Forecasting: principles and practice

Lab Session 3 — 23 September 2014

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 1900–1993 (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?

   Do the residuals from the best model look like white noise?

2. 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) Check that the residuals from the best model look like white noise.

3. Forecast one of the series considered in the previous session using an exponential smoothing method. Try to find the best trend and seasonal specification for the series. Check if the residuals resemble white noise.