TS Module 10 Autocorrelation functions

(The attached PDF file has better formatting.)

● Sample autocorrelation function
● Partial autocorrelation function

Read the introduction to Chapter 6, "Model specification," on page 109. Know the three bullet points at the top of the page; they are tested on the final exam and you may structure your student project in three steps.

Read Section 6.1, "Sample autocorrelation function," on pages 109-112. Know equation 6.1.1 on the bottom of page 109.

The denominator of the sample autocorrelation function has n terms and the numerator has n-k terms. If we did not adjust in this fashion, the sample autocorrelation function for a white noise process would increase (in absolute value) as the lag increases.

The discussion forum for the time series student project has an Excel worksheet that shows why we need to adjust the number of terms in the numerator and denominator.

The final exam problems may give a set of values and ask for the sample autocorrelations of lag 1, 2, or 3, as the homework assignment does. Make sure you use the proper number of terms in the numerator and denominator.

Know equation 6.1.3 on the bottom of page 110. You will not be tested on equations 6.1.2 or 6.1.4.

Know equations 6.1.5 and 6.1.6 on the top of page 111. You are not responsible for equations 6.1.7 and 6.1.8 in the middle of page 111.

Know the last paragraph of this section on page 112.

The discussion forum for the time series student project has an Excel worksheet with a VBA macro that forms correlograms. See the project template for daily temperature, which forms a correlogram from 100 years of daily temperature readings. The large number of computations may slow down your computer if you have an old model. If you use statistical software with functions for sample autocorrelations, the built-in code is more efficient.

Read Section 6.1, "Partial autocorrelation function," on pages 112-114.

Know equation 6.2.3 on page 113 and equations 6.2.4, 6.2.5, and 6.2.6 on page 114.

You are not responsible for pages 115 through the end of this section on page 117.