Forecasting: principles and practice

Exercises: Set 5 4 November 2013

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

1. For this exercise, use the price of a dozen eggs in the United States from 1990–1993 (data set `eggs`). Experiment with the various options in the `holt()` function to see how much the forecasts change with damped or exponential trend. Also try changing the parameter values for α and β to see how they affect the forecasts. Try to develop an intuition of what each parameter and argument is doing to the forecasts.

   [Hint: use `h=100` when calling `holt()` so you can clearly see the differences between the various options when plotting the forecasts.]

   Which model gives the best RMSE?

2. For this exercise, use the quarterly UK passenger vehicle production data from 1977:1–2005:1. (Data set `ukcars`.)
   (a) Plot your data and describe the main features of the series.
   (b) Decompose the series using STL and obtain the seasonally adjusted data.
   (c) Forecast the next two years of the series using Holt's linear trend method applied to the seasonally adjusted data.
   (d) What are the parameters of the method? What do they tell you about how quickly the slope and level are changing over time?
   (e) Reseasonalize the forecasts using the following code where `decomp` is the output from `stl()` and `fit` is the output from `holt()`:

   ```
   lastyear <- rep(decomp$time.series[110:113,"seasonal"],2)
   fc <- fit$mean + lastyear
   ```

   (f) Do the re-seasonalized forecasts look reasonable?