Postestimation commands

The following postestimation commands are available after `nlsur`:

<table>
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<th>Command</th>
<th>Description</th>
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<tr>
<td><code>estat ic</code></td>
<td>Akaike’s and Schwarz’s Bayesian information criteria (AIC and BIC)</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>
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<tr>
<td><code>forecast</code></td>
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<td><code>hausman</code></td>
<td>Hausman’s specification test</td>
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<tr>
<td><code>lincom</code></td>
<td>point estimates, standard errors, testing, and inference for linear combinations of coefficients</td>
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<tr>
<td><code>lrtest</code></td>
<td>likelihood-ratio test</td>
</tr>
<tr>
<td><code>margins</code></td>
<td>marginal means, predictive margins, marginal effects, and average marginal effects</td>
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<tr>
<td><code>marginsplot</code></td>
<td>graph the results from margins (profile plots, interaction plots, etc.)</td>
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<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, residuals, influence statistics, and other diagnostic measures</td>
</tr>
<tr>
<td><code>predictnl</code></td>
<td>point estimates, standard errors, testing, and inference for generalized predictions</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>

* You must specify the `variables()` option with `nlsur`. 
**predict**

**Description for predict**

`predict` creates a new variable containing predictions such as fitted values and residuals.

**Menu for predict**

Statistics > Postestimation

**Syntax for predict**

```plaintext
predict [type] newvar [if] [in] [, equation(#eqno) yhat residuals]
```

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)` specifies to which equation you are referring. `equation(#1)` would mean that the calculation is to be made for the first equation, `equation(#2)` would mean the second, and so on. If you do not specify `equation()`, results are the same as if you had specified `equation(#1)`.
- `yhat`, the default, calculates the fitted values for the specified equation.
- `residuals` calculates the residuals for the specified equation.
margins

Description for margins

margins estimates margins of response for fitted values.

Menu for margins

Statistics > Postestimation

Syntax for margins

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

statistic Description

_yhat_ fitted values; the default
_residuals_ not allowed with margins

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

Remarks and examples

Example 1

In example 2 of [R] nlsur, we fit a four-factor translog cost function to data for the U.S. economy. The own-price elasticity for a factor measures the percentage change in its usage as a result of a 1% increase in the factor's price, assuming that output is held constant. For the translog production function, the own-price factor elasticities are

\[ \eta_i = \delta_{ii} + s_i s_i - 1 \]

Here we compute the elasticity for capital at the sample mean of capital's factor share. First, we use summarize to get the mean of s_k and store that value in a scalar:

```
  . use https://www.stata-press.com/data/r16/mfgcost
  . nlsur (s_k = {bk} + {dkk}*ln(pk/pm) + {dkl}*ln(pl/pm) + {dke}*ln(pe/pm))
     > (s_l = {bl} + {dkl}*ln(pk/pm) + {dll}*ln(pl/pm) + {dle}*ln(pe/pm))
     > (s_e = {be} + {dke}*ln(pk/pm) + {dle}*ln(pl/pm) + {dee}*ln(pe/pm)),
     > ifgnls
     (output omitted)
  . summarize s_k
  Variable | Obs Mean Std. Dev. Min Max
---------|--------------------------
    s_k   | 25 .053488 .0044795 .04602 .06185
  . scalar kmean = r(mean)
```
Now, we can use \texttt{nlsur} to calculate the elasticity:

\begin{verbatim}
.nlcom (([dkk]_cons + kmean*(kmean-1)) / kmean)
     _nl_1: ([dkk]_cons + kmean*(kmean-1)) / kmean
\end{verbatim}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
 & Coef. & Std. Err. & z & P>|z| & [95\% Conf. Interval] \\
\hline
_nl_1 & -.3952986 & .1083535 & -3.65 & 0.000 & -.6076676 & -.1829295 \\
\hline
\end{tabular}
\end{table}

If the price of capital increases by 1\%, its usage will decrease by about 0.4\%. To maintain its current level of output, a firm would increase its usage of other inputs to compensate for the lower capital usage. The standard error reported by \texttt{nlsur} reflects the sampling variance of the estimated parameter $\hat{\delta_{kk}}$, but \texttt{nlsur} treats the sample mean of $s_k$ as a fixed parameter that does not contribute to the sampling variance of the estimated elasticity.

Also see

[R] \texttt{nlsur} — Estimation of nonlinear systems of equations

[U] 20 Estimation and postestimation commands