Replication Package: "Central Bank Balance Sheet Policies Without Rational Expectations"

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1 Introduction

This document summarizes the files replicating Figure 2 and Table B.1 in Iovino and Sergeyev (forthcoming), "Central Bank Balance Sheet Policies Without Rational Expectations," Review of Economic Studies.

2 Instructions to reproduce Figure 2 and Table B.1

The computer codes and public data for replicating our results can be downloaded following the link provided in the paper's main text. To replicate Figure 2 and Table B.1, set MATLAB's working folder to the root folder of this replication package and then run **main.m**. To reproduce the right panel of Figure 2 and Table B.1, one should have access to proprietary mortgage rate forecasts.

3 Replication Package Structure

The root folder of the replication package contains four objects besides the current **readme.pdf** file. They are the main replication file **main.m** and three folders: **Data**, **Functions**, **Results**. The list below summarizes their contents

- **Data**

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- **FMR_data.xlsx** - The data identical to the FMR paper
- **BlueChip_mtg_empty.xls** - Mortgage rate forecasts file (actual data deleted). The file with actual data should be called **BlueChip_mtg.xls**

- **Results**

  - **FigureXXIV_2_CONV.pdf -** Output file: Figure 2 (left panel)
  - **termStructure_p_MTG.pdf -** Output file: Figure 2 (right panel)

- **Functions**

  - **Import_DATASET.m** imports data from the two excel data files (**FMR_data.xlsx** and **BlueChip_mtg.xls**) and writes them to the array called DATASET.
  - **Add_VARIABLES_to_DATASET.m** adds several new variables (e.g., mortgage rate forecast errors and a rolling average of realized mortgage rates) to the DATASET.
  - **Generate_VARIABLES.m** generates variables that are used as controls in regressions.
  - **Compute_Kbar.m** computes the average level of sophistication of the agents in the economy based on the regression results.
  - **auxiliary_files**
    * **Estimate_irs_ap_shock.m** estimates the impulse response function of the variable of interest following a shock
    * **Estimate_irs_ap_shock2.m** is identical to Estimate_irs_ap_shock.m with the only difference that the pre-shock level of the variable of interest is not subtracted from the left-hand side.
    * **gr.m computes** a three-month growth rate
    * **hline.m** adds a horizontal line to MATLAB figures.
    * **nancumsum.m** computes the cumulative sum of a matrix with the user-specified treatment of NaNs.
    * **NeweyWest.m** computes Newey-West adjusted heteroscedastic-serial consistent standard errors.
    * **plot_irs.m** plots impulse response functions.
    * **plot_TermStructure.m** plots a term structure of the forecast errors responses.

4 Data Availability Statement

The empirical part of the paper uses two types of data. First, most data are identical to those used in Fieldhouse, Mertens and Ravn (2018a,b) and are publicly available. We provide an excel file with these data in the replication package. Second, mortgage rate forecasts are from a proprietary Blue Chip Financial Forecasts (BCFF) that come from CCH Incorporated (various years). The researchers can access to these data through institutions that are subscribed to the BCFF reports or by purchasing them directly from Wolters Kluwer publishing company. We certify that we had all the rights to legitimately use the BCFF data.

5 Datasets Description

All publicly available variables used in the empirical part of the paper are monthly and identical to those in Fieldhouse, Mertens and Ravn (2018a,b).[1] One can get these data either by downloading the FMR replication data or by using original sources, which we list here:

- **Agency purchase commitments** are computed by FMR in summing purchases by Fannie Mae, Freddie Mac, and the Federal Reserve.

- **The noncyclical narrative policy indicator** m_t is computed in FMR.

- **Personal income** is from NIPA (series PI in the FRED database).

- **The core PCE price index** is from NIPA (series PCEPILFE in the FRED database).

- **Nominal house price index** is the Freddie Mac house price index.

- **Total mortgage debt** is from the Financial Accounts of the United States and additional computations in FMR.

- **Residential mortgage originations** are computed by FMR from various sources and available from the authors.

- **Housing starts** are from the Census Bureau (series HOUST in the FRED database).

- **The 3-month T-bill rate** is from the Federal Reserve Release (FRSR) H.15 (series TB3MS in the FRED database).

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[1]We downloaded the Fieldhouse, Mertens and Ravn (2018b) replication package with the data on January 21, 2018.

- **The 10-year Treasury rate** is from the Federal Reserve Release (FRSR) H.15 (series GS10 in the FRED database).

- **The BAA-AAA corporate bond spread** is obtained by taking the difference between Moody's seasoned BAA and AAA yields (series BAA and AAA in the FRED database).

- **The conventional mortgage rate** is the 30-year fixed-rate conventional conforming mortgage rate. It is measured as the monthly average commitment rate from the Freddie Mac primary mortgage market survey.

- **Mortgage rate forecast** is the Blue Chip Forecasts of home mortgage rate, which is defined as the 30-year fixed-rate conventional conforming mortgage rate. The Blue Chip reports note, "Interest rate definitions are the same as those in FRSR H.15."

The forecast of conventional mortgage rates for the current quarter and the following four quarters are from the BCFF reports. We use a cross-sectional median for every point in time.

6 Computational Requirements

We computed our results using MATLAB R2021b on a personal computer with the following characteristics

- Operation system: Windows 10 Enterprise

- Processssor: 11th Gen Intel(R) Core(TM) i7-1165G7 @ 2.80GHz 2.80 GHz

- RAM: 32.0 GB

The code takes 15 seconds.

References

CCH INCORPORATED (various years). Blue chip financial forecasts [data set]. ISSN 0741-8345.

FIELDHOUSE, A., MERTENS, K. and RAVN, M. O. (2018a). The macroeconomic effects of government asset purchases: Evidence from postwar us housing credit policy. *The Quarterly Journal of Economics*, **133** (3), 1503–1560.

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