

Duke University
Department of Economics
Federico A. Bugni
ECON 883.6 - Fall 2016
Econometrics III (part 2)

1 Contact information

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- *Office hours:* Th 3:00 pm – 5:00 pm or by appointment

2 Class time and place

- *Lectures:* M,W 8:45 am – 10:00 am in Social Sciences 105
- *Course website:* <https://sakai.duke.edu/portal>

3 Course Description

Econ 883.6 is the second part of the third course in the graduate sequence in econometrics. The goal of this course is to study central results and contributions in (a) nonparametric estimation and (b) semiparametric estimation in econometrics.

In the nonparametric portion of the course, we focus on the kernel-based estimation methods¹. We cover the main results in estimation, hypothesis testing, and asymptotic properties. These results in nonparametric estimation are a fundamental building block for semiparametric estimation.

In the semiparametric portion of the course, we study several classical papers in semiparametric econometrics. For each reference, we study the central ideas behind identification, estimation, inference, and asymptotic properties. In addition, we discuss the concept of semiparametric efficiency,

4 Grading scheme

- The final course grade is the result of: problem sets (40%) and final exam (60%).
- Final exam: Sunday, December 18, 9:00 am – 12 noon, in the lecture classroom.

¹Sieve-based estimation methods is the exclusive topic of a future course in the sequence.

5 Problems sets

- There will be a problem set (approximately) every week. Solutions to the problem sets will be distributed after the due date.
- You are encouraged to work on the problems sets in groups, but individual solutions sets are required.
- The problem sets will contain both theoretical and empirical questions. You are free to use any statistical/econometric software available for empirical questions.

6 Overview of the course

1. Introduction to nonparametric estimation (1 lectures).
 - Main: (Horowitz, 2009, Chapter 1).
 - Additironal: DiNardo and Tobias (2001).
2. Nonparametric kernel estimator: density estimation (2 lectures) and mean regression (1 lecture).
 - Main: (Horowitz, 2009, Appendix A), Li and Racine (2007).
 - Additional: Pagan and Ullah (1999), Silverman (1996), Härdle and Linton (1994), Stone (1980, 1982)
3. Introduction to semiparametric estimation (0.5 lectures).
 - Main: (Horowitz, 2009, Chapter 2), Li and Racine (2007).
 - Additional: Pagan and Ullah (1999), Powell (1994).
4. Partially linear model and nonparametric additive model (1.5 lectures).
 - Main: (Horowitz, 2009, Chapter 3), Robinson (1988).
 - Additional: Arabmazar and Schmidt (1982), Ruud (1986).
5. Semiparametric efficiency bounds (1 lecture).
 - Main: Stein (1956), Newey (1990), Severini and Tripathi (2013).
 - Additional: Chamberlain (1986, 1987), Bickel et al. (1996), Newey (1994), Tsiatis (2006), Khan and Tamer (2010).
6. Semiparametric single index models (3 lectures).
 - (Horowitz, 2009, Chapter 2), Ichimura (1993), Han (1987), Powell et al. (1989), Ai and Chen (2003).
 - Additional: Ichimura and Lee (1991), Sherman (1993).
7. Binary response models (3 lectures).
 - (Horowitz, 2009, Chapter 3), Ai (1997), Manski (1975, 1985), Horowitz (1992), Lewbel (2000).
 - Additional: Cosslett (1983), Pakes and Pollard (1989), Lewbel (1998), Khan and Tamer (2010).

7 Some final remarks...

- This plan (structure of the course, dates, problem sets, required readings, etc.) is subject to revisions.
- Class participation is considered mandatory.

References

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