Title

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betareg postestimation — Postestimation tools for betareg

Postestimation commands

The following postestimation commands are available after `betareg`:

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

*`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, conditional means, conditional variances, and equation-level scores.

Menu for predict

Statistics > Postestimation

Syntax for predict

> predict [*type*] *newvar* [*if*] [*in*] [, *statistic*]

> predict [*type*] *stub** [*if*] [*in*], <u>sc</u>ores

statistic	Description
Main	
<u>cmean</u>	conditional mean of the dependent variable; the default
<u>cvari</u>ance	conditional variance of the dependent variable
xb	linear prediction in the conditional-mean equation
<u>xbscale</u>	linear prediction in the conditional-scale equation
stdp	standard error of the linear prediction

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]

cmean, the default, calculates the conditional mean of the dependent variable.

cvariance calculates the conditional variance of the dependent variable.

xb calculates the linear prediction for the conditional-mean equation.

xbscale calculates the linear prediction for the conditional-scale equation.

stdp calculates the standard error of the linear prediction for the conditional-mean equation.

scores calculates equation-level score variables. The first new variable will contain the derivative of the log likelihood with respect to the conditional-mean equation, and the second new variable will contain the derivative of the log likelihood with respect to the conditional-scale equation.

margins

Description for margins

`margins` estimates margins of response for conditional means, conditional variances, and linear predictions.

Menu for margins

Statistics > Postestimation

Syntax for margins

> margins [*marginlist*] [, *options*]
>
> margins [*marginlist*] , <u>predict</u>(*statistic* ...) [<u>predict</u>(*statistic* ...) ...] [*options*]

statistic	Description
<u>cmean</u>	conditional mean of the dependent variable; the default
<u>cvariance</u>	conditional variance of the dependent variable
xb	linear prediction in the conditional-mean equation
<u>xbscale</u>	linear prediction in the conditional-scale equation
stdp	not allowed with margins
scores	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 3 in [R] **betareg**, we selected a model for school-level data on the fraction of students passing a state-required exam. In that example, we were interested in whether a voluntary summer program increased schools' pass rates. We continue that example to estimate an average treatment effect (ATE) of the program.

After reading in the data and fitting the model, we use margins to estimate the ATE.

```
. use https://www.stata-press.com/data/r18/sprogram
(Fictional summer program data)
. betareg prate freemeals pdonations i.summer, scale(freemeals) link(cloglog)
> slink(root) vce(robust)
  (output omitted)
```

We specify `vce(robust)` with the estimation command and `vce(unconditional)` with the `margins` command to obtain standard errors for a population ATE instead of a sample ATE.

```
. margins r.summer, contrast(nowald) vce(unconditional)
```

Contrasts of predictive margins   Number of obs = 1,000

Expression: Conditional mean of prate, predict()

	Contrast	Unconditional std. err.	[95% conf. interval]	
summer				
(Yes vs No)	.0890851	.008626	.0721784	.1059918

The average pass rate would be about 9% higher when all schools offered the program than when no school offered the program.

◁

Also see

[R] **betareg** — Beta regression

[U] **20 Estimation and postestimation commands**