Problem: Non-parametric bounds

A recent policy of welfare agencies in the Netherlands is to give new applicants for benefits a so-called search period. This means that the application is not taken into account, but instead the worker gets the obligation to apply for at least 20 jobs within the next four weeks. If these job applications are not successful, the worker can re-apply for collecting welfare benefits. In that case the worker receives benefits retrospectively from the moment of the initial application.

The agency is interested in the effect of these search period on the probability to receive benefits. A researcher proposes to run an experiment, where half of the applicants receive a search period and the other half don't. The agency has some ethical and practical objections against this experiment and claims that it is already the case that their caseworkers only give a search period to half of the applicants. They provide the researcher with a dataset with information about applicants with and without a search period.

The Stata dataset searchperiod.dta contains data on applicants for welfare benefits. The dataset contains some information on the applicants (gender, age, partner, children, education, aggregate income 12 and 24 months before the application) and information on the time and the location of the application (period1-period4 and location1-location5).

Furthermore it contains two outcomes: indicator variables for whether or not the applicant receives benefits 10 and 30 weeks after the initial application (benefits_week10 and benefits_week30). Finally the variable searchperiod is an indicator for whether an applicant received a search period or not.

Naive estimation

(*i*) Compute the average probability to receive benefits 10 and 30 weeks after application for applicants that had a search period and applicants that did not have a search period.

(*ii*) Make a balancing table in which you compare characteristics of applicants with and without a search period.

(*iii*) Regress the outcome variables first only on whether or not a search period was applied (which should give the difference-in-means estimate) and next include other covariates in the regression.

y min = people who weren't treated would have not a job if they were treated, and people who were not treated have 100% probability of having a job if they had been treated

Nonparametric bounds

(iv) Compute the no-assumption bounds for the treatment effects.

(v) Assume that caseworkers only apply search periods to applicants who benefit from it. How does this affects the bounds. Roy Model

(vi) Next, imposed the monotone treatment response and the monotone treatment selection assumption separately and also jointly. MTS & MTR

(vii) Usually higher educated workers have more favorable labor market outcomes. Use education as monotone instrumental variable and compute the bounds. MIV

MTS: Individuals assigned to treatment have more favorable outcomes than nonparticipants = People who got search period have a higher potential probability of finding job/lower probability of being on benefits after 10/30 weeks, or selected people have generally more difficulties to find a job
MTR: Treatment can only improve outcomes = If someone got a search period, then the probability decreases that they are gonna be on benefits after 10/30 weeks, or it cannot worsen their opportunites to find a job