Postestimation commands

The following postestimation commands are available after sureg:

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<tr>
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<tr>
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predict

Description for predict

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

Menu for predict

Statistics > Postestimation

Syntax for predict

```
predict [type] newvar [if] [in] [, equation(eqno[,eqno]) statistic]
```

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

```
equation(eqno[,eqno]) specifies to which equation(s) you are referring.
```

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

If you do not specify `equation()`, the results are the same as if you specified `equation(#1)`. `difference` and `stddp` refer to between-equation concepts. To use these options, you must specify two equations, for example, `equation(#1,#2)` or `equation(income,hours)`. When two equations must be specified, `equation()` is required.

xb, the default, calculates the linear prediction (fitted values)—the prediction of $x_j b$ for the specified equation.

stdp calculates the standard error of the prediction for the specified equation. It can be thought of as the standard error of the predicted expected value or mean for the observation’s covariate pattern. The standard error of the prediction is also referred to as the standard error of the fitted value.

residuals calculates the residuals.
difference calculates the difference between the linear predictions of two equations in the system. With \texttt{equation(#1,#2)}, \texttt{difference} computes the prediction of \texttt{equation(#1)} minus the prediction of \texttt{equation(#2)}.

\texttt{stddp} is allowed only after you have previously fit a multiple-equation model. The standard error of the difference in linear predictions \((x_{1j}b - x_{2j}b)\) between equations 1 and 2 is calculated.

For more information on using \texttt{predict} after multiple-equation estimation commands, see \texttt{[R] predict}.

\section*{margins}

\subsection*{Description for margins}

\texttt{margins} estimates margins of response for linear predictions and differences between the linear predictions.

\subsection*{Menu for margins}

\texttt{Statistics > Postestimation}

\subsection*{Syntax for margins}

\begin{verbatim}
margins [ \texttt{marginlist} ] [ , options ]
margins [ \texttt{marginlist} ] , \texttt{predict(statistic ...) [predict(statistic ...) ...]} [ \texttt{options} ]
\end{verbatim}

\textbf{statistic} \quad \textbf{Description}
\begin{itemize}
  \item default: linear predictions for each equation
  \item \texttt{xb}: linear prediction for a specified equation
  \item \texttt{difference}: difference between the linear predictions of two equations
  \item \texttt{stdp}: not allowed with \texttt{margins}
  \item \texttt{residuals}: not allowed with \texttt{margins}
  \item \texttt{stddp}: not allowed with \texttt{margins}
\end{itemize}

\texttt{xb} defaults to the first equation.

Statistics not allowed with \texttt{margins} are functions of stochastic quantities other than \(e(b)\).

For the full syntax, see \texttt{[R] margins}.
Remarks and examples

For an example of cross-equation testing of parameters using the `test` command, see example 1 in [R] `sureg`.

Example 1

In example 1 of [R] `sureg`, we fit a seemingly unrelated regressions model of `price` and `weight`. Here we obtain the fitted values.

```
. use https://www.stata-press.com/data/r17/auto
    (1978 automobile data)
. sureg (price foreign length) (weight foreign length), small dfk
    (output omitted)
. predict phat, equation(price)
    (option `xb' assumed; fitted values)
. predict what, equation(weight)
    (option `xb' assumed; fitted values)
. summarize price phat weight what
```

```
Variable |     Obs  |   Mean   |      Std. dev. |      Min   |       Max
---------|--------|----------|----------------|------------|--------
 price    |      74 |  6165.26 |       2949.49 |       3291 |    15906
 phat     |      74 |  6165.26 |       1656.41 |      1639.9 |    9398.1
 weight   |      74 |  3019.46 |       777.19  |       1760  |     4840
 what     |      74 |  3019.46 |       736.97  |    1481.2  |  4476.33
```

Just as in single-equation OLS regression, in a SURE model the sample mean of the fitted values for an equation equals the sample mean of the dependent variable.

Example 2

Suppose that for whatever reason we were interested in the difference between the predicted values of `price` and `weight`. `predict` has an option to compute this difference in one step:

```
. predict diff, equation(price, weight) difference
```

diff is the same as `phat - what`:

```
. generate mydiff = phat - what
. summarize diff mydiff
```

```
Variable |     Obs  |   Mean   |      Std. dev. |      Min   |       Max
---------|--------|----------|----------------|------------|--------
 diff     |      74 | 3145.797 |       1233.26 |     -132.2 |     5505.9
 mydiff   |      74 | 3145.797 |       1233.26 |     -132.2 |     5505.9
```

Also see

[R] `sureg` — Zellner’s seemingly unrelated regression

[U] 20 Estimation and postestimation commands