



Propensity Score Matching Using Stata

Instructor: Prof. Dr. Michael Gebel

Time/Place: Blocked seminar, taking place on:

Thursday, 27.04.17: 08:15-09:45, RZ/00.05 (preliminary meeting)

Thursday, 11.05.17: 14:15-19:45, RZ/00.06

Thursday, 18.05.17: 14:15-19:45, RZ/00.06

Thursday, 29.06.17: 14:15-19:45, RZ/00.06

Thursday, 20.07.17: 14:15-19:45, RZ/00.06

Registration: Please send a mail to Miriam Schneider (miriam.schneider@uni-bamberg.de) until Friday, April 21, to register.

Prerequisites

Students are required to be familiar with

- the statistics package Stata
- multiple linear and binary logistic regression analysis

Moreover, it is recommended that students are familiar with the contents of our lectures/seminars in research design at BA or MA level (i.e. basic knowledge of the counterfactual model of causality and issues in cross-sectional and longitudinal designs).

Learning targets

After successfully completing the seminar, participants are able to explain the logic of the counterfactual model of causality and apply directed acyclic graphs (DAGs). They can conduct theory-driven empirical research using the method of Propensity Score Matching (PSM). Specifically, they know how to specify the propensity score according to the ideas of modern causal analysis, how to implement and choose between different matching algorithms, how to perform balancing tests of observed control variables and sensitivity analysis simulating the influence of an unobserved factor, and how to correctly interpret and present the empirical results of PSM. They are also able to combine PSM with a difference-in-differences (DID) approach.

Contents

Estimating causal effects is a central aim of quantitative empirical analysis in social sciences. In the recent social science literature, new methods of modern causal analysis have become more and more popular. This seminar provides an introduction to one of these methods: Propensity Score Matching (PSM). First, the counterfactual model of causality will be discussed, which has become the backbone of modern causal analysis in social sciences. Moreover, directed acyclic graphs (DAGs) will be applied because they offer an illustrative graphical approach to the problem of causal inference. Then, applying their knowledge of the counterfactual model and DAGs, participants will learn how to implement the different steps of PSM. Specifically, it will be explained how to estimate the propensity score choosing the appropriate control variables, how to implement and choose between different matching algorithms and how to test whether PSM succeeded in balancing the observed control variables. The different steps will be applied based on real-world data in computer lab sessions. In addition, sensitivity analysis simulating the influence of an unobserved factor will be introduced that can strengthen the claims made with PSM. Moreover, for prospective or retrospective longitudinal data, PSM can be combined with a difference-in-differences (DID) approach. The so-called PSM-DID approach is able to eliminate unobserved time-constant individual effects and unobserved common baseline time trends. Participants will learn how to implement the PSM-DID approach.