

Estimating the effect of treatments allocated by randomized waiting lists with Stata

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1 Introduction

In this note we describe the `randomizedwaitlist` Stata package. This package computes the doubly-reweighted-ever-offer (DREO) estimators proposed in de Chaisemartin & Behaghel (2018), to estimate the effect of treatments allocated by randomized waitlists.

2 The `randomizedwaitlist` command

2.1 Syntax

The syntax of `randomizedwaitlist` is as follows:

```
randomizedwaitlist Y D Z W S [if][, controls(varlist)]
```

2.2 Description

`randomizedwaitlist` computes estimators of three parameters: the first-stage (FS) effect of getting an offer on treatment participation; the intention-to-treat (ITT) effect of getting an offer on the outcome; and the local-average-treatment-effect (LATE) effect of the treatment on the outcome among the compliers. It also computes the estimated standard error of each estimator.

Y is the outcome variable.

D is the treatment variable.

Z is the ever-offer indicator variable: it is equal to 1 for applicants that received an offer to get treated, and to 0 for all other applicants.

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W is the identifier of the waitlist the applicant participated in.

S is the number of seats available in the waitlist the applicant participated in. S is equal to the number of applicants who received an offer and got treated in each waitlist, so S should be created as follows:

```
gen taker=Z*(D>0)
bys W: egen S=total(taker)
```

2.3 Options

`controls(varlist)` specifies the names of all the control variables that need to be used in the estimation.

2.4 Saved results

The `randomizedwaitlist` command saves the following in `e()`:

1. `e(nb_obs)`, a scalar containing the number of observations used in the estimation.
2. `e(nb_waitlists)`, a scalar containing the number of waitlists used in the estimation.
3. `e(DREO_FS)`, a scalar containing the DREO estimator of the FS effect.
4. `e(DREO_ITT)`, a scalar containing the DREO estimator of the ITT effect.
5. `e(DREO_LATE)`, a scalar containing the DREO estimator of the LATE effect.
6. `e(se_DREO_FS)`, a scalar containing the estimated standard error of the estimator of the FS effect.
7. `e(se_DREO_ITT)`, a scalar containing the estimated standard error of the estimator of the ITT effect.
8. `e(se_DREO_LATE)`, a scalar containing the estimated standard error of the estimator of the LATE effect.

3 Example

In de Chaisemartin & Behaghel (2018), we revisit Blattman & Annan (2016), who have estimated the effect of an agricultural training in Liberia allocated through randomized waitlists. In the author's data set, `agrengagednowdum_end` is a dummy variable for whether applicants to the training work in agriculture one year after the training, `treated_1d` is a dummy variable equal to 1 for applicants that participated in the training, `Z` is a dummy variable for applicants that received an offer to participate in the training, and `stratum_min6` is a variable

identifying the waitlist in which each applicant was included. Finally, `CONTROLS` is a global containing all the control variables that the authors used in their estimation.

First, we create the variable equal to the number of seats available in each waitlist:

```
gen taker=Z*(treated_1d>0)
bys stratum_min6: egen S=total(taker)
```

Then, we run the `randomizedwaitlist` command:

```
randomizedwaitlist agrengagednowdum_end treated_1d Z stratum_min6 S, controls($CONTROLS)
```

Here is the output we obtain:

The DREO estimator of the first stage is equal to .72675504 and its estimated standard error is equal to .02939974.

The DREO estimator of the intention to treat is equal to .12167814 and its estimated standard error is equal to .02666541.

The DREO estimator of the local average treatment effect is equal to .16742661 and its estimated standard error is equal to .03712751.

1016 observations and 66 waitlists have been used in the estimation.

The interpretation of the results is the following. As per the DREO estimators of the FS and the ITT, getting an offer increases the percentage of applicants that get the treatment by 72.7 (s.e.= 2.9) percentage points, and the percentage of applicants that work in agriculture by 12.2 (s.e.= 2.7) percentage points. As per the DREO estimators of the LATE, the treatment increases the percentage of applicants that work in agriculture by 16.7 (s.e.= 3.7) percentage points.

References

- Blattman, C. & Annan, J. (2016), ‘Can employment reduce lawlessness and rebellion? a field experiment with high-risk men in a fragile state’, *American Political Science Review* **110**(1), 1–17.
- de Chaisemartin, C. & Behaghel, L. (2018), ‘Estimating the effect of treatments allocated by randomized waiting lists.’.