

## Postestimation commands

The following postestimation command is of special interest after `xtnlogit`:

Command	Description
<code>estat sd</code>	display variance components as standard deviations and correlations

The following standard postestimation commands are also available:

Command	Description
<code>contrast</code>	contrasts and ANOVA-style joint tests of parameters
<code>estat ic</code>	Akaike's, consistent Akaike's, corrected Akaike's, and Schwarz's Bayesian information criteria (AIC, CAIC, AICc, and BIC, respectively)
<code>estat summarize</code>	summary statistics for the estimation sample
<code>estat vce</code>	variance–covariance matrix of the estimators (VCE)
<code>estimates</code>	cataloging estimation results
<code>etable</code>	table of estimation results
* <code>hausman</code>	Hausman's specification test
<code>lincom</code>	point estimates, standard errors, testing, and inference for linear combinations of parameters
* <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 parameters
<code>predict</code>	probabilities, etc.
<code>predictnl</code>	point estimates, standard errors, testing, and inference for generalized predictions
<code>pwcompare</code>	pairwise comparisons of parameters
<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 and linear predictions.

## Menu for predict

Statistics > Postestimation

## Syntax for predict

### Random-effects model

```
predict [type] { stub* | newvar | newvarlist } [if] [in] [ , RE_statistic  
outcome(outcome) ]  
  
predict [type] { stub* | newvarlist } [if] [in] , scores
```

### Fixed-effects model

```
predict [type] { stub* | newvar | newvarlist } [if] [in] [ , FE_statistic  
outcome(outcome) ]  
  
predict [type] { stub* | newvarlist } [if] [in] , scores
```

RE_statistic	Description
Main	
pr	marginal probability of the specified outcome; the default
pcr	conditional probability of the specified outcome
pu0	probability of the specified outcome, assuming zero random effects
xb	linear prediction of the specified outcome, including random effects
xb0	linear prediction of the specified outcome, assuming zero random effects

FE_statistic	Description
Main	
pu0	probability of the specified outcome, assuming zero fixed effects; the default
xb	linear prediction for the specified outcome, assuming zero fixed effects

You specify one or *k* new variables, where *k* is the number of outcomes. If you specify one new variable and you do not specify outcome(), then outcome(#1) is assumed.

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

`pr` (after `xtmlogit, re` only) calculates predicted probabilities that are marginal with respect to the random effects, which means that the probabilities are calculated by integrating the prediction function with respect to the random effect over its entire support. This prediction method is of primary interest if population-averaged probabilities are desired. If `outcome()` is not specified, `pr` defaults to the first outcome. This is the default for the random-effects model.

`pcr` (after `xtmlogit, re` only) calculates predicted probabilities that are conditional on the random effects. In contrast to `predict, pr`, the random effects are not integrated out but are set to their predicted value when predictions are computed from the logistic cumulative distribution function. The random effects are calculated using their posterior means, which are approximated using mean-variance adaptive Gaussian quadrature. This prediction method is useful if observation-level predictions, rather than averaged predicted probabilities, are of interest. If `outcome()` is not specified, `pcr` defaults to the first outcome.

`pu0` calculates predicted probabilities, assuming that the fixed or random effect for that observation's panel is zero ( $u_i = 0$ ). If `outcome()` is not specified, `pu0` defaults to the first outcome. This is the default for the fixed-effects model.

`xb` calculates the linear prediction. This includes the random effect in the case of `xtmlogit, re`. In the case of `xtmlogit, fe`, the fixed effect is assumed to be zero. If `outcome()` is not specified, `xb` defaults to the first outcome.

`xb0` (after `xtmlogit, re` only) calculates the linear prediction, excluding the random effect. If `outcome()` is not specified, `xb0` defaults to the first outcome.

`scores` calculates parameter-level scores, the first derivatives of the log likelihood with respect to  $\beta_j$ .

`outcome(outcome)` specifies the outcome for which the predicted probabilities or linear predictions are to be calculated. `outcome()` can only be used when one variable is specified. `outcome()` should contain either one value of the dependent variable or one of #1, #2, ..., with #1 meaning the first category of the dependent variable, #2 meaning the second category, etc.

# 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]
```

### Random-effects model

statistic	Description
default	marginal probability for each outcome
pr	marginal probability of the specified outcome
pu0	probability of the specified outcome, assuming random effect is zero
xb	linear prediction of the specified outcome equation, including random effect
xb0	linear prediction of the specified outcome equation, assuming random effect is zero
pcr	not allowed with margins

### Fixed-effects model

statistic	Description
default	probability for each outcome, assuming fixed effect is zero
pu0	probability of the specified outcome, assuming fixed effect is zero
xb	linear prediction of the specified outcome equation, assuming fixed effect is zero

pr, pu0, xb, and xb0 default to the first outcome when outcome() is not specified.

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

For the full syntax, see [R] margins.

## Also see

[XT] xtnlogit — Fixed-effects and random-effects multinomial logit models

### [U] 20 Estimation and postestimation commands

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