TOPIC 7: SEMIPARAMETRIC SINGLE INDEX MODELS: ICHIMURA'S METHOD

Background: Discrete choice models, such as the parametric logit- and probit-models, play a very important role, for instance, in the literature on labor supply. This project aims to investigate *semiparametric* discrete choice models: so-called "semiparametric single index models". The statistical community has proposed several different estimation procedures for this class of models. The main focus of this project is on Ichimura's estimation method.

Todos:

1. Introduce the model and outline the differences to the classical parametric models. Discuss the identification issues for semiparametric single index models.
2. Introduce and motivate Ichimura's estimation method and its theoretical properties.
3. Asses the finite sample properties of Ichimura's estimation procedure by means of Monte Carlo simulations.
4. Apply the discussed method to an appropriate data set.

Literature:

- Li and Racine (2007), Chapter 8
- Horowitz (2009), Chapter 2
- Ichimura (1993)

References.

Horowitz, J. L. (2009). *Semiparametric and nonparametric methods in econometrics. Springer Series in Statistics*. Springer.

Ichimura, H. (1993). Semiparametric least squares (SLS) and weighted SLS estimation of single-index models. *Journal of Econometrics* **58** 71–120.

Li, Q. and Racine, J. S. (2007). *Nonparametric Econometrics: Theory and Practice*. Princeton University Press.