Macroeconometrics 440.614.52
Fall 2016
Lecture – Wednesday 6:00-8:45pm
Rm 208

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Course Objective

This graduate level course provides a selected overview of modern time series econometrics. We will try to strike a balance between econometric theory, intuition, and empirical applications. Upon completing this course, a successful student will (1) have a solid understanding of basic and some advanced time series econometric concepts, (2) understand the pros and cons of various methods and make sound methodological judgment and (3) be able to carry out empirical analyses using econometrics software and critically interpret/assess empirical results.

Students should be aware that some of the topics are highly quantitative.

Prerequisite

Students are expected to have taken at least one course in statistics *and* one course in introductory econometrics, preferably within the past two years. Specifically, I will assume that the students have an understanding of basic probability (expectations, variances, probability distributions, etc.) and econometric concepts (linear regression, hypothesis testing, etc.)

Also, to successfully complete this course, students are expected to use at least one statistical software (*Stata*, *SAS*, *Eviews*, *R*, etc.). So if you are not familiar with any of such software, you are expected to begin learning one as early as possible. I will also provide some learning resources. *Note: Excel does not qualify as a statistical software in this course.*

Prior experience with matrix/linear algebra will also be very helpful, but not required at the beginning of the course. A brief overview of matrix algebra will be provided.

Textbook

As the main reference for this class, I will use *Applied Econometric Time Series*, Walter Enders, John Wiley and Sons, Inc, 3rd edition, 2010. Please note that I will *not* cover the entire book and will introduce topics not discussed in the textbook.

An extremely helpful textbook, not required for this course, is *Introduction to Econometrics* by James Stock and Mark Watson. It is an undergraduate textbook focusing on empirical examples and intuition. Our coverage in this course will be much more technical and quantitative.

Another textbook with comparable coverage and depth to this course is *Applied Time Series Econometrics (2004)* edited by Lutkepohl and Kratzig. More advanced texts include *Time Series Analysis (1994)* by Hamilton and *New Introduction to Multiple Time Series Analysis (2005)* by Lutkepohl.

Software

You are free to use the software of your choice. I will use *Eviews* (mostly), *Matlab* (occasionally), and *Stata* (occasionally) for various class demonstrations. And I will not be able to offer much help if you use a software other than the three.

Grading

The grade will be based on six homework assignments (one will involve a class presentation), an in-class mid-term and an in-class final exam. One of the homework will contain a term project. And the last homework will contain a writing assignment.

The in-class exams will be "closed book."

Homework 50%
Midterm 25%
Final 25%

Homework

- For the homework problem sets, you are encouraged to work in groups of no more than *three* people, but each student must submit their own answers (copying others' is not acceptable).
- Please indicate on your homework answers whom, if any, you work with.
- Please submit a hardcopy of your work, *including all* the computer scripts or log files.
- Please write your answers as clearly and legibly as possible. Illegible answers will *not* be graded and will *not* receive any credit.
- Late homework will not be accepted unless the circumstances warrant it. I will have the sole discretion to make the determination.

Please be aware that most homework problems are quantitative and require mathematically precise answers. If you are not clear what this means, please ask. The level of rigor means that for some questions, your answers are either correct or incorrect. There usually will be no partial credit.

Academic integrity

Please read carefully the *Academic and Ethical Code of Conduct in Advanced Academic Programs* at http://advanced.jhu.edu/wp-content/uploads/2013/01/AAP1101_CodeofConduct.pdf. Cheating in any form is not tolerated. A single violation will result in a failing grade.

Other information

Class attendance: Please note that (1) *not* all course materials can be found in the main reference (Enders, 2010) and (2) even for the topics in the main reference, I may present a view *different* from the book. Consequently, class attendance is important. If a student misses a class, I will *not* be able to provide class notes in most cases. The student is responsible for obtaining the notes from others.

Office hour: by appointment

Course schedule

The schedule is *tentative* and subject to *change*.

Week	Date	Topic	Homework
1	August 31	Motivation, statistical concepts review, difference equations (if time permits)	

2	September 7	Difference equations Intro to statistical software	1st HW due
3	September 14	ARMA models	
4	September 21	Identification and estimation	2nd HW due
5	September 28	Stochastic and deterministic trends	
6	October 5	Structural breaks and forecasting	3rd HW due
7	October 12	**Mid-term exam**	
8	October 19	Class presentation (and unit roots if time permits)	4th HW due
9	October 26	Testing for unit roots or VAR models (with matrix algebra review)	
10	November 2	VAR models	5th HW due
11	November 9	Cointegration and error-correction model, I	
12	November 16	Cointegration and error-correction model, II	6th HW due
13	November 23	No class (week of Thanksgiving)	
14	November 30	Course review	
15	December 7	**Final exam**	