

BA 464 – Week 5A

Time Series Prediction
(See

<http://a-little-book-of-r-for-time-series.readthedocs.io/en/latest/src/timeseries.html>
for advanced study)

Time Series

- A time series is an ordered list which represents repeated measures of a variable with periodic intervals. For example, daily stock exchange closing index, or monthly number of airline passengers.

Auto-regression

- A time series is modeled by regressing it onto a lagged version of itself, e.g. with a lag of k periods:

$$y'_t = a + b y_{t-k}$$

Time-series stationarity

- In some cases a time series is stationary, i.e. its distribution (mean and variance) does not change over time. In that case simple auto-regression with k being equal to the period (e.g. 12 months) can be used
- But most often a time series has a seasonal and trend component. The two must be modeled separately: the trend with a linear regression, and the remaining seasonal with auto regression.
- Time series prediction introduces several improvements onto the simplified scheme described here.