Economics 341, Time Series Econometrics

Fall 2017

Bates College

Paul Shea

Class Times: Tuesdays and Thursdays, 11:00 A.M.-12:20 PM

Contact Information:

E-mail: pshea@bates.edu

Office Hours: Monday, 12:30-1:30 PM, Thursday, 2:30-3:30 PM, and by appointment.

Office: 270 Pettengill

Course Website: www.paulshea.com. This site includes lecture notes, practice problems, class announcements, readings, and assignments. Note that the class website is unrelated to Lyceum.

Course Description: This course examines the theory and application of time series econometrics. The course considers issues related to time series data including stationarity, lag structure, and endogeneity, as well as techniques such as vector autoregressions, forecasting, and panel data estimation. Time permitting, we may cover additional topics such as local projection estimators, and panel vector autoregressions. The emphasis, however, is covering a few critical techniques carefully, instead of covering many estimators hastily.

My hope is that students will find this to be a very practical class. Many Bates thesis and capstone students, including almost all writing in macroeconomics, will use some of the techniques developed in this class. In my experience, many students have had to independently learn this material during their thesis/capstone semester which greatly reduces the time that they have to focus on the central question of their research project. One goal of the class is to thus better prepare students for thesis and capstone. Furthermore, econometrics is a highly attractive skill both for prospective employers and graduate programs.

The class will be heavily based on examples and applications. Throughout the semester, class time will apply the techniques that we are studying to the issue of how monetary policy affects the real economy. At the same time, you are to choose your own example (preferably in an area of economics that interests you, time series is not just used in macro). Through homework assignments and the final class project, you will also apply the course's techniques to your example. We will also consider stand alone examples during class in areas unrelated to monetary economics.

My goal is to make this material as approachable as possible. Time series is, however, a challenging subject. We will have to develop some related skills such as basic linear algebra that many students will not have seen before. We will cover these in class.

Prerequisites: Econ 250 and Econ 103.

Textbook: Gebhard Kirchgassner, Jurgen Wolters, and Uwe Hassler. "Introduction to Modern Time Series Analysis." Second Edition. This text is freely available electronically from the Bates library.

Assignments: Your grade consists of the following:

i) A written project. You are to choose a topic to be estimated using some of the techniques from class. Your topic may either be novel or an extension of an example from class. You are to frame your question, describe your econometric approach, and write up your results. Additional details will be provided near the beginning of the semester. **27.5% of your grade.**

ii) A presentation. The last few classes, will be set aside for student presentations. Your presentation will be a verbal summary of your project from i.**15% of your grade.**

iii) An in class midterm on Thursday, November 16. **30% of your grade.**

iv) Homework assignments. Econometrics is best learned by actually doing it. Homework assignments will therefore often require you to execute the techniques developed in class using Stata. **27.5% of your grade.**

The following process will determine each student's final grade:

1. Any letter grades will be converted into numerical scores.

2. Numerical scores will be multiplied by the weights for each assignment and summed to obtain a raw score.

3. Course grades will then be given based on the ordering of raw scores. The distribution of grades will be largely based on my subjective impression of the class' performance.

4. No student shall receive a higher final grade than another student with a higher raw score. Likewise, no student shall receive a lower final grade than another student with a lower raw score.

5. All students shall have the same opportunity to succeed in this course. There is no extra credit. Please do not ask.

Contesting of Grades: Every effort is made to ensure that grades are accurate and consistent. I do not want to give any student an erroneous grade. If you believe that a grading error has been made, please bring it to my attention promptly after the assignment has been handed back. I will only consider possible grading errors for two weeks after an examination has been passed back. All grade appeals must be submitted in writing.

All exams and homework assignments will be counted immediately after they are handed in to ensure that the number received equals the number graded. Save all of your graded work. If I have no record of a completed assignment, and if you cannot present your graded assignment, then you will receive no credit for the assignment in question.

Inability to Complete Course Requirements: If you know that you cannot attend an exam or complete an assignment due to a non-college excused commitment, do not take this class. If an unanticipated commitment arises that prevents you from satisfying any of the course requirements, you must have your conflict verified by the appropriate college agency. Be aware that this office will require documentation of all illnesses and deaths in the family. I will not personally judge the

validity of students' conflicts. I reserve the right to either offer a makeup or roll the weight of the missed exam into the other graded elements of the course.

Academic Dishonesty: I will pursue any instances of academic dishonesty. Historically, I have been very aggressive in investigating and sanctioning cheating.

Students with Disabilities: If you have a documented disability and need an accommodation, please make arrangements with me during the first week of the term. Please request that the Dean of Student's office send me a letter verifying your disability. You are unlikely to receive any substantial accommodation if you wait until right before an exam to notify me.

Please note that I am not qualified to diagnose a disability. You must therefore always go through the College.

Class Schedule: The following material will surely be covered.

1. Introduction and Stochastic Processes

2. Mathematical Background: Linear Algebra and Econometrics

3. Stata

4. Stationarity, Trends, and Unit Root Tests

5. Autoregressions

6. Vector Autoregressions

7. Forecasting

8. Panel Data

Time permitting, we may cover some of the following topics:

9. Local Projections

10. Panel Vector Autoregressions

11. Binary Choice Variables