

# Forecasting: principles and practice

Exercises: Set 11 and 12

4 December 2013

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Before doing any exercises in R, load the **fpp** package using `library(fpp)`.

1. For the time series you selected from the retail data set in Exercise 7.3:
  - (a) Develop an appropriate dynamic regression model with Fourier terms for the seasonality. Use the AIC to select the number of Fourier terms to include in the model. (You may need to use the same Box-Cox transformation you identified previously.)
  - (b) Check the residuals of the fitted model. Does the residual series look like white noise?
  - (c) Compare the forecasts with those you obtained earlier using alternative models.
  
2. Use the `tbats` function to model the same data set. Check the residuals and produce forecasts. Does this completely automated approach work for these data?
  
3. Over this course, you have developed several models for the retail data. The last exercise is to use cross-validation to objectively compare the models you have developed. Following the example used in Session 12 of the course, apply a similar approach to these data and compute cross-validated MAE values for each of the time series models you have considered. It will take some time to run, so perhaps leave it running overnight and check the results the next morning.

*Congratulations on finishing the forecasting course! I hope you have learned things that will be useful in forecasting whatever it is you want to forecast.*