Postestimation commands

The following postestimation command is of special interest after *sqreg*:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>estat coefplot</code></td>
<td>plot coefficients and their confidence intervals at different quantiles</td>
</tr>
</tbody>
</table>

The following postestimation commands are available after *qreg*, *iqreg*, *bsqreg*, and *sqreg*:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>contrast</code></td>
<td>contrasts and ANOVA-style joint tests of estimates</td>
</tr>
<tr>
<td><code>estat summarize</code></td>
<td>summary statistics for the estimation sample</td>
</tr>
<tr>
<td><code>estat vce</code></td>
<td>variance–covariance matrix of the estimators (VCE)</td>
</tr>
<tr>
<td><code>estimates</code></td>
<td>cataloging estimation results</td>
</tr>
<tr>
<td><code>etable</code></td>
<td>table of estimation results</td>
</tr>
<tr>
<td><code>forecast</code></td>
<td>dynamic forecasts and simulations</td>
</tr>
<tr>
<td><code>hausman</code></td>
<td>Hausman’s specification test</td>
</tr>
<tr>
<td><code>lincom</code></td>
<td>point estimates, standard errors, testing, and inference for linear combinations of coefficients</td>
</tr>
<tr>
<td><code>linktest</code></td>
<td>link test for model specification</td>
</tr>
<tr>
<td><code>margins</code></td>
<td>marginal means, predictive margins, marginal effects, and average marginal effects</td>
</tr>
<tr>
<td><code>marginsplot</code></td>
<td>graph the results from margins (profile plots, interaction plots, etc.)</td>
</tr>
<tr>
<td><code>nlcom</code></td>
<td>point estimates, standard errors, testing, and inference for nonlinear combinations of coefficients</td>
</tr>
<tr>
<td><code>predict</code></td>
<td>predictions and their SEs, residuals, etc.</td>
</tr>
<tr>
<td><code>predictnl</code></td>
<td>point estimates, standard errors, testing, and inference for generalized predictions</td>
</tr>
<tr>
<td><code>pwcompare</code></td>
<td>pairwise comparisons of estimates</td>
</tr>
<tr>
<td><code>test</code></td>
<td>Wald tests of simple and composite linear hypotheses</td>
</tr>
<tr>
<td><code>testnl</code></td>
<td>Wald tests of nonlinear hypotheses</td>
</tr>
</tbody>
</table>

* `hausman` is not appropriate after *bsqreg*, *isqreg*, or *sqreg*.
† `forecast` is not appropriate with *mi* estimation results.
predict

Description for predict

predict creates a new variable containing predictions such as linear predictions, standard errors, and residuals.

Menu for predict

Statistics > Postestimation

Syntax for predict

For qreg, iqreg, and bsqreg

\[ \text{predict } [\text{type}] \text{ newvar } [\text{if}] [\text{in}] [\text{, } \text{xb|stddp|residuals}] \]

For sqreg

\[ \text{predict } [\text{type}] \text{ newvar } [\text{if}] [\text{in}] [\text{, } \text{equation(eqno[,eqno]) statistic}] \]

<table>
<thead>
<tr>
<th>statistic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xb</td>
<td>linear prediction; the default</td>
</tr>
<tr>
<td>stdp</td>
<td>standard error of the linear prediction</td>
</tr>
<tr>
<td>stddp</td>
<td>standard error of the difference in linear predictions</td>
</tr>
<tr>
<td>residuals</td>
<td>residuals</td>
</tr>
</tbody>
</table>

These statistics are available both in and out of sample; type predict ... if e(sample) ... if wanted only for the estimation sample.

Options for predict

<table>
<thead>
<tr>
<th>Main</th>
<th>XB</th>
</tr>
</thead>
<tbody>
<tr>
<td>xb</td>
<td>the default, calculates the linear prediction.</td>
</tr>
<tr>
<td>stdp</td>
<td>calculates the standard error of the linear prediction.</td>
</tr>
<tr>
<td>stddp</td>
<td>is allowed only after you have fit a model using sqreg. The standard error of the difference in linear predictions ((x_{1j}b - x_{2j}b)) between equations 1 and 2 is calculated.</td>
</tr>
<tr>
<td>residuals</td>
<td>calculates the residuals, that is, (y_j - x_jb).</td>
</tr>
</tbody>
</table>

\(\text{equation(eqno[,eqno])}\) specifies the equation to which you are making the calculation.

\(\text{equation()}\) is filled in with one \(\text{eqno}\) for the \(\text{xb}\), \(\text{stddp}\), and \(\text{residuals}\) options. \(\text{equation(#1)}\) would mean that the calculation is to be made for the first equation, \(\text{equation(#2)}\) would mean the second, and so on. You could also refer to the equations by their names. \(\text{equation(income)}\) would refer to the equation named income and \(\text{equation(hours)}\) to the equation named hours.

If you do not specify \(\text{equation()}\), results are the same as if you had specified \(\text{equation(#1)}\). To use \(\text{stddp}\), you must specify two equations. You might specify \(\text{equation(#1, #2)}\) or \(\text{equation(q80, q20)}\) to indicate the 80th and 20th quantiles.
margins

Description for margins

margins estimates margins of response for linear predictions.

