ETW3420
Principles of Forecasting and Applications

Topic 5 Pre-tutorial Activity

In this pre-tutorial activity, you will:

(i) Apply the simple exponential smoothing method in Microsoft Excel and use Solver to estimate the smoothing parameter.

(ii) Apply a trend method in Microsoft Excel and use Solver to estimate the smoothing parameters.

Before attempting the following question, please watch the following videos:

(i) Simple exponential smoothing: http://www.youtube.com/watch?v=6P-qGU8EYmI. In this video, Goal Seeker was used to estimate the smoothing parameter, α. You may refer to the second video to see how Solver could be used to estimate α instead.

(ii) Holt's linear method: https://www.youtube.com/watch?v=x-hxg4pE-Ns. In this video, Solver was used to estimate the smoothing parameters, α and β.

Question 1

Use the data in the worksheet "Paper" in the Excel file for this question.

(a) Plot a time series of the data.

(b) Divide the data into a training set (Obs 1 to 40) and a test set (Obs 41 to 48).

(c) Using the training set data, use the simple exponential smoothing method and Solver to estimate the value of the smoothing parameter α that minimizes RMSE.

(d) Using the estimated value of α, produce the out-of-sample forecasts for the test set period (i.e. Obs 41 to 48).

(e) Plot the out-of-sample forecasts with the actual test set values and comment on the forecasting accuracy of the simple exponential smoothing method.

Question 2

Use the data in the worksheet "CPI" in the Excel file for this question.

(a) Plot a time series of the data.

(b) Divide the data into a training set (Jan 1985 - Dec 2005) and a test set (Jan 2006 to Dec 2007).

(c) Using the training set data, use the Holt's linear method and Solver to estimate the values of the smoothing parameters α and β that minimize RMSE.

(d) Using the estimated values of α and β, produce the out-of-sample forecasts for the test set period (i.e. Jan 2006 to Dec 2007).

(e) Plot the out-of-sample forecasts with the actual test set values and comment on the forecasting accuracy of the Holt's linear method.