Syllabus for Econ 575

Applied Time Series Analysis and Macroeconomic Data Analysis

Professor: Neville Francis

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Lectures: Tue & Thu 9:30 - 10:45 AM

Office Hours: TBD

***Prerequisites:*** Econ 410, 420 and 470 (Intermediate Microeconomics, Macroeconomics, and Econometric). It is assumed the student is familiar with regression model estimation and related Hypothesis-testing.

***Academic integrity:*** All students are bound to the Honor Code http://instrument.unc.edu. Any

violation will result in an F for the course, and other sanctions may apply.

***Attendance*:** Regular class attendance is expected by default. You are responsible for any announcements that you may have missed if you choose not to attend class or if you cannot attend class. You should get the missed notes/announcements from one of your peers.

***Course Outline:*** This course examines time series methods for data analysis with an emphasis on macroeconomic applications. The aim of the class is to provide students with a basic formal introduction to modern time series techniques, hands-on experience in applying them to real-world macroeconomic data, and understanding of how to bring data to bear on policy-relevant macroeconomic theories.

***Textbook:***

We will use material from multiple sources

1. Introduction to Econometrics 4th ed. by Stock & Watson (SW)
2. Forecasting in Economics, Business, Finance and Beyond by Francis X. Diebold. (D) -Available from the authors website.

***Problem Sets:***

A number of homework assignments will be given during the course. You may discuss and exchange ideas about how to solve the assignments, but each student must turn in her own work. Some assignments may require the use of computer software such as Matlab, Gauss, R, Julia, Ox, STATA. Matlab is quite popular in Economics/Econometrics/Finance, while R is popular in Statistics. You can obtain Matlab inexpensively from UNC; R is shareware and therefore free online; and Ox can be obtained for free for academic use.

***Grading Policy:***

Grades will be based on: **two in-class midterms** (20% each), **a final exam** (30%), **homework assignments** (10%) and **a writing assignment** (20%). Dates for midterms will be determined depending on the volume of materials covered. The date for the final exam can be found on the Registrar’s webpage ***(each student is responsible for figuring out this date!).*** **Finally, the empirical project is due 5 pm on the final day of classes**.

Plan for the final exam being cumulative. If you are unable to take the final exam at the scheduled time, you need to get the “examination excuse” from the academic dean to avoid receiving an AB or an F grade. A make-up exam can be scheduled with such excuse. All exams (two midterms and the final) are closed-book and closed-notes. Only a basic calculator is allowed. Cellphones and other electronic devices must not be used during exams.

Each student must work alone on the project that involves: Collecting data; build a model; estimate and evaluate the results. Students are graded on how well the project is written, along with the presentation of the model and results. A project that is simply thrown together at the last minute will receive "zero" credit. Additional details about the project will be given later in the course. Late projects are accepted, but you lose 5 percentage points for each day that it is late (unless you have a documented medical emergency) – this means no project will be accepted after 4 days past due. Exams are closed-book, but you may bring a sheet with your own notes (one side of a letter-sized sheet of paper for the midterm, both sides for the final exam).

***Tentative course outline:*** I intend to follow the outline closely, but deviation may become necessary. Changes will be announced in class, via email, or on Sakai as early as possible.

**Weeks 1-2**

SW Ch. 1 - 7

Introduction and Review of Basic Linear Regression Analysis

(OLS, Hypothesis Testing)

**Weeks 2-3**

SW Ch. 15 Time-Series Models: Difference Equations, Autoregressive Models, and Moving Average Models

**Weeks 3-5**

SW Ch. 16 Distributed Lag Models

**Weeks 5-7**

Forecasting (D)

**Weeks 7-10**

Non-stationarity, Trends and Cycles, Endogeneity Bias

**Weeks 10-12**

SW Ch 17.1-3. Vector Autoregression, Structural Vector Autoregression

**Week 12-14**

Advanced Topics: Spurious Regressions, Cointegration and Error Correction Models