

4.5: Summary

In this chapter, the basic methods for frequency domain time series analysis were introduced. These are based on a regression of the given data on cosine and sine functions varying at the Fourier frequencies. On the population side, spectral densities were identified as the frequency domain counterparts of absolutely summable autocovariance functions. These are obtained from one another by the application of (inverse) Fourier transforms. On the sample side, the periodogram has been shown to be an estimator for the unknown spectral density. Since it is an inconsistent estimator, various techniques have been discussed to overcome this fact. Finally, linear filters were introduced which can, for example, be used to compute spectral densities of causal ARMA processes and to derive parametric spectral density estimators other than the periodogram.

Contributors

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