

GMM, Indirect Inference and Bootstrap

General information

Willi Mutschler

TU Dortmund

Winter 2015/2016

General information

Aims and prerequisites

- **Objective:** learn to understand and *use* advanced econometric estimation techniques
- Applications in Finance, Macro- and Microeconometrics
- **Prerequisites:**
 - ① Basics in probability theory & statistical inference (Bachelor level)
 - ② Basics in econometrics (multiple linear regression)
 - ③ Basic knowledge of R is helpful but not required

- R. Davidson and J.G. MacKinnon, *Econometric Theory and Methods*, Oxford University Press, 2004.
- A. Spanos, *Statistical Foundations of Econometric Modelling*, Cambridge University Press, 1989.
- A.C. Davison and D.V. Hinkley, *Bootstrap Methods and their Application*, Cambridge University Press, 1997.
- M.J. Crawley, *The R Book*, Wiley, 2007.
- Further relevant literature will be provided.

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Schedule: Part I

Part I: Repetition

- Prerequisites: Probability theory, statistical inference, multiple linear regression
- Multidimensional random variables
- Stochastic convergence and limit theorems
- Estimators and their properties

Part II: Estimation techniques

- Least squares estimation and method of moments
- Maximum-Likelihood estimation
- Instrument variables estimation
- GMM
- Indirect Inference
- Bootstrap

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Exercises and additional material

- All material (slides, exercises, data, further readings) can be found on the internet site of the course:

<http://www.statistik.tu-dortmund.de/gmm.html>

- **Time and Room**

- Thursday, 08.30 - 10.00, CDI 120
 - Thursday, 12.15 - 13.45, CDI 120
 - The lecture and exercises are intertwined.
 - Please bring your computer to both.
- Class teacher is Rafael Kawka

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Credits and Examination

- **Credits:** This course is designed for Master students (or advanced Bachelor students). Please check with the Prüfungsamt if you are eligible to get credits.
- **Examination:** At the end of the semester each student is required to complete an exercise sheet *within a week*.
 - See exercise *Estimation of the Cox-Ingersoll-Ross model* as an example