Empirical Methods in Corporate Finance
(Preliminary Syllabus)

Professor Michael R. Roberts

INFORMATION

Instructor: Michael Roberts
Office: 2320 SH-DH
Email: mrrobert@wharton.upenn.edu
Course WebSite: http://finance.wharton.upenn.edu/~mrrobert/

PREREQUISITES

You should have taken a graduate sequence in econometrics. Practically speaking, you should be comfortable with econometrics at the level of William Greene's *Econometric Analysis* and Jeffrey Wooldridge's *Econometric Analysis of Cross-Section and Panel Data*. The course will actually cover a fair amount of ground in the latter text but I expect students to be comfortable with the general concepts if not the specific details.

GOALS

Provide students with a toolbox and working knowledge of microeoconometric empirical methods. What does this mean? The "toolbox" refers to a variety of methods commonly employed in empirical research – not all but a good sample of existing and recent econometric techniques.

The "working knowledge" means that you are going to learn these methods via a three-pronged approach. First, you will learn the econometric intuition behind each method. This will be accomplished by lectures and "light" econometrics readings. This is not a theory course so well will not be spending time deriving asymptotic properties of estimators or searching for UMP hypothesis tests. This is a course for end-users of econometric tools and you don't need to know how to build the tool in order to use it. However, you will learn how to use each tool properly.

Second, you will see these methods implemented by other researchers in published papers. Specifically, students will read and potentially present a paper that illustrates the empirical method in a (short) seminar-like setting. This exercise will not only reinforce your understanding of the material but it will also give you practice in presenting to an audience.

Finally, you will implement each method on live data – learning by doing. There will be a number of empirical exercises that will require you to manipulate and analyze data using the various econometric techniques. Since this is technically a finance course, the data and applications will typically be finance related.

The "microeconometric" means that we will focus on cross-sectional and panel data methods, as opposed to time-series techniques. Methods such as ARIMA models, Kalman Filtering, Vector Autoregressions (VAR), etc. will not explicitly be covered in this class.

LIMITATIONS

Practical limitations (i.e., time) impose certain restrictions on what we can accomplish in this course. For example, we will not cover all of the methods you might need or should know. I have listed a few such topics at the bottom of the syllabus. We also will not cover each method in excruciating detail. Arguably, you could build an entire course (research agenda) around each method. Finally, this course will not train you to do theoretical research in any of the particular topics. This course is meant to be truly applied.

MATERIALS

I will teach from slides, which I will make available to you (hopefully) before each class. I will be drawing from a variety of sources including various textbooks, journal articles, and working papers. As such, there is no required text but I will be making note of the appropriate references for each module.

COURSE OUTLINE

1. **Linear Regression**
    a. Cross-Sectional Data
    b. Time-Series Data

2. **Linear Panel Data Models**
    a. Pooled OLS
    b. Fixed Effects
    c. Random Effects
    d. Dynamic Linear Panel Data Models

3. **Discrete Choice Models**
    a. Bivariate Models
        i. Linear Probability Model
        ii. Probit
        iii. Logit
    b. Multivariate Models
        i. Multinomial Logit
        ii. Multinomial Probit
        iii. Nested Logit

4. **Duration Models**
    a. Nonparametric Methods
    b. Semiparametric Methods
    c. Parametric Methods

5. **Nonlinear Panel Data Models**

6. **Instrumental Variables**

7. **Matching Methods**

8. **Regression Discontinuity**

9. **Topics**
   a. Bootstrap & Jacknife