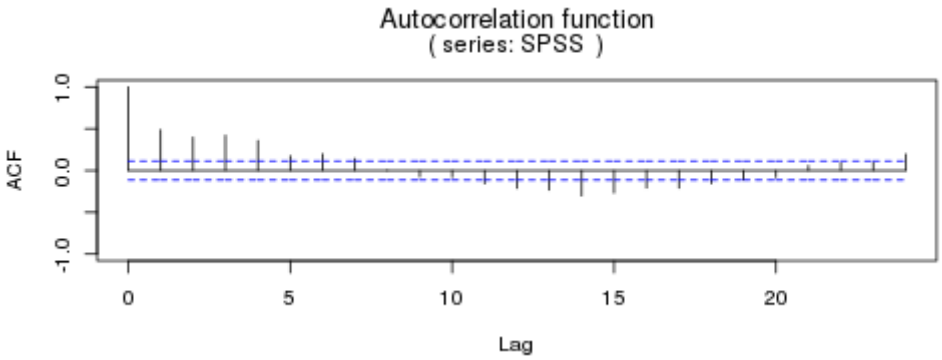
ACF confidence bands calculation.

The 'Confidence bands' parameter determines which formula for generating the confidence bands will be used:

1. The 'Standard formula':

$\pm \frac{z_{1-\alpha/2}}{\sqrt{N}}$ where N is the sample size, z is the quantile function of the standard normal distribution and α is the 0.05 significance level.

In this case, the confidence bands have fixed width that depends on the sample size. Fixed confidence bands example:

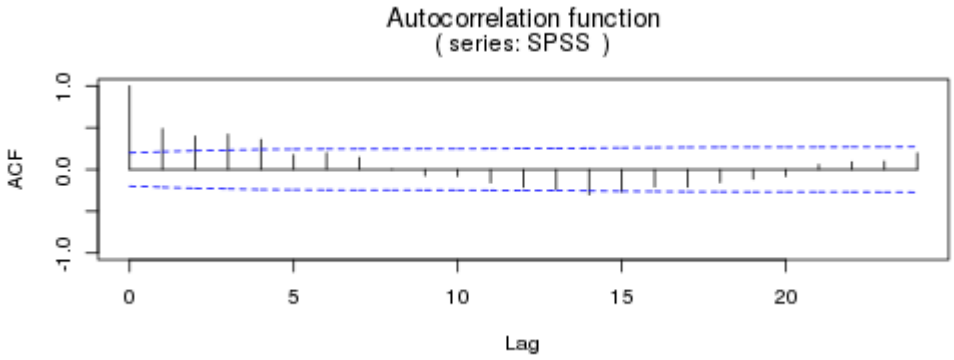


2. The 'Bartlett's formula':

$\pm z_{1-\alpha/2}\sqrt{\frac{1}{N}\left(1+2\sum_{i=1}^{k} r_i^2\right)}$ where k is the lag, N is the sample size, z is the quantile function of the standard normal distribution, α is the 0.05 significance level, r_i is the estimated autocorrelation at lag i.

In this case, the confidence bands increase as the lag k increases.

Lag-dependent confidence bands example:



https://en.wikipedia.org/wiki/Correlogram