

Forecasting: principles and practice

Exercises: Set 6

6 November 2013

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

1. For this exercise, use the monthly Australian short-term overseas visitors data, May 1985–April 2005. (Data set: `visitors`.)
 - (a) Make a time plot of your data and describe the main features of the series.
 - (b) Forecast the next two years using Holt-Winters' multiplicative method.
 - (c) Why is multiplicative seasonality necessary here?
 - (d) Experiment with making the trend exponential and/or damped.
 - (e) Compare the RMSE of the one-step forecasts from the various methods. Which do you prefer?
 - (f) Now use the `ets()` function to select a model automatically. Does it choose the same model you did?
2. For this exercise, use the quarterly UK passenger vehicle production data from 1977:1–2005:1. (Data set `ukcars`.)
 - (a) Use `ets()` to choose a seasonal model for the data.
 - (b) Compare the RMSE of the fitted model with the RMSE of the model you obtained in Exercise Set 5 using an STL decomposition with Holt's method. Which gives the better in-sample fits?
 - (c) Now compare the forecasts from the two approaches? Which seems most reasonable?
3. Experiment with using `ets()` on a range of different time series data. Can you find an example where it does *not* give reasonable forecasts?