

hetregress postestimation — Postestimation tools for hetregress

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Postestimation commands

The following postestimation commands are available after `hetregress`:

Command	Description
<code>contrast</code>	contrasts and ANOVA-style joint tests of estimates
* <code>estat ic</code>	Akaike's and Schwarz's Bayesian information criteria (AIC and BIC)
<code>estat summarize</code>	summary statistics for the estimation sample
<code>estat vce</code>	variance–covariance matrix of the estimators (VCE)
* <code>estat (svy)</code>	postestimation statistics for survey data
<code>estimates</code>	cataloging estimation results
† <code>forecast</code>	dynamic forecasts and simulations
† <code>hausman</code>	Hausman's specification test
<code>lincom</code>	point estimates, standard errors, testing, and inference for linear combinations of coefficients
<code>linktest</code>	link test for model specification
*† <code>lrtest</code>	likelihood-ratio test
<code>margins</code>	marginal means, predictive margins, marginal effects, and average marginal effects
<code>marginsplot</code>	graph the results from margins (profile plots, interaction plots, etc.)
<code>nlcom</code>	point estimates, standard errors, testing, and inference for nonlinear combinations of coefficients
<code>predict</code>	predictions, residuals, influence statistics, and other diagnostic measures
<code>predictnl</code>	point estimates, standard errors, testing, and inference for generalized predictions
<code>pwcompare</code>	pairwise comparisons of estimates
* <code>suest</code>	seemingly unrelated estimation
<code>test</code>	Wald tests of simple and composite linear hypotheses
<code>testnl</code>	Wald tests of nonlinear hypotheses

* `estat ic`, `estat (svy)`, `lrtest`, and `suest` are not appropriate after `hetregress`, `twostep`.

† `forecast`, `hausman`, and `lrtest` are not appropriate with `svy` estimation results.

predict

Description for predict

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

Menu for predict

Statistics > Postestimation

Syntax for predict

After ML or two-step

```
predict [type] newvar [if] [in] [, statistic]
```

After ML

```
predict [type] { stub* | newvarreg newvarlnsigma2 } [if] [in] , scores
```

<i>statistic</i>	Description
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Main

<code>xb</code>	linear prediction; the default
<code>stdp</code>	standard error of the linear prediction
<code>sigma</code>	standard deviation of the error term

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

Main

`xb`, the default, calculates the linear prediction.

`stdp` calculates the standard errors of the linear prediction.

`sigma` calculates the standard deviations of the error term.

`scores` calculates equation-level score variables.

The first new variable will contain the derivative of the log likelihood with respect to the regression equation, $\partial \ln L / \partial (\mathbf{x}_i \beta)$.

The second new variable will contain the derivative of the log likelihood with respect to the scale equation (`lnsigma2`), $\partial \ln L / \partial (\mathbf{z}_i \alpha)$.

margins

Description for margins

`margins` estimates margins of response for linear predictions and of standard deviations.

Menu for margins

Statistics > Postestimation

Syntax for margins

```
margins [marginlist] [, options]
```

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

<i>statistic</i>	Description
<code>xb</code>	linear prediction; the default
<code>stdp</code>	not allowed with <code>margins</code>
<code>sigma</code>	standard deviation of the error term

Statistics not allowed with `margins` are functions of stochastic quantities other than $e(b)$.

For the full syntax, see [R] [margins](#).

Remarks and examples

[stata.com](http://www.stata.com)

Once you have fit a heteroskedastic regression model, you can use the `predict` command to obtain the predicted values both for the estimation sample and for other samples; see [U] [20 Estimation and postestimation commands](#) and [R] [predict](#). `predict` without arguments calculates the linear prediction from the fitted model $\mathbf{x}_i\mathbf{b}$, where \mathbf{x}_i are the independent variables in the j th observation and \mathbf{b} is the estimated parameter vector for the mean model. With the `stdp` option, `predict` calculates the standard error of the linear prediction. With the `sigma` option, `predict` calculates the predicted standard deviations of the error term, $\hat{\sigma}_j = \exp(0.5 \times \mathbf{z}_i\mathbf{a})$, where \mathbf{g} is the estimated parameter vector for the variance model.

▷ **Example 1: Predicting heteroskedastic standard deviation**

We can use `predict` to compute the predicted values of the standard deviations for female and male faculty based on the model from [example 2](#) in [R] `hetregress`.

```
. use http://www.stata-press.com/data/r15/salary
(DeMaris (2004) - Faculty salaries)
. hetregress salary i.female##(c.priorexp c.yrrank c.yrbg c.salfac),
> het(i.female) twostep
(output omitted)
. predict sigma, sigma
. tabulate female, summarize(sigma)
```

		Summary of Heteroskedastic standard deviation		
1 = female; 0 = male		Mean	Std. Dev.	Freq.
0		7741.8481	0	511
1		5828.6973	0	214
Total		7177.1388	873.22924	725

The predicted standard deviation for male faculty is approximately $7742/5829 \approx 1.3$ times the size for female faculty. We could have obtained the same results using `margins` with the `predict(sigma)` option.

◀

▷ **Example 2: Marginal means**

We can use `margins` to compute the adjusted mean salary for male and female faculty when other factors are fixed at their means:

```
. margins female, atmeans
Adjusted predictions          Number of obs   =          725
Model VCE      : Conventional
Expression     : Linear prediction, predict()
at
  0.female     =   .7048276 (mean)
  1.female     =   .2951724 (mean)
  priorexp     =   2.89931 (mean)
  yrrank       =   7.397241 (mean)
  yrbg         =   12.52966 (mean)
  salfac       =   .9399862 (mean)
```

		Delta-method					
female		Margin	Std. Err.	z	P> z	[95% Conf. Interval]	
0		49036.29	420.3711	116.65	0.000	48212.37	49860.2
1		43822.74	569.9368	76.89	0.000	42705.69	44939.8

If everyone in the population were male faculty while holding all other factors at their mean values, the average salary would be \$49,036. If, instead, everyone were female faculty, the average salary would be \$43,823.

◀

Also see

[R] [hetregress](#) — Heteroskedastic linear regression

[U] [20 Estimation and postestimation commands](#)