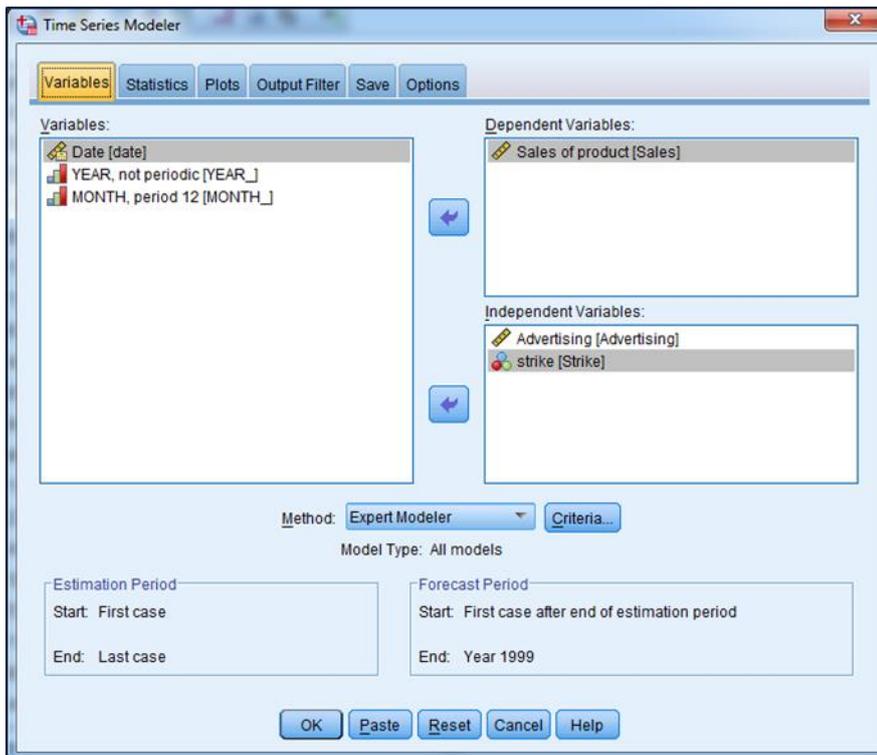
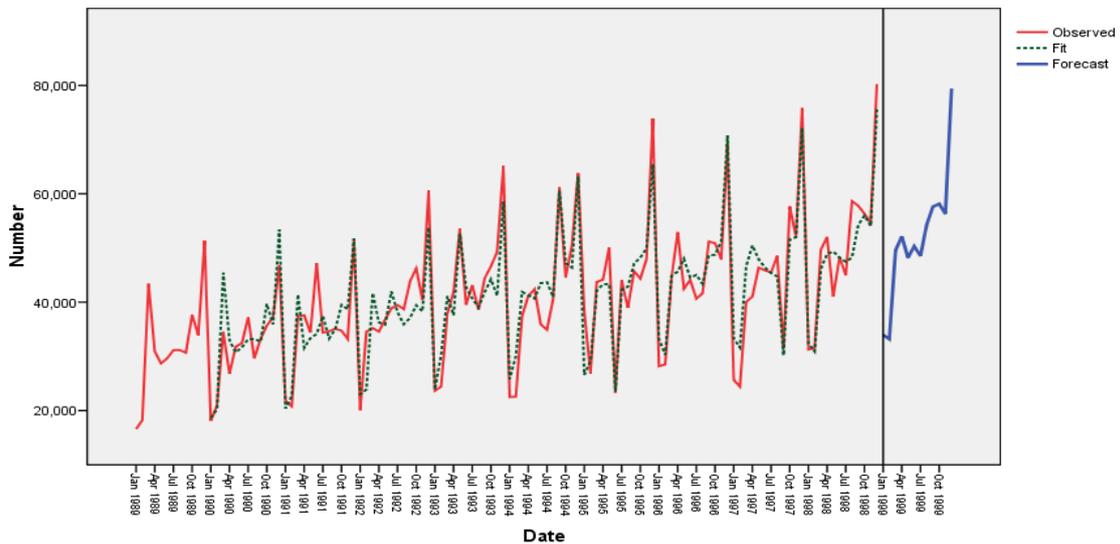


## IBM SPSS Forecasting

- IBM SPSS Forecasting is the SPSS *time series* module. A time series is a set of observations obtained by measuring a single variable regularly over time. Time series forecasting is the use of a model to predict future events based on known past events.
- Examples of time series forecasting include:
  - Predicting the number of staff required on each day for a call centre
  - Forecasting the number of patients visiting the accident and emergency department
  - Predicting demand for a gas or electricity supplier
  - Estimating passenger numbers for a train company
- Unlike regression techniques, in time series each of the cases are related to each other, as they represent the same phenomena over time. For this reason, the time factor, is in itself, a predictor of the dependent variable. In other words, in time series, the *past provides a model for the future*.
- Although independent variables are not essential, time series analysis can make use of these predictor fields to increase the accuracy of the predictions. Examples of this may include using future promotional spend to help predict next month's sales of a soft drink.
- A crucial feature of the IBM SPSS Forecasting module is the *Expert Modeller*. Rather than defining the parameters and settings of time series models manually, the *Expert Modeller* automatically identifies and estimates the best-fitting ARIMA or exponential smoothing model for one or more dependent variable series. Although users can specify a custom ARIMA or exponential smoothing model manually, *Expert Modeller* eliminates a great deal of the trial and error associated with doing so.
- A further aspect of the *Forecasting* module is the *Apply Time Series Models* procedure which applies an existing time series model to the active dataset. This allows you to obtain forecasts for series for which new or revised data are available, without rebuilding your models.
- The *Forecasting* module also includes two other time series procedures:
  - *Seasonal Decomposition*: This procedure decomposes a time series into a seasonal component, a combined trend and cycle component, and an "error" component. The Seasonal Decomposition procedure can be used to remove any systematic seasonal variations.
  - *Spectral Plots*: This procedure is used to identify periodic behaviour in time series. Instead of analysing the variation from one time point to the next, it analyses the variation of the series as a whole into periodic components of different frequencies.



Screenshot shows the Time Series dialog with Expert Modeler selected as the method.



An example of a time series forecast showing the model fit and the forecast one year into the future.