

Quantitative Economic Research I: Agenda

1 Introduction & Basics

- Least squares, stationarity, autocorrelation, lag operator

2 Stationary single equation models

- Time series processes (AR, MA, ARMA) and dynamic regression
- Properties and estimation strategies
- Applications: Economic forecasting, Taylor rule

3 Nonstationary single equation models

- Nonstationarity
 - definition (related to moments of a stochastic variable)
 - consequences (spurious regression)
 - balancedness
 - test (Dickey-Fuller)
- Cointegration (common stochastic trends)
 - tests
 - error correction models
- Application: Expectation hypothesis of the term structure

4 Stationary multiple equations models

- Basics of multiple equations models
- Vector Autoregression (VAR)
 - Granger causality
 - stationarity
 - estimation
- Simultaneity and Identification
 - structural vector autoregression (SVAR)
- Impulse responses and variance decomposition
- Application: Partial IS-LM-Model

5 Nonstationary multiple equations models

- Cointegration with multiple variables
- Cointegration in VARs – Vector Error Correction Models (VECM)
- Inference in VECMs
 - estimation
 - test for number of cointegrating relations
- Application: Money demand

Recommended literature

- Kirchgässner / Wolters: Einführung in die moderne Zeitreihenanalyse, Vahlen 2006; Introduction to modern time series analysis, Springer 2007.
- Lütkepohl / Krätzig (eds.): Applied time series analysis, Cambridge Univ Press 2004.
- Lütkepohl: New introduction to multiple time series analysis. Springer 2005.
- Enders: Applied econometric time series, Wiley 2004.