

## biprobit postestimation — Postestimation tools for biprobit

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## Postestimation commands

The following postestimation commands are available after `biprobit`:

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>hausman</code>	Hausman's specification test
<code>lincom</code>	point estimates, standard errors, testing, and inference for linear combinations of coefficients
* <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 <code>margins</code> (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

\* `hausman` and `lrtest` are not appropriate with `svy` estimation results.

## predict

### Description for predict

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

### Menu for predict

Statistics > Postestimation

### Syntax for predict

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

```
predict [type] { stub* | newvareq1 newvareq2 newvarathrho } [if] [in] , scores
```

<i>statistic</i>	Description
Main	
<code>p11</code>	$\Phi_2(\mathbf{x}_j \mathbf{b}, \mathbf{z}_j \mathbf{g}, \rho)$ , predicted probability $\Pr(y_{1j} = 1, y_{2j} = 1)$ ; the default
<code>p10</code>	$\Phi_2(\mathbf{x}_j \mathbf{b}, -\mathbf{z}_j \mathbf{g}, -\rho)$ , predicted probability $\Pr(y_{1j} = 1, y_{2j} = 0)$
<code>p01</code>	$\Phi_2(-\mathbf{x}_j \mathbf{b}, \mathbf{z}_j \mathbf{g}, -\rho)$ , predicted probability $\Pr(y_{1j} = 0, y_{2j} = 1)$
<code>p00</code>	$\Phi_2(-\mathbf{x}_j \mathbf{b}, -\mathbf{z}_j \mathbf{g}, \rho)$ , predicted probability $\Pr(y_{1j} = 0, y_{2j} = 0)$
<code>pmarg1</code>	$\Phi(\mathbf{x}_j \mathbf{b})$ , marginal success probability for equation 1
<code>pmarg2</code>	$\Phi(\mathbf{z}_j \mathbf{g})$ , marginal success probability for equation 2
<code>pcond1</code>	$\Phi_2(\mathbf{x}_j \mathbf{b}, \mathbf{z}_j \mathbf{g}, \rho) / \Phi(\mathbf{z}_j \mathbf{g})$ , conditional probability of success for equation 1
<code>pcond2</code>	$\Phi_2(\mathbf{x}_j \mathbf{b}, \mathbf{z}_j \mathbf{g}, \rho) / \Phi(\mathbf{x}_j \mathbf{b})$ , conditional probability of success for equation 2
<code>xb1</code>	$\mathbf{x}_j \mathbf{b}$ , linear prediction for equation 1
<code>xb2</code>	$\mathbf{z}_j \mathbf{g}$ , linear prediction for equation 2
<code>stdp1</code>	standard error of the linear prediction for equation 1
<code>stdp2</code>	standard error of the linear prediction for equation 2

where  $\Phi()$  is the standard normal-distribution function and  $\Phi_2()$  is the bivariate standard normal-distribution function.

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

`p11`, the default, calculates the bivariate predicted probability  $\Pr(y_{1j} = 1, y_{2j} = 1)$ .

`p10` calculates the bivariate predicted probability  $\Pr(y_{1j} = 1, y_{2j} = 0)$ .

`p01` calculates the bivariate predicted probability  $\Pr(y_{1j} = 0, y_{2j} = 1)$ .

`p00` calculates the bivariate predicted probability  $\Pr(y_{1j} = 0, y_{2j} = 0)$ .

`pmarg1` calculates the univariate (marginal) predicted probability of success  $\Pr(y_{1j} = 1)$ .

`pmarg2` calculates the univariate (marginal) predicted probability of success  $\Pr(y_{2j} = 1)$ .

`pcond1` calculates the conditional (on success in equation 2) predicted probability of success  $\Pr(y_{1j} = 1, y_{2j} = 1) / \Pr(y_{2j} = 1)$ .

`pcond2` calculates the conditional (on success in equation 1) predicted probability of success  $\Pr(y_{1j} = 1, y_{2j} = 1) / \Pr(y_{1j} = 1)$ .

`xb1` calculates the probit linear prediction  $\mathbf{x}_j \mathbf{b}$ .

`xb2` calculates the probit linear prediction  $\mathbf{z}_j \mathbf{g}$ .

`stdp1` calculates the standard error of the linear prediction for equation 1.

`stdp2` calculates the standard error of the linear prediction for equation 2.

`nooffset` is relevant only if you specified `offset1(varname)` or `offset2(varname)` for `biprobit`.

It modifies the calculations made by `predict` so that they ignore the offset variables; the linear predictions are treated as  $\mathbf{x}_j \mathbf{b}$  rather than as  $\mathbf{x}_j \mathbf{b} + \text{offset}_{1j}$  and  $\mathbf{z}_j \boldsymbol{\gamma}$  rather than as  $\mathbf{z}_j \boldsymbol{\gamma} + \text{offset}_{2j}$ .

`scores` calculates equation-level score variables.

The first new variable will contain  $\partial \ln L / \partial (\mathbf{x}_j \boldsymbol{\beta})$ .

The second new variable will contain  $\partial \ln L / \partial (\mathbf{z}_j \boldsymbol{\gamma})$ .

The third new variable will contain  $\partial \ln L / \partial (\text{atanh } \rho)$ .

## margins

### Description for margins

`margins` estimates margins of response for probabilities and linear predictions.

### Menu for margins

Statistics > Postestimation

### Syntax for margins

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

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

<i>statistic</i>	Description
<code>p11</code>	$\Phi_2(\mathbf{x}_j\mathbf{b}, \mathbf{z}_j\mathbf{g}, \rho)$ , predicted probability $\Pr(y_{1j} = 1, y_{2j} = 1)$ ; the default
<code>p10</code>	$\Phi_2(\mathbf{x}_j\mathbf{b}, -\mathbf{z}_j\mathbf{g}, -\rho)$ , predicted probability $\Pr(y_{1j} = 1, y_{2j} = 0)$
<code>p01</code>	$\Phi_2(-\mathbf{x}_j\mathbf{b}, \mathbf{z}_j\mathbf{g}, -\rho)$ , predicted probability $\Pr(y_{1j} = 0, y_{2j} = 1)$
<code>p00</code>	$\Phi_2(-\mathbf{x}_j\mathbf{b}, -\mathbf{z}_j\mathbf{g}, \rho)$ , predicted probability $\Pr(y_{1j} = 0, y_{2j} = 0)$
<code>pmarg1</code>	$\Phi(\mathbf{x}_j\mathbf{b})$ , marginal success probability for equation 1
<code>pmarg2</code>	$\Phi(\mathbf{z}_j\mathbf{g})$ , marginal success probability for equation 2
<code>pcond1</code>	$\Phi_2(\mathbf{x}_j\mathbf{b}, \mathbf{z}_j\mathbf{g}, \rho) / \Phi(\mathbf{z}_j\mathbf{g})$ , conditional probability of success for equation 1
<code>pcond2</code>	$\Phi_2(\mathbf{x}_j\mathbf{b}, \mathbf{z}_j\mathbf{g}, \rho) / \Phi(\mathbf{x}_j\mathbf{b})$ , conditional probability of success for equation 2
<code>xb1</code>	$\mathbf{x}_j\mathbf{b}$ , linear prediction for equation 1
<code>xb2</code>	$\mathbf{z}_j\mathbf{g}$ , linear prediction for equation 2
<code>stdp1</code>	not allowed with <code>margins</code>
<code>stdp2</code>	not allowed with <code>margins</code>

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

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

### Also see

[\[R\] biprobit](#) — Bivariate probit regression

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