

**Economics 144: Homework 3**  
**Winter 2019, UCLA**  
**Instructor: Dr. Rojas**

**Due Date: February 21, 2019**

1. (20%) The file `w-gs1yr.txt` contains the U.S. weekly interest rates (in percentages) from January 5, 1962, to April 10, 2009. For this assignment you will fit an appropriate ARMA(p,q) model and make a 24-steps-ahead forecast.
  - (a) Show a plot of the data, along with the respective ACF and PACF functions. Discuss the plots.
  - (b) Based on your discussion in (a), fit 3 different ARMA(p,q) models, and show the fits over the original data. Discuss your results, and select one model as your preferred choice.
  - (c) Now that you fit an ARMA(p,q) model to the data, plot the ACF and PACF of the residuals from your preferred fit model, and discuss your results.
  - (d) Compute and plot the recursive residuals from your best fit model. Interpret the plot.
  - (e) Compute and plot the CUSUM from your best fit model. Interpret the plot.
  - (f) Compute the best fit model according to 'R' and compare it against your model. Discuss these results.
  - (g) Using your best fit model as well as 'R's' best fit model, compute the respective 24-steps-ahead forecast, and compare your results.
2. (20%) Problem 7.2 (i.e., Chapter 7, Problem 2) from Textbook<sup>a</sup>.
3. (20%) Problem 7.6 (i.e., Chapter 7, Problem 6) from Textbook<sup>a</sup>.
4. (20%) Problem 7.7 (i.e., Chapter 7, Problem 7) from Textbook<sup>a</sup>.
5. (25%) Problem 8.7 (i.e., Chapter 8, Problem 7) from Textbook<sup>a</sup>.