Title

scplot — Synthetic Control Methods Plots.

Syntax

scplot , [**scest uncertainty(**_string_**) joint dots_tr_col(**_colorstyle_**)**
    dots_tr_symb(_symbolstyle_**) dots_tr_size(**_markersizestyle_**) dots_sc_col(**_colorstyle_**)**
    dots_sc_symb(_symbolstyle_**) dots_sc_size(**_markersizestyle_**) line_tr_col(**_colorstyle_**)**
    line_tr_patt(_linepatternstyle_**) line_tr_width(**_linewidthstyle_**)**
    line_sc_col(_colorstyle_**) line_sc_patt(**_linepatternstyle_**)**
    line_sc_width(_linewidthstyle_**) spike_sc_col(**_colorstyle_**)**
    spike_sc_patt(_linepatternstyle_**) spike_sc_width(**_linewidthstyle_**) gphoptions(**_string_**)**
    gphsave(_string_**) savedata(**_dta_name_**) pypinocheck**]

Description

scplot implements several Synthetic Control (SC) plots. The command is designed te be
called after <u>scest</u> or <u>scpi</u> which implement estimation and inference procedures for
SC methods using least squares, lasso, ridge, or simplex-type constraints
according to <u>Cattaneo, Feng, and Titiunik (2021)</u>. The command is a wrapper of the
companion Python package. As such, the user needs to have a running version of
Python with the package installed. A tutorial on how to install Python and link it
to Stata can be found <u>here</u>.

Companion <u>R</u> and <u>Python</u> packages are described in <u>Cattaneo, Feng, Palomba and
Titiunik (2022)</u>.

Companion commands are: <u>scdata</u> for data preparation, <u>scest</u> for estimation
procedures, and <u>scpi</u> for inference procedures.

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

https://nppackages.github.io/scpi/

For an introduction to synthetic control methods, see <u>Abadie (2021)</u> and references
therein.

Options

scest if specified **scplot** must be called after <u>scest</u>. Otherwise, it is presumed that
scplot is called after <u>scpi</u>.

uncertainty(_string_**)** specifies which prediction intervals are plotted. It does not
affect the plot if **scest** is specified. Options are:
insample prediction intervals quantify only in-sample uncertainty.
gaussian prediction intervals quantify in-sample and out-of-sample uncertainty
    using conditional subgaussian bounds.
ls prediction intervals quantify in-sample and out-of-sample uncertainty imposing

a location-scale model.
       qreg prediction intervals quantify in-sample and out-of-sample uncertainty using
            quantile regressions.

   joint if specified simultaneous prediction intervals are included in the plot.

       ┌─────────────┐
   ────┘ Marker Options └───

These options let the user specify color, size, and form of the markers in the plot.

   dots_tr_col(_colorstyle_**)** specifies the color of the markers for the treated unit.
   dots_tr_symb(_symbolstyle_**)** specifies the form of the markers for the treated unit.
   dots_tr_size(_markersizestyle_**)** specifies the size of the markers for the treated unit.
   dots_sc_col(_colorstyle_**)** specifies the color of the markers for the SC unit.
   dots_sc_symb(_symbolstyle_**)** specifies the form of the markers for the SC unit.
   dots_sc_size(_markersizestyle_**)** specifies the size of the markers for the SC unit.

       ┌───────────┐
   ────┘ Line Options └───

These options let the user specify color, pattern, and width of the lines in the plot.

   line_tr_col(_colorstyle_**)** specifies the color of the line for the treated unit.
   line_tr_patt(_linepatternstyle_**)** specifies the pattern of the line for the treated unit.
   line_tr_width(_linewidthstyle_**)** specifies the width of the line for the treated unit.
   line_sc_col(_colorstyle_**)** specifies the color of the line for the SC unit.
   line_sc_patt(_linepatternstyle_**)** specifies the pattern of the line for the SC unit.
   line_sc_width(_linewidthstyle_**)** specifies the width of the line for the SC unit.

       ┌──────────┐
   ────┘ Bar Options └──

These options let the user specify color, pattern, and width of the bar (spikes) in the
   plot. These options do not have effect if **scest** is specified.

   spike_sc_col(_colorstyle_**)** specifies the color of the bars for the SC unit.
   spike_sc_patt(_linepatternstyle_**)** specifies the pattern of the bars for the SC unit.
   spike_sc_width(_linewidthstyle_**)** specifies the width of the bars for the SC unit.

       ┌──────┐
   ────┘ Others └───

   gphoptions(_string_**)** specifies additional options to modify the plot.
   gphsave(_string_**)** specifies the path and the name of the _.gph_ file that is saved by the
        command.
   savedata(_dta_name_**)** saves a _dta_name.dta_ file containing the processed data used to
        produce the plot.

   pypinocheck) if specified avoids to check that the version of scpi_pkg in Python is
        the one required by **scplot** in Stata. When not specified performs the check and
        stores a macro called to avoid checking it multiple times.{p_end}

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Example: Germany Data

Setup
>   . **use scpi_germany.dta**

Prepare data
>   . **scdata gdp, dfname("python_scdata") id(country) outcome(gdp) time(year)**
>   **treatment(status) cointegrated**

Estimate Synthetic Control with a simplex constraint and quantify uncertainty
>   . **scpi, dfname("python_scdata") name(simplex) u_missp**

Plot Synthetic Control Estimate with Prediction Intervals
>   . **scplot, gphsave("plot_scpi")**

References

Abadie, A. 2021. Using synthetic controls: Feasibility, data requirements, and methodological aspects. *Journal of Economic Literature*, 59(2), 391–425.

Cattaneo, M. D., Feng, Y., and Titiunik, R. 2021. Prediction Intervals for Synthetic Sontrol Methods. *Journal of the American Statistical Association*, 116(536), 1865–1880.

Cattaneo, M. D., Feng, Y., Palomba F., and Titiunik, R. 2022. scpi: Uncertainty Quantification for Synthetic Control Estimators, *arXiv*:2202.05984.

Cattaneo, M. D., Feng, Y., Palomba F., and Titiunik, R. 2022. Uncertainty Quantification in Synthetic Controls with Staggered Treatment Adoption, *arXiv*:2210.05026.

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