SYLLABUS

Overview: This course analyzes the structural estimation and testing of nonlinear models. It has four segments:

1. The first segment gives a flavor of structural estimation, by showing how some examples of economic models induce a data generating process that provides the basis for estimating the structure of the economic environment, critical for conducting counterfactual simulations. We introduce the estimation of dynamic discrete choice optimization models, and analyze the estimation of preferences in a model of continuous choices in a competitive equilibrium.

2. Then we profile many estimators that have been used to summarize data. They can be placed into four categories: estimators for linear data generating processes, parametric nonlinear processes, plus nonparametric and semiparametric estimators.

3. Almost all inference is based on the laws of probability, so it is hard to understand modern econometrics without a basic knowledge of probability theory, including laws of large numbers and central limit theorems. The purpose of the next two lectures is to introduce these concepts.

4. The rationale for the last segment is that the exact distribution of most nonlinear estimators is intractable. This explains why we resort to large sample theory. We derive the asymptotic distribution of several nonlinear estimators, and show how to conduct hypothesis tests.

Assessment: There is a final examination (40 percent) and four assignments (15 percent each). The assignments include a heavy dose of computational and empirical work, and the closed book final exam tests your understanding of the lecture material. The final examination will be held Monday December 6. You should form a study group as soon as possible.

Lectures, tutorials and assignments: The public lecture notes, video recordings and assignments are posted at the course web site.