README and Guidance

Data Availability and Provenance Statements

Data on average maturity of the outstanding public debt, as given in the datafile below, was obtained from Jagdish Chada, as source data for the analysis in the paper Chada et al. (2013). A copy of the data is provided as part of this archive, as given below. The data are in the public domain.

Datafile: `Data_BIS_Figure3.xlsx`

Data on reserves as given in the datafile below, was obtained from Jagdish Chada, as source data for the analysis in the paper Chada et al. (2013). A copy of the data is provided as part of this archive. The data are in the public domain.

Datafile: `Data_BIS_FRB_H3.xlsx`

Data on outstanding US Federal debt as given in the datafile below, was obtained from Jagdish Chada, as source data for the analysis in the paper Chada et al. (2013). A copy of the data is provided as part of this archive. The data are in the public domain.

Datafile: `Data_BIS_USFederalDebt.xlsx`

Data on nominal GDP and tax receipts were obtained from the Bureau of Economic Analysis (1947-2010), as part of National Income and Product Account Tables 1.1.5 and 3.2. Data on Market Value of Government Debt was obtained from the Federal Reserve Bank of Dallas (1942-2010) database. These data are on the datafile `Data_fiscal` given below. The datafile `Data_fiscal` also contains computations for parameters $\hat{b}_S$ and ψ used in Table 1 on spreadsheet `Fiscal_Data` within the file. A copy of the data is provided as part of this archive. The data are in the public domain. It can be obtained from Bureau of Economic Analysis as part of National Income and Product Account Tables and Federal Reserve Bank of Dallas Debt Data, see
https://apps.bea.gov/iTable/iTable.cfm?ReqID=19&step=4
&isuri=1&1921=flatfiles&3Place=N,
https://www.dallasfed.org/research/econdata/govdebt

Datafile: `Data_fiscal.xlsx`

Columns C from `Data_BIS_Figure3.xlsx`, V from `Data_BIS_FRB_H3.xlsx` and E from `Data_BIS_USFederalDebt.xlsx` are combined together in `MaturityAdjustedForReserves_final.xlsx` to compute the maturity adjusted for reserves. A truncated version of the resulting time series are copied as a comma separated file which is used to produce Figure C8.

Datafile: `MaturityAdjustedForReserves.csv`

> Dataset is from Ramey and Zubairy (2018) which is available online as a part of the data archive here https://www.journals.uchicago.edu/doi/suppl/10.1086/696277

Datafile: `RZDAT.xlsx`

Dataset list

Data file	Source	Notes	Provided
`Data_BIS_Figure3.xlsx`	Chada et al. (2013)	Public	Yes
`Data_BIS_FRB_H3.xlsx`	Chada et al. (2013)	Public	Yes
`Data_BIS_USFederalDebt.xlsx`	Chada et al. (2013)	Public	Yes
`Data_fiscal.xlsx`	Bureau of Economic Analysis (1947-2010) and Federal Reserve Bank of Dallas (1942-2010)	Public	Yes
`RZDAT.xlsx`	Ramey and Zubairy (2018)	Public	Yes
`MaturityAdjustedForReserves.csv`	Chada et al. (2013)	Combines multiple data sources, serves as input for Figure C8.	Yes

Computational Requirements

Software Requirements

- Stata (code was last run with version 15.1)
  - ivreg2
  - ranktest
  - weakivtest
  - avar
  - weakiv
- Mathematica 12.3.0

  - `MaTeX`, can be downloaded from Wolframcloud website, https://resources.wolframcloud.com/FunctionRepository/resources/MaTeXInstall/
- Matlab (code was run with Matlab Release 2021b)

Memory and Runtime Requirements

The code was last run on a **4-core Intel-based laptop with MacOS version 12.4 with 16 GB of RAM**. Computation took about 20 hours total.

Description of programs and their outputs

Instructions: Please, run the scripts in the order given in the list. It is crucial to restart the Mathemtatica kernel between the scripts.

Folders list grouped by sections

Section 2 results

1. Figure 1
   (a) Run SimpleModelStickyPriceCommitement_fig1.nb , quit Mathamtica kernel
   (b) Run forwardGuidance_fig1.nb
   (c) Figure 1 is panel.pdf in ./FiscalStickyCommitementModelResults
   (d) Figure A.1 panel_fnf.pdf in ./FiscalStickyCommitementModelResults
2. Figures 2 to 5
   (a) Run SimpleModelStickyPriceCommitement_fig1.nb , quit Mathamtica kernel
   (b) Run SimpleModelStickyPriceFinal_fig2.nb
   (c) Figure 2 is panel_s.png in ./stickyPriceModelResults/unb_Calibration_1/
   (d) Figure 3 is panel_x_comparison.png in ./stickyPriceModelResults/unb_Calibration_1/
   (e) Figure 4 is mcmb.png in ./stickyPriceModelResults/unb_Calibration_2/
   (f) Figure 5 is renegPanel4.png in ./stickyPriceModelResults/unb_Calibration_2/
   (g) Figure A.2 is panel_x_short.png in ./stickyPriceModelResults/unb_Calibration_1/
   (h) Figure A.3 is panel_d_short.png in ./stickyPriceModelResults/unb_Calibration_1/
3. Figures 6 to 7
   (a) Run NoFiscalforwardGuidance_fig6.nb , quit Mathamtica kernel

