values printed into separate `*.tex` files by `DMP_figures.m` (These are to be subsequently used by `calibration_table.tex`).
  - Note: neither of these result files are necessary to run the codes, as they will be generated by the codes anyway. But having them already in place could allow to skip running certain codes, which can save time.

Note:

- Some variable and parameter names used in the codes do not have a straightforward match with the symbols used in the paper for the same variables/parameters (due to a series of requested changes in notation). However, the description of each variable/parameter and

the structure of the model as defined and outlined in `DMP_monpol_CSC.model` should make the correspondance between them clear.

2 Instructions

1. Set current folder in Matlab to where this repository is saved/extracted.
2. Run `DMP_monpol_CSC_main.m`
    - This adds the 2015-01-27 release of the IRIS Toolbox to the current Matlab path. The command "`irisstartup`" starts up an IRIS session. If you have already started up an IRIS session earlier, then this part of the code can be commented out.
    - This file calls `DMP_monpol_CSC_steady.m` and `DMP_monpol_CSC.model`, so make sure they are in the same folder.
    - This file generates `DMP_results.mat` and `DMP_irf_results.mat` which will be needed later.
3. Run `DMP_figures.m`
    - This file uses `DMP_results.mat` and `DMP_irf_results.mat`, so make sure they already exist and are in the same folder.
    - If you have generated the `*_results.mat` files in a previous, *and by now closed*, IRIS session, then you need to start up an IRIS session again, as described in the previous step. Just uncomment the corresponding portion of this code at the very beginning.
    - This file generates output for results in the `charts` and `numbers` subfolders, which are used in our manuscript.
4. Run `calibration_table.tex` with a LaTeX compiler engine
    - This file uses input from the `numbers` subfolder, so make sure it already exists and is in the same folder.

3 List of figures and tables

Table 1 is generated from results saved into separate `*.tex` files in the `numbers` subfolder.

- Lines 36-61 of `DMP_figures.m` do the saving. Filenames are constructed according to the syntax `{coeffname}_{scenario}.tex`, where various values for `{coeffname}` are listed in the "coeffnamelist" cell on line 43, and `{scenario}` is set to "base" in line 50, denoting our baseline calibration.

- `calibration_table.tex` does the compiling, which results in the final output of our Table 1

Figures

- We use 10 types of figures, annotated by f1, f2, f3, f4, f5, w1, w2, w3, w4, and w5 in the code `DMP_figures.m`
- These figure types are filled up with content in loops for different combinations of
  - alternative calibration scenarios (pp keeps track of these),
  - alternative scenario comparisons (kk keeps track of these), and
  - alternative shocks (jj keeps track of these)
- This is why multiple figures can be generated by the same lines in the code, just for different combinations of jj, kk and/or pp
- Note: These codes generate more figures than those appearing in our manuscript, since figures appearing in the Online Appendix are also created here.

Table 1: List of theoretical figures appearing in the main text of the manuscript and in its Appendix

Figures	**Program**	**Line no.**	**Output file**	**Note**
Figure 2	`DMP_figures.m`	236	`figure2_v_baseline.eps`	
Figure 3	`DMP_figures.m`	179	`figure1_v_base.eps`	
Figure 4	`DMP_figures.m`	277	`figure3_v_baseline.eps`	
Figure 5	`DMP_figures.m`	480	`w1_base.eps`	
Figure 6	`DMP_figures.m`	638	`w5_baseline.eps`	for $kk = 1$
Figure 7	`DMP_figures.m`	638	`w5_gamma.eps`	for $kk = 4$
Figure 8	`DMP_figures.m`	332	`figure4_v.eps`	
Figure C1	`DMP_figures.m`	239	`figure2_g_baseline.eps`	for $jj = 3, kk = 1$
Figure C2	`DMP_figures.m`	280	`figure3_g_baseline.eps`	for $jj = 3, kk = 1$
Figure C3	`DMP_figures.m`	239	`figure2_qq_baseline.eps`	for $jj = 7, kk = 1$
Figure C4	`DMP_figures.m`	280	`figure3_qq_baseline.eps`	for $jj = 7, kk = 1$
Figure C5	`DMP_figures.m`	239	`figure2_v_symphi.eps`	for $jj = 4, kk = 3$
Figure C6	`DMP_figures.m`	280	`figure3_v_symphi.eps`	for $jj = 4, kk = 3$
Figure C7	`DMP_figures.m`	477	`w1_scen77.eps`	for $pp = 77$
Figure C8	`DMP_figures.m`	635	`w5_symphi.eps`	for $kk = 3$

