Advanced Econometrics (MSc)

Your Teacher

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Office Hours: Tuesday afternoon by appointment per email

Class Schedue

Lecture:

Thu 14:15 - 16:00 (WWZ, Auditorium)

Course Homepage and Contact

There is a course homepage with slides, handouts and additional readings:

https://www.schmidheiny.name/teaching/unibas/advmetrics/

(username: unibas; password:)

General Questions:

contact me <kurt.schmidheiny(ät)unibas.ch>

About this Course

- Supplement to the course "Econometrics" (12036) for ambitious students.

- Follows the topics of Econometrics every week providing formal proofs and additional results using matrix algebra and asymptotic theory.

- Basis for the more advanced MSc courses in econometrics (Microeconometrics, Time Series Analysis).

Outline

1. Elements of matrix algebra: basic operations, trace, rank, inverse, eigenvalue and spectral decomposition

2. Elements of probability theory: random variables, joint, conditional and marginal distribution, expected value and other moments, change of variables

3. Elements of statistics: point estimation, interval estimation, hypothesis testing, large sample theory

Outline (cont.)

4. The algebra of the multivariate linear regression: degrees of freedom, Gauss-Markov theorem, Frisch-Waugh-Lovell theorem

5. The algebra of instrumental variable estimation

6. The algebra of basic panel data methods: within and between transformation, testing for unrelated effects under non-spherical disturbances

7. Maximum Likelihood Estimation

8. Binary choice as an example of deriving estimators and their properties using maximum likelihood

Textbooks

► Amemiya, Takeshi (1994)
  Introduction to Statistics and Econometrics
  Harvard University Press.

► Cameron, A. Colin and Pravin K. Trivedi (2005)
  Microeconometrics: Methods and Applications
  Cambridge University Press.

► Davidson, Russell and James G. MacKinnon (2004)
  Econometric Theory and Methods
  Oxford University Press.

► Hayashi, Fumio (2000)
  Econometrics

Textbooks (cont.)

▶ Wooldridge, Jeffrey M. (2002)

Econometric Analysis of Cross Section and Panel Data

MIT Press.

Problem Sets

There will be 3 problem sets.

- They will *not* be graded.
- You don't have to hand them in.
- They will be discussed in the following week.

Exam

There will be a final exam in January around the same time as the exam in Econometrics

- Closed book.

- Open questions.

- Replication of fundamental proofs in discussed models.

- Derivations and new proofs in new statistical models.