Economics 144: Homework 2
Spring 2018, UCLA
Instructor: Dr. Rojas

Due Date: April 24, 2018

1. (40%) The data file `labordata.dat` consists of the labor force participation rates by gender (including the total, i.e., sum of male and female) for the years 1948-1991. Each observation is a monthly data point. The objective of this assignment is to fit a trend to the time series data, and based on the best fit model, make a 10 year forecast.

   The complete assignment needs to be typed, include all the plots, and the R source code as well.

   (a) Show a time-series plot of your data. You can show all three variables on the same plot.

   (b) Fit a linear, polynomial, and exponential model to the female labor force participation rate. For each model, plot the time series and overlay the respective fit. Discuss your results for each one.

   (c) Plot the residuals vs. the fitted values for each model in the previous question. Discuss your results.

   (d) Based on AIC and BIC, choose the best fit model. Make sure to provide a table with the AIC and BIC computed values.

   (e) Using your selected best fit model, forecast and plot your estimated female labor force participation rate for the years 1992-2002. Your forecast should include the 95% confidence and prediction intervals. Discuss your results.

   (f) Fit a Holt-Winters filter to your data and show the fit. How does this model compare to your best fit model?

   (g) Based on the Holt-Winters fit, forecast and plot your estimated female labor force participation rate for the years 1992-2002. Your forecast should include the error bands. Discuss your results.

2. (15%) Problem 3.2 (i.e., Chapter 3, Problem 2) from Textbook[a].

3. (15%) Problem 4.4 (i.e., Chapter 4, Problem 4) from Textbook[a].

4. (15%) Problem 4.6 (i.e., Chapter 4, Problem 6) from Textbook[a].

5. (15%) Problem 5.4 (i.e., Chapter 5, Problem 4) from Textbook[a].