Table 2: List of theoretical figures appearing in the Online Appendix

Figures	**Program**	**Line no.**	**Output file**	**Note**
O.A. Figure 7	DMP_figures.m	396	figure5_v_sigma.eps	for $jj = 4, kk = 5$
O.A. Figure 8	DMP_figures.m	396	figure5_v_psi.eps	for $jj = 4, kk = 6$
O.A. Figure 9	DMP_figures.m	396	figure5_v_xi.eps	for $jj = 4, kk = 7$
O.A. Figure 10	DMP_figures.m	396	figure5_v_omega.eps	for $jj = 4, kk = 8$
O.A. Figure 11	DMP_figures.m	396	figure5_v_alpha.eps	for $jj = 4, kk = 9$
O.A. Figure 12	DMP_figures.m	396	figure5_v_rhow.eps	for $jj = 4, kk = 10$
O.A. Figure 13	DMP_figures.m	396	figure5_v_capz.eps	for $jj = 4, kk = 11$
O.A. Figure 14	DMP_figures.m	396	figure5_v_monpol.eps	for $jj = 4, kk = 12$
O.A. Figure 15	DMP_figures.m	396	figure5_v_monpolCSC.eps	for $jj = 4, kk = 13$
O.A. Figure 16	DMP_figures.m	239	figure2_g_baseline.eps	for $jj = 3, kk = 1$
O.A. Figure 17	DMP_figures.m	280	figure3_g_baseline.eps	for $jj = 3, kk = 1$
O.A. Figure 18	DMP_figures.m	239	figure2_inv_baseline.eps	for $jj = 6, kk = 1$
O.A. Figure 19	DMP_figures.m	280	figure3_inv_baseline.eps	for $jj = 6, kk = 1$
O.A. Figure 20	DMP_figures.m	239	figure2_qq_baseline.eps	for $jj = 7, kk = 1$
O.A. Figure 21	DMP_figures.m	280	figure3_qq_baseline.eps	for $jj = 7, kk = 1$
O.A. Figure 22	DMP_figures.m	396	figure5_qq_monpol.eps	for $jj = 7, kk = 12$
O.A. Figure 23	DMP_figures.m	396	figure5_qq_monpolCSC.eps	for $jj = 7, kk = 13$
O.A. Figure 24	DMP_figures.m	239	figure2_psi_baseline.eps	for $jj = 1, kk = 1$
O.A. Figure 25	DMP_figures.m	280	figure3_psi_baseline.eps	for $jj = 1, kk = 1$
O.A. Figure 26	DMP_figures.m	239	figure2_a_baseline.eps	for $jj = 2, kk = 1$
O.A. Figure 27	DMP_figures.m	280	figure3_a_baseline.eps	for $jj = 2, kk = 1$
O.A. Figure 28	DMP_figures.m	477	w1_base.eps	for $pp = 1$
O.A. Figure 29	DMP_figures.m	553	w2_base.eps	for $pp = 1$
O.A. Figure 30	DMP_figures.m	477	w1_sSAMb.eps	for $pp = 3$
O.A. Figure 31	DMP_figures.m	553	w2_sSAMb.eps	for $pp = 3$
O.A. Figure 32	DMP_figures.m	477	w1_sSAMC.eps	for $pp = 4$
O.A. Figure 33	DMP_figures.m	553	w2_sSAMC.eps	for $pp = 4$
O.A. Figure 34	DMP_figures.m	477	w1_aSAMb.eps	for $pp = 5$
O.A. Figure 35	DMP_figures.m	553	w2_aSAMb.eps	for $pp = 5$
O.A. Figure 36	DMP_figures.m	477	w1_caput.eps	for $pp = 42$
O.A. Figure 37	DMP_figures.m	553	w2_caput.eps	for $pp = 42$
O.A. Figure 38	DMP_figures.m	722	w3_baseline.eps	for $kk = 1$
O.A. Figure 39	DMP_figures.m	748	w4_baseline.eps	for $kk = 1$
O.A. Figure 40	DMP_figures.m	722	w3_caputil.eps	for $kk = 2$
O.A. Figure 41	DMP_figures.m	748	w4_caputil.eps	for $kk = 2$
O.A. Figure 42	DMP_figures.m	635	w5_baseline.eps	for $kk = 1$
O.A. Figure 43	DMP_figures.m	635	w5_caputil.eps	for $kk = 2$

4 Repository

The repository with the above described replication codes is available at `https://github.com/gergomotyovszki/DMP---monpol-and-CSC---replication-codes`

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