

Topics in Advanced Econometrics

(MScQEc, MScEcon EAE7-PhD)
Winter Semester 2011 - 12
University of Konstanz

Instructor: Prof. Dr. Winfried Pohlmeier

Contact Details:

Office: F 319

Phone: +49 7531-88-2660

e-mail: winfried.pohlmeier@uni-konstanz.de

Office Hours: Open office policy or by appointment.

Teaching Assistant: Ruben Seiberlich

Contact Details:

Office: F 318

Phone: +49 7531-88-5111

e-mail: ruben.seiberlich@uni-konstanz.de

Office Hours: Tue. 2 pm - 3 pm

Class Details: Th 10:15-11:45 in A704, Fr 10:15-11:45 in A704

There will be a tutorial every second Friday

See Time Schedule for Lectures and Tutorials!

Class Homepage: http://econometrics.wiwi.uni-konstanz.de/teach/topics_adv_eco.htm

Course Description:

Modern empirical research in economics and other social sciences is confronted with a vast menu of modeling strategies resulting from alternative useful data sets, huge numbers of potential covariates useful for the target of investigation and an ever increasing number of alternative estimation approaches. The overflow of data, variables and estimators makes it difficult to select the best modeling strategy. The problem is prevalent in macroeconomic forecasting, financial econometrics (e.g. portfolio management), evaluation econometrics or generally any empirical study where the number of possible modeling strategies prohibits conventional hypothesis testing approaches.

This is a PhD/MA level course in Econometrics and Applied Economics. The goal of the course is to provide an introduction to several topics in frontier econometric and statistical modeling strategies which are beyond the conventional parametric approaches based on frequentist inference and asymptotic theory.

Very often the theoretically best estimation approaches in terms of their asymptotic properties are far from being optimal if other criteria (e.g. finite sample properties, forecasting performance) are taken into account. Often data quality plays a major role. It is the goal to acquaint students

with these new ideas, some of which differ strongly from the standard framework of consistent, asymptotically normal estimators.

Part A part of the course will cover the Bayesian econometrics as a powerful alternative to the classical approaches in particular when classical approaches are subject to serious computational limitations.

Part B covers robust estimation approaches in the light of sample deficiencies and ill-posed estimation approaches. In particular various statistical learning approaches such as Shrinkage Estimation, Boosting, Bagging and Model Averaging.

Part C covers standard nonparametric econometrics. Special emphasis will be given to shrinkage approaches to nonparametric estimation.

Course Objectives:

After completing this course, students will be able to:

- Demonstrate a deep understanding of advanced method covered in the course and to be able to follow the recent literature in the
- Develop an awareness on the chances and limitations of a wide range of econometric estimation approaches
- Realize the value added of the methods covered for empirical economic research
- Apply these methods to a wide range specific empirical research questions.
- Program these estimation approaches using GAUSS, Matlab and/or R.

Prerequisites:

Advanced Econometrics (or equivalent)

Grading:

- For 6 ECTS:
 - The course grade is based on one final exam (100%)
 - Participation in all Presentation-Sessions is obligatory
- For 10 ECTS (all PhDs and Master fast track):
 - The course grade is based on two presentations (each 15%) and one final exam (70%)
 - The slides for the presentations must be provided to Ruben.Seiberlich@uni-konstanz.de by Monday in the week of the presentation.
 - For each presentation an essay of 8-12 pages has to be written. Deadline for both essays will be March 1st, 2012.
 - Participation in all Presentation-Sessions is obligatory

Background Textbooks:

- Greenberg, E. (2008): *Introduction to Bayesian Econometrics*, Cambridge University Press.
- Härdle, W. (1990): *Applied Nonparametric Regression*. Cambridge University Press.
- Koop, G. (2003): *Bayesian Econometrics*, John Wiley & Sons.
- Lancaster, T. (2004): *An introduction to modern Bayesian econometrics*, Blackwell Publishing.
- Li, Q. and J. S. Racine (2006): *Nonparametric Econometrics: Theory and Practice*. Princeton University Press.
- Mittelhammer R. C., G. G. Judge, and D. J. Miller (2000): *Econometric Foundations*, Cambridge University Press.

Topics for the first Presentation Session:

- Bayesian Econometrics:
 - Koop, G. and D. Korobilis (2010): Bayesian Multivariate Time Series Methods for Empirical Macroeconomics.
(<http://ssrn.com/abstract=1514412>)
 - Litterman, R. B. (1986): Forecasting with Bayesian Vector Autoregressions: Five Years of Experience. *Journal of Business & Economic Statistics*.
(<http://www.jstor.org/stable/1391384>)
 - Frühwirth-Schnatter, S. and H. F. Lopes (2011): Parsimonious Bayesian Factor Analysis when the Number of Factors is Unknown. Working Paper University of Chicago.
(www.eesp.fgv.br/sites/eesp.fgv.br/files/file/4d502ecc187f7.pdf)
 - Heckman, J. J., H. F. Lopes, and R. Piatek (2011): Treatment Effects: A Bayesian Perspective. Working Paper University of Chicago.
(<http://faculty.chicagobooth.edu/hedibert.lopes/research/pdf/heckman-lopes-piatek.pdf>)
- Robust Methods:
 - Tibshirani, R. (1996): Regression Shrinkage and Selection via the Lasso. *Journal of the Royal Statistical Society (Series B)*.
(<http://www.jstor.org/stable/2346178>)
 - Friedman, J., T. Hastie, and R. Tibshirani (2010): Regularization Paths for Generalized Linear Models via Coordinate Descent. *Journal of Statistical Software*.
(<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2929880/pdf/nihms201118.pdf>)
 - Inoue, A. and L. Kilian (2008): How useful is bagging in forecasting economic time series? A case study of US consumer price inflation. *Journal of the American Statistical Association*.
(http://www.fsa.ulaval.ca/SBFSIF/Documents/ik6mar26_05%20Kilian%20final%20version.pdf)
 - Breiman, L. (1996): Bagging Predictors. *Machine Learning*, Vol. 24, 123-140.
(<http://www.springerlink.com/content/14780124w2874025/>)

- Nonparametric Methods:

- Seifert, B. and T. Gasser (2000): Data Adaptive Ridging in Local Polynomial Regression. Journal of Computational and Graphical Statistics, Vol. 9 (2), 338-360.
(<http://www.jstor.org/stable/2291404?origin=JSTOR-pdf>)

In the second presentation session those students who get 10ECTS will present an empirical work he/she does based on the paper he/she presented in the first presentation session.