Title

xtlogit postestimation — Postestimation tools for xtlogit

Description | Syntax for predict | Menu for predict | Options for predict
Remarks and examples | Also see

Description

The following postestimation commands are available after `xtlogit`:

Command	Description
`contrast`	contrasts and ANOVA-style joint tests of estimates
`estat ic`[1]	Akaike's and Schwarz's Bayesian information criteria (AIC and BIC)
`estat summarize`	summary statistics for the estimation sample
`estat vce`	variance–covariance matrix of the estimators (VCE)
`estimates`	cataloging estimation results
`forecast`[2]	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`[3]	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`	predictions, residuals, influence statistics, and other diagnostic measures
`predictnl`	point estimates, standard errors, testing, and inference for generalized predictions
`pwcompare`	pairwise comparisons of estimates
`test`	Wald tests of simple and composite linear hypotheses
`testnl`	Wald tests of nonlinear hypotheses

[1] `estat ic` is not appropriate after `xtlogit, pa`.
[2] `forecast` is not appropriate with `mi` estimation results or after `xtlogit, fe`.
[3] The default prediction statistic for `xtlogit, fe`, `pu1`, cannot be correctly handled by `margins`; however, `margins` can be used after `xtlogit, fe` with the `predict(pu0)` option or the `predict(xb)` option.

Syntax for predict

Random-effects model

predict [*type*] *newvar* [*if*] [*in*] [, *RE_statistic* nooffset]

Fixed-effects model

predict [*type*] *newvar* [*if*] [*in*] [, *FE_statistic* nooffset]

Population-averaged model

predict [*type*] *newvar* [*if*] [*in*] [, *PA_statistic* nooffset]

RE_statistic	Description
Main	
xb	linear prediction; the default
pu0	probability of a positive outcome assuming that the random effect is zero
stdp	standard error of the linear prediction

FE_statistic	Description
Main	
pc1	predicted probability of a positive outcome conditional on one positive outcome within group; the default
pu0	probability of a positive outcome assuming that the fixed effect is zero
xb	linear prediction
stdp	standard error of the linear prediction

PA_statistic	Description
Main	
mu	predicted probability of *depvar*; considers the offset()
rate	predicted probability of *depvar*
xb	linear prediction
stdp	standard error of the linear prediction
score	first derivative of the log likelihood with respect to $\mathbf{x}_j\boldsymbol{\beta}$

These statistics are available both in and out of sample; type `predict ... if e(sample) ...` if wanted only for the estimation sample.

The predicted probability for the fixed-effects model is conditional on there being only one outcome per group. See [R] **clogit** for details.

Menu for predict

Statistics > Postestimation > Predictions, residuals, etc.

Options for predict

Main

`xb` calculates the linear prediction. This is the default for the random-effects model.

`pc1` calculates the predicted probability of a positive outcome conditional on one positive outcome within group. This is the default for the fixed-effects model.

`mu` and `rate` both calculate the predicted probability of *depvar*. `mu` takes into account the `offset()`, and `rate` ignores those adjustments. `mu` and `rate` are equivalent if you did not specify `offset()`. `mu` is the default for the population-averaged model.

`pu0` calculates the probability of a positive outcome, assuming that the fixed or random effect for that observation's panel is zero ($\nu = 0$). This may not be similar to the proportion of observed outcomes in the group.

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

`score` calculates the equation-level score, $u_j = \partial \ln L_j(\mathbf{x}_j\boldsymbol{\beta})/\partial(\mathbf{x}_j\boldsymbol{\beta})$.

`nooffset` is relevant only if you specified `offset(`*varname*`)` for `xtlogit`. This option modifies the calculations made by `predict` so that they ignore the offset variable; the linear prediction is treated as $\mathbf{x}_{it}\boldsymbol{\beta}$ rather than $\mathbf{x}_{it}\boldsymbol{\beta} + \text{offset}_{it}$.

Remarks and examples

stata.com

▷ Example 1

In example 1 of [XT] **xtlogit**, we fit a random-effects model of union status on the person's age and level of schooling, whether she lived in an urban area, and whether she lived in the south. In fact, we included the full interaction between `south` and `year` to capture both the overall effect of residing in the south and a separate time-trend for southerners. To test whether residing in the south affects union status, we must determine whether `1.south` and `south#c.year` are jointly significant. First, we refit our model, store the estimation results for later use, and use `test` to conduct a Wald test of the joint significance of those two variables' parameters:

```
. use http://www.stata-press.com/data/r13/union
(NLS Women 14-24 in 1968)
. xtlogit union age grade not_smsa south##c.year
  (output omitted )
. estimates store fullmodel
. test 1.south 1.south#c.year
 ( 1)  [union]1.south = 0
 ( 2)  [union]1.south#c.year = 0
           chi2(  2) =  143.93
         Prob > chi2 =    0.0000
```

The test statistic is clearly significant, so we reject the null hypothesis that the coefficients are jointly zero and conclude that living in the south does significantly affect union status.

We can also test our hypothesis with a likelihood-ratio test. Here we fit the model without `south##c.year` and then call `lrtest` to compare this restricted model to the full model:

```
. xtlogit union age grade not_smsa
  (output omitted )
. lrtest fullmodel .
Likelihood-ratio test                                 LR chi2(3)  =    146.55
(Assumption: . nested in fullmodel)                   Prob > chi2 =    0.0000
```

These results confirm our finding that living in the south affects union status.

◁

Also see

[XT] **xtlogit** — Fixed-effects, random-effects, and population-averaged logit models

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