W271-2 – Spring 2016 – **HW 7**

Juanjo Carin, Kevin Davis, Ashley Levato, Minghu Song

March 30, 2016

Contents

Exercises

Question 1

1. Load hw07_series1.csv

. . .

2. Describe the basic structure of the data and provide summary statistics of the series

. . .

3. Plot histogram and time-series plot of the series. Describe the patterns exhibited in histograrm and time-series plot. For time series analysis, is it sufficient to use only histogram to describe a series?

. . .

4. **Plot the ACF and PACF of the series. Describe the patterns exhibited in the ACF and PACF.**

. . .

5. **Estimate the series using the `ar()` function.**

. . .

6. **Report the estimated AR parameters, the order of the model, and standard errors.**

. . .

Question 2

1. **Simulate a time series of lenght 100 for the following model. Name the series x.**

$$\mathbf{x_t = \frac{5}{6}x_{t-1} - \frac{1}{6}x_{t-2} + \omega_t}$$

...

2. **Plot the correlogram and partial correlogram for the simulated series. Comments on the plots.**

...

3. **Estimate an AR model for this simulated series. Report the estimated AR parameters, standard errors, and the order of the AR model.**

...

4. **Construct a 95% confidence intervals for the parameter estimates of the estimated model. Do the "true" model parameters fall within the confidence intervals? Explain the 95% confidence intervals in this context.**

...

5. **Is the estimated model stationary or non-stationary?**

...

6. **Plot the correlogram of the residuals of the estimated model. Comment on the plot.**

...
