

# Homework 5

Eco 4306 Economic and Business Forecasting

Spring 2019

Due: Thursday, March 22, before the class

## Problem 1

Obtain monthly data for change, in millions of dollars, in Total Private Residential Construction Spending, for the period 1993M01-2017M12. This data is available under code **PRESCON** on FRED. Note that you either need to switch the units to “Change, Millions of Dollars” on FRED, or construct the change in EViews yourself by calculating the first differences  $DCONST = CONST - CONST(-1)$ .

- (a) Import the data for 1993M01-2017M12 into EViews, then change your sample to 1993M01-2013M12. Use this data to create time series plot and correlogram similar to the two panels in Figure 7.19 but for 1993M01-2013M12 instead of 2002M01-2011M01.
- (b) Compare your correlogram in (a) with that in Figure 7.19. Does the change in U.S. residential construction in 1993M01-2013M12 follow a similar process as in 2002M01-2011M01?
- (c) Estimate a suitable multiplicative  $AR(p)+S-AR(P)$  model for the period 1993M01-2013M12. Create a time series plot with residuals and the correlogram for residuals. If based of these two plots the residuals do not appear to be white noise, modify your model appropriately. Report only the estimation results, residuals plot and correlogram for the final model you select. Explain why you selected that particular model over possible alternatives.
- (d) Create a multistep forecast for period 2014M01-2017M12. Also generate the standard errors for this forecast to construct the lower and upper bounds of the 95% confidence interval. Plot the actual data together with the forecast and its 95% confidence interval. Report the RMSE for this forecast.
- (e) Create a sequence of one step ahead forecasts for period 2014M01-2017M12 using fixed forecasting scheme. Also generate the standard errors for this forecast to construct the lower and upper bounds of the 95% confidence interval. Plot the actual data together with the forecast and its 95% confidence interval. Report the RMSE for this forecast.
- (f) Comment on the difference in RMSE and the width of the confidence intervals between (d) and (e) .