Readme File for the Replication of
"A Bayesian DSGE Model of Stock Market Bubbles and Business Cycles"
by Miao, Wang and Xu

Notes: The estimations and simulations are conducted in Dynare (version: 4.4.2). The installation file of Dynare can be downloaded from: www.dynare.org/. Please cite our paper if you use our codes.

Lists of Codes

(1) The folder "Estimation_Benchmark" contains codes to conduct the Bayesian estimation for the baseline model.

    (a) **RunEstBubbleBench.m**: matlab code to run the estimation. The results replicate Table 1.

    (b) **EstBubbleBench.mod**: dynare code

    (c) **LoadDataSentiFin_75.m**: contains all the data series used in the estimation. The data are described in the paper.

(2) The folder "Simulation_Benchmark" contains codes to conduct the simulation exercises for the baseline model.

    (a) **RunVarDecFreq.m**: matlab code to compute the variance decomposition in frequency domain. It replicates the lines labeled "Baseline" in Table 3. This code calls dynare code **BubbleImpBench.mod** and functions **SpectrumDSGE.m** (to compute the spectrum).

    (b) **RunPlotImp.m**: matlab code to compute the impulse responses. It replicates Figures 2 and 3

    (c) **RunPlotHist.m**: matlab code to do the historical decomposition for the IT bubble episode and the Great Recession episode. It replicates Figure 4. This code calls dynare code **BenchmarkSmoother.mod**, **ShockHistDecomp.m** and data file LoadDataSentiFin_75.m

    (d) **RunPlotSmoothFinShock.m**: matlab code to compare smoothed financial shocks and sentiment shocks in different estimations. It replicates Figure 5.

    (e) **RunPlotCCI.m**: matlab code to compare the smoothed sentiment shock with the consumer sentiment index from Michigan Survey. It replicates Figure 6.

(3) The folder "Robustness_PredictiveChecks" contains **RunPlotPostPredict.m**, which reports the posterior predictive checks (PPC) for various models. It replicates results in Figure 1. Since the size of MCMC posterior sampling data are too large, here we only provide the simulation data about the PPC of two moments.

(4) Folder "Robustness_VarianceDecomposition", conducts variance decompositions (VD) in frequency domain for alternative models. Replicates results in alternative models in Table 3. The folder contains

    (a) **RunVarDecFreq_NoSP.m**: compute VD for the estimation without stock prices.

It calls dynare code `BubbleImpNoSP.mod` and `SpectrumDSGE.m`

 (b) `RunVarDecFreq_NoBubble.m`: matlab code to compute the variance decomposition for the model without bubbles. It calls dynare code `NoBubbleImp.mod` and `SpectrumDSGE.m`.

 (c) `RunVarDecFreq_Nothet.m`: matlab code to compute the variance decomposition for the model without sentiment shocks. It calls dynare code `BubbleImpNothet.mod` and `SpectrumDSGE.m`.

 (d) `RunVarDecFreq_Extend.m`: matlab code to compute the variance decomposition for the extended model. It calls dynare code `BubbleImpExtend.mod` and `SpectrumDSGE.m`.

 (e) `RunVarDecFreq_Hybrid.m`: matlab code to compute the variance decomposition for the hybrid model (see Appendix F.3). It calls dynare code `BubbleImpHybrid.mod` and `SpectrumDSGE.m` .

(5) The folder "`Robustness_Appendix_Table1`" contains codes to compute the HP filtered moments simulated from various models. It replicates Table 1 in the Appendix. It contains main codes: `RunMomentsHP_MODEL.m,` where MODEL refers to {Bench, Extend, NoBubble, NoSP, Nothet}. The main codes call dynare codes `BubbleImpMODEL.mod`, function `hpfilter.m` and data file `LoadDataSentiFin_75.m`.

(6) The folder "`Robustness_Appendix_Table2`" contains codes to estimate the extended model, which replicates Table 2 in the online Appendix. It contains main code `RunEstBubbleExtend.m`, which calls dynare code `EstBubbleExtend.mod` and data file `LoadDataSentiFin_75.m`.

(7) The folder "`Robustness_Appendix_Table3`" contains codes to estimate the baseline model when the prior of the standard deviation of the sentiment shock is set to be InvGamma with mean 0.01 and infinite variance. It contains the main code `RunEstBunchRobust.m`, which calls dynare code `EstBubbleBench.mod` and the data file `LoadDataSentiFin_75.m`