

Homework 4

Eco 5316 Time Series Econometrics

Spring 2019

Due: Saturday, February 23, 11.55pm

Problem 1

Complete the review of the HW3 code of your classmate on github.com.

Problem 2

Submit your solution for this problem to your student folder in the TTU-EC05316 github repo under the file name `yourlastname_eco5316_hw4q2.r`. Create a pull request to add it to the `students` branch of the `jduras\TTU-EC05316` repo.

- (a) Use `tq_get` to obtain quarterly Real Personal Consumption Expenditures for the 1955Q1-2018Q4 sample, available on FRED under code `PCECC96`.
- (b) Construct the log changes in the Real Personal Consumption Expenditures $\Delta \log c_t = \log c_t - \log c_{t-1}$ where c_t is the original quarterly Real Personal Consumption Expenditures.
- (c) As in the example discussed in class and the lecture slides, split the sample into two parts: first one up to 2008Q4, second one from 2009Q1 onward. Use `auto.arima` with `ic = aic` and `stationary = TRUE`, `stepwise = FALSE`, `approximation = FALSE` to find the best model. Check the estimated model for adequacy, diagnose residuals using `gtsdiag`.
- (d) Use the estimated model with `forecast` to generate 1 to 36 step ahead forecast for the prediction subsample, 2009Q1-2018Q4.
- (e) Use `slide` from the `tsibble` package to generate a rolling scheme forecast, in particular a sequence of 1 period ahead forecasts for the prediction subsample, 2009Q1-2018Q4.
- (f) Plot the multistep forecast and the 1 step ahead rolling forecasts, with their confidence intervals.
- (g) Use `accuracy` to evaluate the out of sample accuracy of the two sets of forecasts.