Statistical Methods for Discrete Response, Time Series, and Panel Data (W271): Lab 4

W271 Instructional Team

November 22, 2017

Instructions:

- **Due Date: 12/9/2017 (by mid-night)**
- **Page limit: 10 pages**
- Submission:
  - Submit 2 files:
    1. A pdf file including the summary, the details of your analysis, and all the R codes used to produce the analysis. Please do not suppress the codes in your pdf file.
    2. R markdown file used to produce the pdf file
  - Each group only needs to submit one set of files
  - Use the following file naming convensation
    - SectionNumber_hw01_FirstNameLastNameFirstInitial.fileExtension
    - For example, if you are in Section 1 and have two students named John Smith and Jane Doe, you should name your file the following
      - Section1_hw01_JohnS_JaneD.Rmd
      - Section1_hw01_JohnS_JaneD.pdf
  - Please write the name of each members of your group on page 1 of your report.
  - This lab can be completed in a group of up to 3 people. Each group only needs to make one submission. Although you can work by yourself, you are encouragd to work in a group.

Description of the Lab

In this lab, you are provided a time series stored in "Lab4-series2.csv". The series, which is a monthly series, covers the historical period from 1990 to 2015. Your main task is to build a time series model, using materials covered between lecture 6 - lecture 10 (not including VAR modeling), and conduct a monthly, 11-month ahead forecast of the series in 2015.

You will have to split the series into a training series, which includes the data from 1990 to 2014 December, leaving all the months in 2015 as the test data.

As we have studied extensively in the last 6 lectures on how to build time series models, I expect that your team illustrate and describe all of steps in building up to your final model. All of your analyses and decisions to select your final models must be clearly demonstrated. It is quite possible that you will have a few candidate models that you have considered. Besides using information criterion, consider the mean absolute percentage error (MAPE) on the test sample in your model selection.