

Econometrics II, Spring 2018

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The main textbook is *Time Series Analysis* by James Hamilton. Students seeking an introductory treatment might prefer *Time Series Models* by Andrew Harvey. Required readings are marked with an asterisk.

Time Domain Representations

Ensembles. Stationarity and mixing conditions. The Wold representation theorem. ARMA processes. Invertibility. Vector processes.

*Hamilton, chs. 2-3, 10.1-10.3.
Harvey, ch. 2.

Frequency Domain Representations

The Cramer representation. The spectral density matrix. Linear time-invariant filters. Estimation.

*Hamilton, chs. 6, 10.4-10.5.
Harvey, ch. 3.

[Cogley, Data Filters](#)

[Hamilton, Why You Should Never Use the Hodrick-Prescott Filter](#)

For those interested in learning more, I recommend *Time Series: Data Analysis and Theory* by David Brillinger and *Stationary Random Processes* by Yuri Rozanov.

Maximum Likelihood Estimation

The MLE concept. The prediction-error decomposition. State-space representations and the Kalman filter. Consistency and asymptotic normality.

*Hamilton, chs. 5, 7, and 13
Harvey, chs. 4-5.

Reduced form vector autoregressions

ML estimation. Forecasting. Stochastic trends. Cross-equation restrictions. Variance decompositions.

*Hamilton, ch. 11.

[Cochrane, 1994, Permanent and transitory components of GNP and Stock Prices](#)

[Rotemberg and Woodford, 1996, Real-Business-Cycle Models and Forecastable Movements in Output, Hours, and Consumption](#)

[Cochrane, 1991, Explaining the variance of price-dividend ratios](#)

DSGE models

ML estimation. An introduction to Bayesian estimation.

*Hamilton, ch. 12.

[An and Schorfheide, 2005, Bayesian Analysis of DSGE Models](#), sections 1-4.

[Chib and Greenberg, 1995, Understanding the Metropolis-Hastings Algorithm](#)

Identified VARs

[Blanchard and Quah, 1989, Dynamic Effects of Aggregate Supply and Demand Shocks](#)

[Kehoe, 2006, How to Advance Theory with Structural VARs](#)

Conditional Heteroskedasticity

*Hamilton, ch. 21

[Engle, Risk and Volatility: Econometric Models and Financial Practice](#)

Introduction to unit roots and cointegration

Priors and tests. Near observational equivalence. Beveridge-Nelson representation. Granger's representation theorem. Balanced growth implies cointegration.

*Hamilton, chs. 15, 17, 19, 20

[Nelson and Plosser, 1982, Trends and Random Walks in Macroeconomic Time Series](#)

[Stock, 1991, Confidence Intervals for the Largest Autoregressive Root in US Macroeconomic Time Series](#)

[King, Plosser, Stock, and Watson, 1991, Stochastic trends and economic fluctuations](#)