Menu for margins

Statistics > Postestimation

Syntax for margins

margins [marginlist] [ , options ]
margins [marginlist] , predict(statistic ...) [options]

<table>
<thead>
<tr>
<th>statistic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xb</td>
<td>linear prediction; the default</td>
</tr>
<tr>
<td>stdp</td>
<td>not allowed with margins</td>
</tr>
<tr>
<td>stddp</td>
<td>not allowed with margins</td>
</tr>
<tr>
<td>residuals</td>
<td>not allowed with margins</td>
</tr>
</tbody>
</table>

Statistics not allowed with margins are functions of stochastic quantities other than e(b).
For the full syntax, see [R] margins.
estat

Description for estat

estat coefplot plots the estimated coefficients and their confidence intervals (CIs) after sqreg.

Menu for estat

Statistics > Postestimation

Syntax for estat

    estat coefplot [varname] [, options]

varname is one of the variables specified when fitting sqreg; the default is the first endogenous variable.

options Description

    noci        do not plot the CIs
    nools       do not plot the ordinary least-squares (OLS) estimates

Plot

    connect_options change look of lines or connecting method
    marker_options change look of markers (color, size, etc.)

CI plot

    ciopts(area_options) affect rendition of the pointwise CIs

Line options

    lineopts(cline_options) affect rendition of reference line identifying the OLS estimates

Y axis, X axis, Titles, Legend, Overall

    twoway_options any options other than by() documented in [G-3] twoway_options

Options for estat

noci removes plots of the pointwise CIs. The default is to plot the CIs.

nools removes the plot of the OLS estimates. The default is to plot the OLS reference line.

connect_options specify how points on a graph are to be connected; [G-3] connect_options.

marker_options affect the rendition of markers drawn at the plotted points, including their shape, size, color, and outline; see [G-3] marker_options.

ciopts(area_options) affects rendition of the pointwise CIs; see [G-3] area_options.
Line options

`lineopts(cline_options)` affects rendition of reference line identifying the OLS estimates; see [G-3] `cline_options`.

Y axis, X axis, Titles, Legend, Overall

`twoway_options` are any of the options documented in [G-3] `twoway_options`, excluding `by()`. These include options for titling the graph (see [G-3] `title_options`) and for saving the graph to disk (see [G-3] `saving_option`).

Remarks and examples

Example 1: Predictions after qreg and iqreg

In example 4 of [R] `qreg`, we fit regressions for the lower and the upper quartile of the `price` variable. The `predict` command can be used to obtain the linear prediction after each regression.

```
use https://www.stata-press.com/data/r18/auto
(1978 automobile data)
qreg price weight length foreign, quantile(.25)
(output omitted)
predict q25
(option xb assumed; fitted values)
qreg price weight length foreign, quantile(.75)
(output omitted)
predict q75
(option xb assumed; fitted values)
```

We can use the variables generated by `predict` to compute the predicted interquartile range, that is,

```
generate iqr1 = q75 - q25
```

If we directly perform the interquartile range regression with the `iqreg` command, we can predict the interquartile range and also the standard error for the prediction.

```
iqreg price weight length foreign, quantile(.25 .75)
(output omitted)
predict iqr2
(option xb assumed; fitted values)
predict stdp, stdp
```
We now plot the predicted interquartile range versus variable length:

```
.scatter iqr2 length
```

As stated in example 5 of [R] qreg, the negative coefficient for the `length` variable means that increases in length imply decreases in the interquartile range and therefore in price dispersion. Consequently, we could have expected a downward trend in the plot, but there is not. This is because the regression output indicates that when we hold the rest of the variables constant, an increase in `length` leads to a decrease in `iqr2`. However, there is a high correlation between `weight` and `length`, which could be masking the effect of `length` on `iqr2`. We can achieve a better visualization by using a contour plot.
We can see the effect by setting a fixed value of length on the vertical axis, say, 3,000 lbs. When we move from left to right on the horizontal axis, we see that for small values of length, iqr2 values are shown in red, meaning high values, and when we move toward the right, the graph indicates transition into increasingly smaller values.

Example 2: Coefficients plot after sqreg

In example 5 of [R] qreg, we simultaneously estimated the quantile regressions at different quantile indexes.

```
. use https://www.stata-press.com/data/r18/auto, clear
(1978 automobile data)
. set seed 1001
. sqreg price weight length foreign, q(.25 .5 .75) reps(100)
(output omitted)
```
We can now use `estat coefplot` to visualize the coefficients at different quantiles. For example, we can type `estat coefplot weight` to see the trend of the effects of weight on price across quantiles.

```
estat coefplot weight
```

![Coefficient plot for weight](image)

The resulting graph shows that there is an upward trend in the effects. For reference, the red line shows the OLS estimates.

**Also see**

[R] qreg — Quantile regression

[U] 20 Estimation and postestimation commands