ETC3550: Applied forecasting for business and economics

Ch12. Some practical forecasting issues

OTexts.org/fpp2/

Outline

Models for different frequencies

Models for annual data
- ETS, ARIMA, Dynamic regression

Models for different frequencies

Models for annual data

- ETS, ARIMA, Dynamic regression

Models for quarterly data

- ETS, ARIMA/SARIMA, Dynamic regression, Dynamic harmonic regression, STL+ETS, STL+ARIMA

Models for different frequencies

Models for annual data
- ETS, ARIMA, Dynamic regression

Models for quarterly data
- ETS, ARIMA/SARIMA, Dynamic regression, Dynamic harmonic regression, STL+ETS, STL+ARIMA

Models for monthly data
- ETS, ARIMA/SARIMA, Dynamic regression, Dynamic harmonic regression, STL+ETS, STL+ARIMA

Models for different frequencies

Models for weekly data

- ARIMA/SARIMA, Dynamic regression, Dynamic harmonic regression, STL+ETS, STL+ARIMA, TBATS

Models for different frequencies

Models for weekly data

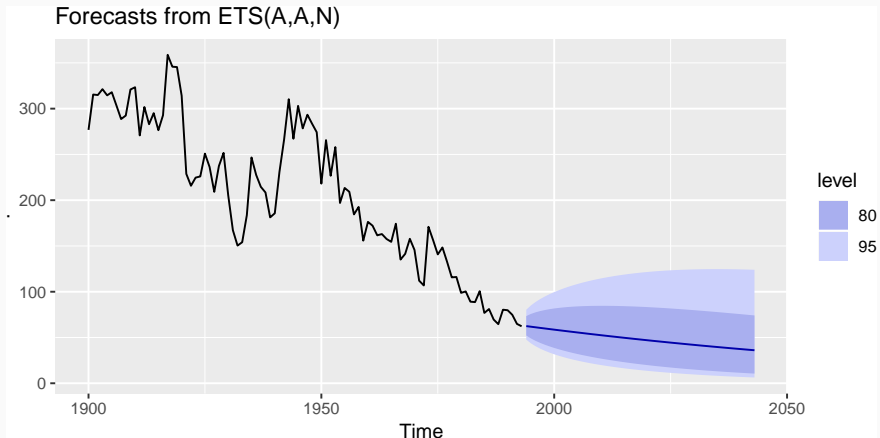- ARIMA/SARIMA, Dynamic regression, Dynamic harmonic regression, STL+ETS, STL+ARIMA, TBATS

Models for daily, hourly and other sub-daily data

- ARIMA/SARIMA, Dynamic regression, Dynamic harmonic regression, STL+ETS, STL+ARIMA, TBATS

Outline

Positive forecasts

Forecasts from ETS(A,A,N)

Outline

Forecast combinations

The results have been virtually unanimous: combining multiple forecasts leads to increased forecast accuracy. ...In many cases one can make dramatic performance improvements by simply averaging the forecasts. (Clemen 1989)
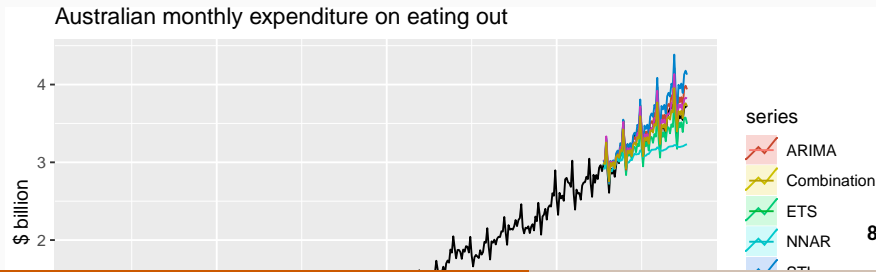
Australian monthly expenditure on eating out

series
- ARIMA
- Combination
- ETS
- NNAR

Outline

Missing values

Functions which can handle missing values *
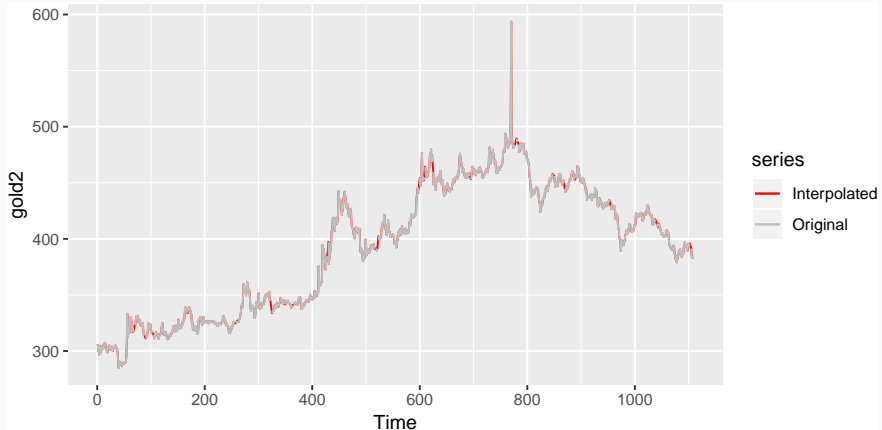`auto.arima()`, `Arima()` * `tslm()` * `nnetar()`
Models which cannot handle missing values *
`ets()` * `stl()` * `stlf()` * `tbats()`

What to do?
1. Model section of data after last missing value.
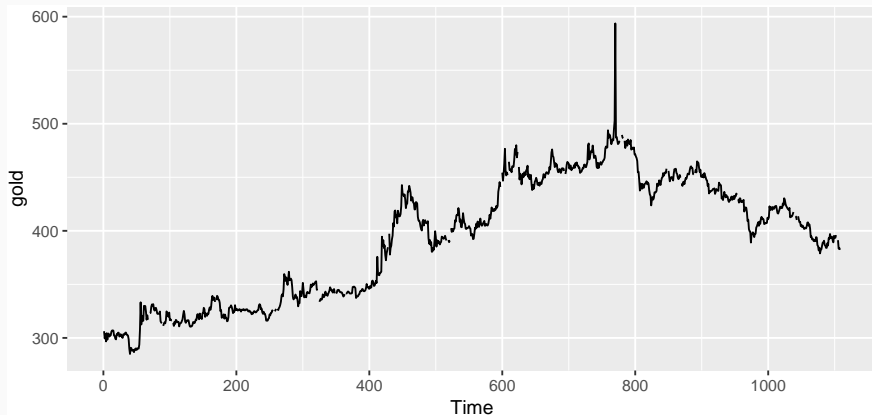2. Estimate missing values with `na.interp()`.

Missing values

Outline

Outliers


```
## $index
## [1] 770
##
## $replacements
```