Statistics/Data analysis

Title

rdmcplot —— RD Plots for Regression Discontinuity Designs with Multiple Cutoffs.

Syntax

rdmcplot *depvar runvar* [*if*] [*in*], **cvar(***string***)** [**nbinsvar(***string***)** **nbinsrightvar(***string***)** **binselectvar(***string***)** **scalevar(***string***)** **scalerightvar(***string***)** **supportvar(***string***)** **supportrightvar(***string***)** **pvar(***string***)** **hvar(***string***)** **hrightvar(***string***)** **kernelvar(***string***)** **weightsvar(***string***)** **covsvar(***string***)** **covsevalvar(***string***)** **covsdropvar(***string***)** **binsoptvar(***string***)** **lineoptvar(***string***)** **xlineoptvar(***string***)** **ci(***cilevel***)** **nobins** **nopoly** **noxline** **nodraw** **genvars**]

Description

rdmcplot plots estimated regression functions at each cutoff in regression discontinuity (RD) designs with multiple cutoffs. For methodological background see Calonico, Cattaneo and Titiunik (2015a), Calonico, Cattaneo and Titiunik (2015a), Keele and Titiunik (2015), Cattaneo, Keele, Titiunik and Vazquez-Bare (2016), and Cattaneo, Keele, Titiunik and Vazquez-Bare (2021).

Companion commands are: rdmc for multi-cutoff RD estimation and inference, and rdms for multi-score RD estimation and inference.

A detailed introduction to this command is given in Cattaneo, Titiunik and Vazquez-Bare (2020).

This command employs the Stata (and R) package rdrobust for underlying calculations. See Calonico, Cattaneo and Titiunik (2014), Calonico, Cattaneo and Titiunik (2015b), and Calonico, Cattaneo, Farrell and Titiunik (2017) for more details.

Related Stata and R packages useful for inference in RD designs are described in the following website:

https://rdpackages.github.io/

Options

Estimand

cvar(*string***)** specifies the numeric variable containing the RD cutoff for *indepvar* for each unit in the sample.

Bin Selection

nbinsvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the number of bins for **rdplot**. When **nbinsrightvar** is specified, **nbinsvar** indicates the number of bins to the left of the cutoff. When **nbinsrightvar** is not specified, the same number of bins is used at each side. See rdplot for details.

nbinsrightvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the number of bins to the right of the cutoff for **rdplot**. When **nbinsrightvar** is not specified, the number of bins in **nbinsvar** is used at each side. See rdplot for details.

binselectvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the bins selection method for **rdplot**. See rdplot for details.

scalevar(*string***)** a variable of length equal to the number of different cutoffs that specifies the scale for **rdplot**. When **scalerightvar** is specified, **nbinsvar** indicates the scale to the left of the cutoff. When **scalerightvar** is not specified, the same scale is used at each side. See rdplot for details.

scalerightvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the scale to the right of the cutoff for **rdplot**. When **scalerightvar** is not specified, the scale in **scalevar** is used at each side. See rdplot for details.

supportvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the support for **rdplot**. When **supportrightvar** is specified, **supportvar** indicates the support to the left of the cutoff. When **supportrightvar** is not specified, the same support is used at each side. See rdplot for details.

supportrightvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the support to the right of the cutoff for **rdplot**. When **supportrightvar** is not specified, the support in **supportvar** are used at each side. See rdplot for details.

Polynomial Fit

pvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the order of the polynomials for **rplot**. See rdplot for details.

hvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the bandwidths for **rdplot**. When **hrightvar** is specified, **hvar** indicates the bandwidth to the left of the cutoff. When **hrightvar** is not specified, the same bandwidths are used at each side. See rdplot for details.

hrightvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the bandwidths to the right of the cutoff for **rdplot**. When **hrightvar** is not specified, the bandwidths in **hvar** are used at each side. See rdplot for details.

kernelvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the kernels for **rdplot**. See rdplot for details.

weightsvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the weights for **rdplot**. See rdplot for details.

covsvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the covariates for **rdplot**. See rdplot for details.

covsevalvar(*string***)** a variable of length equal to the number of different cutoffs that specifies the evaluation points for additional covariates. See rdplot for details.

covsdropvar(*string***)** a variable of length equal to the number of different cutoffs that specifies whether collinear covariates should be dropped. See rdplot for details.

Plot

binsoptvar(*string***)** a variable of length equal to the number of different cutoffs that specifies options for the bins plots.

lineoptvar(*string***)** a variable of length equal to the number of different cutoffs that specifies options for the polynomial plots.

xlineoptvar(*string***)** a variable of length equal to the number of different cutoffs that specifies options for the vertical lines indicating the cutoffs.

ci(*cilevel***)** adds confidence intervals of level *cilevel* to the plot. Should be a number between 0 and 100 (e.g. **ci(95)** for 95% level).

nobins omits the bins plot.

nopoly omits the polynomial curve plot.

noxline omits the vertical lines indicating the cutoffs.

nodraw omits the plot.

Generate Variables

genvars generates variables to replicate plots by hand. Variable labels indicate the corresponding cutoff.
rdmcplot_hat_y_c predicted value of the outcome variable given by the global polynomial estimator in cutoff number *c*.
rdmcplot_mean_x_c sample mean of the running variable within the corresponding bin for each observation in cutoff number *c*.
rdmcplot_mean_y_c sample mean of the outcome variable within the corresponding bin for each observation in cutoff number *c*.
rdmcplot_ci_l_c lower end value of the confidence interval for the sample mean of the outcome variable within the corresponding bin for each observation in cutoff number *c*.
rdmcplot_ci_r_c upper end value of the confidence interval for the sample mean of the outcome variable within the corresponding bin for each observation in cutoff number *c*.

Examples

Standard use of rdmcplot
```
. rdmcplot yvar xvar, c(cvar)
```

rdmcplot without bins plot
```
. rdmcplot yvar xvar, c(cvar) nobins
```

Saved results

rdmcplot saves the following in **r()**:

Scalars

r(p)	order of the polynomial
r(cnum)	number of cutoffs

Macros

r(cvar)	cutoff variable
r(clist)	cutoff list

Matrices

r(c_failed)	vector of cutoffs at which rdplot encountered problems

References

Calonico, S., M. D. Cattaneo, M. H. Farrell, and R. Titiunik. 2017. rdrobust: Software for Regression Discontinuity Designs.
Stata Journal 17(2): 372-404.

Calonico, S., M. D. Cattaneo, and R. Titiunik. 2014. Robust Data-Driven Inference in the Regression-Discontinuity Design.
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Cattaneo, M. D., L. Keele, R. Titiunik, and G. Vazquez-Bare. 2016. Interpreting Regression Discontinuity Designs with Multiple Cutoffs.
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Cattaneo, M. D., L. Keele, R. Titiunik, and G. Vazquez-Bare. 2021. Extrapolating Treatment Effects in Multi-Cutoff Regression Discontinuity Designs.
Journal of American Statistical Association, forthcoming.

Cattaneo, M. D., R. Titiunik, and G. Vazquez-Bare. 2020. Analysis of Regression Discontinuity Designs with Multiple Cutoffs or Multiple Scores.
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