TECHNISCHE
UNIVERSITÄT
DARMSTADT

Winter Term

Course
Productivity and Efficiency Analysis

The course productivity and efficiency analysis covers methods and application related knowledge for the measurement analysis of productive efficiency. Following an overview of different approaches to efficiency measurement, the course concentrates on the approach of "data envelopment analysis" (DEA). A specific characteristic of this method is that no assumptions on the functional form of the production function are required. DEA models are introduced for constant and variable returns to scale, different orientations of the efficiency measurement and various extensions are presented. Stochastic frontier analysis (SFA) is also briefly covered. Freely available software is introduced and applied during the course.

Outline:
1. Analysis of Production Decisions
2. Stochastic Frontier Function Analysis
3. DEA Under Constant Returns to Scale – Productivity Form
4. DEA Under Constant Returns to Scale – Envelopment Form
5. DEA Under Variable Returns to Scale
6. Input Orientation Versus Output Orientation
7. Extensions (e.g. slacks, allocative efficiency, order-m-approach)
8. Dynamic Analysis

Prerequisites:
basic microeconomics and statistics (regression analysis, maximum likelihood estimation)

Materials:
- slides and exercises on Moodle
- literature:
  Bogetoft, P., Otto, L. (2011), Benchmarking with DEA, SFA and R, New York: Springer.
  Cantner, U., Krüger, J., Hanusch, H. (2007), Produktivitäts- und Effizienzanalyse – Der nichtparametrische Ansatz, Berlin: Springer.
  Coelli, T.J., Rao, D.S.P., O'Donnell, C.J., Battese, G.E. (2005), An Introduction to Efficiency and Productivity Analysis, 2nd ed., New York: Springer.
  Fried, H.O., Lovell, C.A.K., Schmidt, S.S. (2008), The Measurement of Productive Efficiency and Productivity Change, Oxford: Oxford University Press.
- software:
  EMS (http://www.holger-scheel.de/ems)
  FEAR (http://www.clemson.edu/economics/faculty/wilson/Software/FEAR/fear.html)

Time and Place: see the course page on TUCaN