

JEM 017 Business Cycles Tudory

1. Modelling Trends and Cycles: Classical techniques. Linear and non-linear trends and cyclical components. Basic specifications, illustration of problems that might arise.
2. Stationarity: definition, testing and implications. Trend vs. difference stationarity. Structural breaks and stationarity. Examples.
3. Stationary time series and their estimation. Autocorrelation function. ARMA model. Box Jenkins procedure.
4. Stochastic Trends and Cycles. Random walk. ARIMA models. Definition, properties, estimation.
5. Spectral decomposition of time series. Representation of time series using the Fourier expansion. Spectrum, periodogram. Illustration of spectrum on concrete time series.
6. Signal extraction and Filtering Economic Time Series I.: Transfer function theorem, types of filters, moving averages. Example of application.
7. Filtering Economic Time Series II.: Hodrick-Prescott filter, band pass filter and their transfer functions. Example of application.
8. Seasonal decomposition methods. Example of application.
9. Recession dating procedures: the NBER approach and simplified versions. Recessions vs. growth recessions.
10. Nonlinear time series models. Reasons for nonlinearity. Regime shift models. Markov property. Example of application.
11. Multivariate time series models I: definition of VAR models, stability issues.
12. Multivariate time series models II: Identification, Granger causality. Example of application.
13. Multivariate time series models III: estimation of VAR models, impulse response functions, variance decompositions. Example of application.
14. Nonstationary time series within VAR. When to difference? VECM. Example.
15. History of the business cycles research.