Dynamic Models for Social Scientists and Policy Analysts

ICPSR Summer Program in Quantitative Methods of Social Research

Instructor: Harold D. Clarke
Ashbel Smith Professor
School of Economic, Political and Policy Sciences
University of Texas at Dallas
e-mail: clarke475@msn.com

Recommended Texts:


Becketti, Sean. 2013. *Introduction to Time Series Using Stata*. College Station, TX: Stata Press. (Stata 13 estimates a wide variety of time series models)


TOPICS

1. **Analyzing Time Series Data: Fundamentals**
   - Stationarity and Nonstationary Processes
   - Unit Root Tests
   - Software - Stata and Alternatives (R, EVIDES, Rats)
   - Simulating Time Series Data
   - Time Series Regression

   Suggested Readings:
   Asteriou and Hall, chs. 16, 17
   Becketti, chs. 1, 5
   Box-Steffensmeier, chs. 1, 3, 5
   DeBoef and Keele “Taking Time Seriously: Dynamic Regression Models”
   Enders, chs. 2, 4, 6

2. **Intervention & Transfer Function Models and Model Comparisons**
   - Foundations: The Univariate ARIMA Model
   - Multivariate Models - Specification, Estimation and Diagnostics
- Exogeneity Testing - Weak, Strong and Super Exogeneity
- Comparing Rival Models - Encompassing and Other Model Selection Tests

Suggested Readings:
Asteriou and Hall, ch. 13
Becketti, chs. 6, 7
Box-Steffensmeier et al., ch. 2
Charemza and Deadman, ch. 7
Clarke, Mishler and Whiteley, "Recapturing the Falklands"
Enders, ch. 5, pp. 272-297
Hendry, chs. 5, 14

3. Cointegration, Error Correction and Fractional Generalizations
- cointegration
- error correction models
- exogeneity testing
- multiple cointegrating vectors
- long memory processes, factional cointegration and fractional error correction

Suggested Readings:
Becketti, ch. 10, parts 1-5
Box-Steffensmeier et al., chs. 6, 7
Box-Steffensmeier and Smith "The Dynamics of Aggregate Partisanship"
Clarke and Lebo, "Fractional (Co)integration and Governing Party Support in Britain"
Enders, ch. 2

4. ARCH and GARCH
- Diagnosing ARCH and GARCH processes
- Conditional (Co)variances
- Financial Time Series Applications
- Public Opinion Dynamics Applications

Suggested Readings:
Asteriou, ch. 14
Becketti, ch. 8
Clarke et al., 2009: ch. 4, pp. 130-138
Enders, ch. 3.
Lebo and Box-Steffensmeier, "Dynamic Conditional Correlations"

5. Threshold and Markov Switching Models
- STAR and SETAR processes
- Markov switching processes

Suggested Readings:
Franses and van Dijk, ch. 3.
Enders, ch. 7.

6. VAR and VECM
- Critique of Structural Models
- Reduced Forms and VAR Specification
-Nonstationarity, Cointegration and VECMs
-MAR Representations and Innovation Accounting

Suggested Readings:
Box-Steffensmeier et al., ch. 4
Sims "Macroeconomics and Reality"
Whiteley et al. "Hunting the Snark"
Enders, ch. 5, pp. 297-349.

7. State Space Models
- State Space Representations of Time Series Processes
- Bayesian Dynamic Factor Analysis Models

Suggested Readings:
Commandeur and Koopman, chs. 1-9
Jackman, "Pooling the Polls"
Gelman, "R2Winbugs"
Ntzoufras, chs. 1-4

REFERENCES


