

Graham Elliott

UCSD, Department of Economics

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## Economics 220E - Time Series Econometrics

### Course Description

We will review and extend limit theory for time series processes and apply it to a range of topics. Students will gain ability to work with standard tools of time series econometrics as well as cover a number of areas currently or recently of interest in the field.

### Books

There is no text for the course. See citations below as well as those given in class for background material and further reading.

### Course Outline.

The papers listed are those we cover more closely in class as well as secondary/further readings. The plan is to give a more comprehensive list than we have time to go through. It is also likely that we will not have time to cover all the topics.

#### A. Groundwork.

##### 1. Introduction.

Asymptotic theory for dependent processes, introduce ARMA(p,q) models and related concepts.

White, H. (2001) chapters 1-6 Hamilton, J.H.(1994), Chapters 1-4 Further reading on ARIMA modelling Brockwell and Davis (1991).

##### 2. Functional Central Limit Theory.

White, H. (2001) chapter 7 sections 1-3. Hamilton (1994) chapter 17 sections 1-3. Davidson (1994) has an extensive examination of this topic.

##### 3. Spectral Analysis.

For an introduction see Hamilton (1994) chapter 6. Classic text is Brillinger (1981). Berk (1974).

## B. Topics

### 1. HAC estimation.

Newey and West (1987), Andrews (1991), Hansen (1992), Kiefer et. al (2000,2002),

### 2. Vector Autoregressions

Sims (1980), Granger (1969), A comprehensive analysis is in Lutkepohl (1993). Gouriéroux and Monfort (1989) Chapter 22 gives a good overview of Information Criteria. Recent issues see Fernandez-Villaverde et. al. (2007)(Fernandez-Villaverde, Rubio-Ramirez, Sargent, and Watson 2007).

### 3. Breaks and nonstationarities.

For feasible tests for a break see Andrews (1993). For optimal tests with nontrending covariates see Nyblom (1989), Andrews and Ploberger (1994), Elliott and Mueller (2006). For issues with trending covariates see Hansen (2000). For estimation of break points see Bai(1997), Bai and Perron (1998). Testing for stationarity see Stock (1994) for a review.

### 4. Unit Roots

Regression with unit root processes. Testing for unit roots, spurious regression, cointegration.

For testing for a unit root Dickey and Fuller (1979), Phillips (1987), , Elliott, Rothenberg and Stock (1996), Phillips (1987b). A review is available in Stock (1994). For spurious regression see Granger and Newbold (1974) and Phillips (1986). For linear regression with unit root processes see Sims, Stock and Watson (1990). For cointegration see Engle and Granger (1987), Stock (1987), Johansen (1991), Saikkonen (1991), Watson (1994), Elliott (1998).

### 5. Trend Estimation and Identification

For decomposing a trend where there is a unit root Watson (1986) and Quah (1992). For filtering out long run components see King and Rebelo (1993), Baxter and King (1999). For problems with the approach see Cogley and Nason (1995).

### 6. Dynamic Panel Data .

TBA

Grading. There are no exams. I will hand out problem sets which will make up the full

grade for the class.

## References

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