(b) Run SimpleModelStickyPriceFinal_fig2.nb , quit Mathamtica kernel

(c) Run SimpleModelStickyPriceCommitement_fig6.nb

(d) Figure 6 is panel.png in ./stickyPriceCommitementModelResults/Calibration_2/

(e) Figure A.4 is panel.png in ./stickyPriceCommitementModelResults/Calibration_4/

(f) Figure 7 is panel2.png in ./stickyPriceCommitementModelResults/Calibration_2/

Section 3 results

1. Table 1 Figure 8-10

   (a) Run IRF_ESTIMATES/taxes_irf.do in Stata

   (b) Run IRF_ESTIMATES/inflation_irf.do in Stata

   (c) Run IRF_ESTIMATES/std_irf.do in Stata

   (d) Run summaryTable.nb

   (e) Run /Model/simulate_QE_commitment.m in Matlab

   (f) Run UB/completQE2_UB.nb , quit Mathematica kernel

   (g) Run LB/completQE2_LB.nb , quit Mathematica kernel

   (h) Run completQE2_point_estimate.nb

   (i) Table 1 is based on table1.csv in ./OOS_benchmark . Note that λ_y and λ_T are annualized by multiplication by 16. The numbers in the main text Table 1 and in the subsequent tables are being rounded.

   (j) Table 2 is based on outputEffects.csv in ./OOS_benchmark

   (k) Table 3 is based on KVJmoments.csv in ./OOS_benchmark

   (l) Table 4 is based on Table4.csv in ./OOS_benchmark

   (m) Table C.1 the last two columns are based on Tablec1high.csv in ./UB/OOS_benchmark and on Tablec1low.csv in ./LB/OOS_benchmark and

   (n) Table 5 is based on Table5.csv in ./OOS_benchmark

   (o) Table 6 is based on Table6.csv in ./OOS_benchmark

   (p) Figure 8 is bigModelPanel4.pdf in ./OOS_benchmark

   (q) Figure 9 is estimationRatio.png in ./OOS_benchmark

   (r) Figure 10 bigModelPanel.pdf in ./OOS_benchmark

2. Figure 11
   (a) Run timeVaryingMaturity.nb
   (b) Figure 11 is based on tvPanel.pdf and
3. Figure 12
   (a) Run completQE2Bayes.nb
   (b) Figure 12 is based on lambdaTposterior.pdf
   (c) Run ./LB/completQE2_LB.nb
   (d) The lower bound on QE2 output effects (reported Appendix B.4) is taken from ./LB/OSS_Benchmark/outputEffects.csv
   (e) Run ./UB/completQE2_UB.nb
   (f) The upper bound on QE2 output effects (reported Appendix B.4) is taken from ./UB/OSS_Benchmark/outputEffects.csv

Appendix results

1. Figure A5 A6
   (a) Run SimpleModelHybrid2.nb
   (b) Figure A.5 is panel_x_short.png in ./hybridPriceModelResults/ Calibration_28/
   (c) Figure A.6 is panel_d_short.eps in ./hybridPriceModelResults/ Calibration_28/
2. Figure A7
   (a) Run SimpleModelStickyPriceQuadratic.nb, quit mathematica kernel
   (b) Run SimpleModelStickyPriceNonlinear.nb, quit mathematica kernel
   (c) Figure A.7 is panel_quad_nonlin.png in ./stickyPriceModelResultsCombined/ Calibration_1/
3. Figure C8
   (a) Run nicePlots.nb
   (b) Figure C.8 is MaturityAdjustedForReserves_new
4. Table C2
   (a) Run ./UB/TableC2high.nb
   (b) Run ./LB/TableC2low.nb

(c) Table C2 the last two columns are based on TableC2high.csv in ./UB/OOS_benchmark and on TableC2low.csv in ./LB/OOS_benchmark and

5. Table C3 4
   (a) Run yeildMatch.nb
   (b) Table C.3 is TableC3.csv in ./Benchmark
   (c) Table C.4 is outputEffects.csv in ./Benchmark
   (d) p.37 $\alpha = 0.97$ output effects are given in outputEffects.csv in ./Discounted
6. Figure E9
   (a) Run LongTermDebt.m in matlab
   (b) Run longTermDebtPic.nb in Mathematica
   (c) Figure E9 is given in inflationPic.eps

References

Bureau of Economic Analysis. 1947-2010. "National Income and Product Accounts." United States Department of Commerce. https://apps.bea.gov/iTable/iTable.cfm?ReqID=19&step=4&isuri=1&1921=flatfiles&3Place=N (accessed August 12, 2011).

Chadha, Jagjit S., Philip Turner, and Fabrizio Zampoli. 2013. "Data for: The Interest Rate Effects of Government Debt Maturity." Bank of International Settlements Working Paper 415 (provided July 21, 2014).

Federal Reserve Bank of Dallas. 1942-2010. "Market Value of U.S. Government Debt" Federal Reserve Bank of Dallas. https://www.dallasfed.org/research/econdata/govdebt (accessed Sept 1, 2011).

Ramey, Valerie A., and Sarah Zubairy. 2018. "Replication data for: Government Spending Multipliers in Good Times and in Bad: Evidence from US Historical Data." *Journal of Political Economy,* 126, 850-901. https://www.journals.uchicago.edu/doi/suppl/10.1086/696277
