This file accompanies the replication package for "Forecasting with panel data: Estimation uncertainty versus parameter heterogeneity" by M. Hashem Pesaran, Andreas Pick and Allan Timmermann.

Reproducing the tables and figures

The computations were done using Matlab R2025a on a Macbook Pro (with M4 Max CPU). The parallel computing toolbox of Matlab was used (but is easy to avoid at the expense of increased computation time, see below for more details).

After unzipping the file, the only Matlab file to manipulate in order to produce the tables and figures is `main.m`. Set the path in line 6 to the path of the unzipped files. (Also make the folder and subfolders discoverable by Matlab.)

The **house price application** results are produced by setting `doHouse` equal to 1. The forecasts will be saved in the subfolder `results\house`. For the first run, switch `doForecastsHouse` to 1. In order to produce the hierarchical Bayesian forecasts reported in Table S.5 and S.6 (in the Online Supplement) switch `doSupplement` to 1.

If you do not have the parallel computation toolbox, change `parfor` in line 132 of the file `ppt_house.m` in the subfolder `functions` to `for`.

Similarly, the **CPI application** results are produced by setting `doCPI` equal to 1. The forecasts will be saved in the subfolder `results\cpi`. For the first run, switch `doForecastsCPI` to 1. In order to produce the hierarchical Bayesian forecasts reported in Table S.5 and S.6 (in the Online Supplement) switch `doSupplement` to 1.

If you do not have the parallel computation toolbox, change `parfor` in line 135 of the file `ppt_cpi.m` in the subfolder `functions` to `for`.

The results of the **Monte Carlo experiments** are produced by setting `doMonteCarlo` equal to 1 or 2. Setting it to 1 calculates the forecasts, which can take a substantial amount of time even with the parallel computation toolbox. In order not to mistakenly call of the calculations for the forecasts, they will not be done if the corresponding forecasts are already saved in the `results\MonteCarlo` folder. Setting it to 2, uses the forecasting results from a previous run, which are saved in the `results\MonteCarlo` folder. Setting `doMCSupplement` to 0 yields Tables 1 and S.3 (in the Online Supplement), setting it to 1 yields Table S.2 (in the Online Supplement), and setting it to 2 yields Table S.4 (in the Online Supplement).

If you do not have the parallel computation toolbox, change `parfor` in line 61 of the file `main.m` to `for`. The computations could then take

a rather substantial amount of time (the Monte Carlo experiments with the hierarchical Bayesian forecasts take about 19 hours using 16 cores and `parfor`).

Table A.1 in the Appendix of the paper is reproduced by setting `doTableA1` to 1.

Table S.1 in the Online Supplement of the paper is reproduced by setting `doTableS1` to 1.

Data for application

House price data The house price data (in `fmhpi_master_file.csv`) were collected FreddieMac website and the CPI data (in `CPIAUCSL.csv`) from the FRED data set of the St. Louis Fed's website. The files are in the `data/house` folder. They are read and manipulated by the GNU Octave file `CalcHousePriceInfl.m` to produce the files used in the Matlab programmes described above. These files are in the subfolder `data/house`.

The MSA regions and spatial weights are obtained from Cynthia Yang (2021) "Common Factors and Spatial Dependence: An Application to US House Prices" Econometric Reviews, 40(1): 14-50.

CPI data The CPI data are collected from the FRED data base using the `R` script `GetCPIdataFRED.R`, which is in the `data/cpi` folder. This downloads and save the data in a the subfolder `series`. The path needs to be adjusted on line 27 in `GetCPIdataFRED.R`.

Once downloaded, the Gnu Octave file `ImportCPIdata.m` then loads the different series and saves them as the csv file that is used in the Matlab programmes described above.

The default yield and term spread where obtained from Ivo Welch and Amit Goyal (2008) "A Comprehensive Look at The Empirical Performance of Equity Premium Prediction" Review of Financial Studies, 21(4): 1455-1508.