Postestimation commands

The following postestimation commands are available after `newey`:

Command	Description
contrast	contrasts and ANOVA-style joint tests of parameters
estat summarize	summary statistics for the estimation sample
estat vce	variance–covariance matrix of the estimators (VCE)
estimates	cataloging estimation results
etable	table of estimation results
forecast	dynamic forecasts and simulations
lincom	point estimates, standard errors, testing, and inference for linear combinations of parameters
linktest	link test for model specification
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 parameters
predict	predictions and their SEs, residuals, etc.
predictnl	point estimates, standard errors, testing, and inference for generalized predictions
pwcompare	pairwise comparisons of parameters
test	Wald tests of simple and composite linear hypotheses
testnl	Wald tests of nonlinear hypotheses

predict

Description for predict

predict creates a new variable containing predictions such as linear predictions and residuals.

Menu for predict

Statistics > Postestimation

Syntax for predict

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

statistic	Description
Main	
xb	linear prediction; the default
stdp	standard error of the linear prediction
<u>resid</u>uals	residuals

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 error of the linear prediction.

residuals calculates the residuals.

margins

Description for margins

margins estimates margins of response for linear predictions.

Menu for margins

Statistics > Postestimation

Syntax for margins

margins [*marginlist*] [, *options*]

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

statistic	Description
xb	linear prediction; the default
stdp	not allowed with margins
<u>res</u>iduals	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

We use the test command after newey to illustrate the importance of accounting for the presence of serial correlation in the error term. The dataset contains daily stock returns of three car manufacturers from January 2, 2003, to December 31, 2010, in the variables toyota, nissan, and honda.

We fit a model for the Nissan stock returns on the Honda and Toyota stock returns, and we use estat bgodfrey to test for serial correlation of order one:

```
. use https://www.stata-press.com/data/r19/stocks
(Data from Yahoo! Finance)

. regress nissan honda toyota
(output omitted )

. estat bgodfrey
```

Breusch–Godfrey LM test for autocorrelation

lags(*p*)	chi2	df	Prob > chi2
1	6.415	1	0.0113

H0: no serial correlation

The result implies that the error term is serially correlated; therefore, we should rather fit the model with newey. But let's use the outcome from regress to conduct a test for the statistical significance of a particular linear combination of the two coefficients in the regression:

```
. test 1.15*honda+toyota = 1
 ( 1)  1.15*honda + toyota = 1
       F(  1,  2012) =    5.52
            Prob > F =    0.0189
```

We reject the null hypothesis that the linear combination is valid. Let's see if the conclusion remains the same when we fit the model with newey, obtaining the Newey–West standard errors for the OLS coefficient estimates.

```
. newey nissan honda toyota,lag(1)
  (output omitted)
. test 1.15*honda+toyota = 1
 ( 1)  1.15*honda + toyota = 1
       F(  1,  2012) =    2.57
            Prob > F =    0.1088
```

The conclusion would be the opposite, which illustrates the importance of using the proper estimator for the standard errors.

◁

▷ Example 2

We want to produce forecasts based on dynamic regressions for each of the three stocks. We will treat the stock returns for toyota as a leading indicator for the two other stocks. We also check for autocorrelation with the Breusch–Godfrey test.

```
. use https://www.stata-press.com/data/r19/stocks
(Data from Yahoo! Finance)
. regress toyota l(1/2).toyota
  (output omitted)
. estat bgodfrey
Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	4.373	1	0.0365

H0: no serial correlation

```
. regress nissan l(1/2).nissan l.toyota
  (output omitted)
. estat bgodfrey
Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	0.099	1	0.7536

H0: no serial correlation

```
. regress honda l(1/2).honda l.toyota
  (output omitted)

. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	0.923	1	0.3367

H0: no serial correlation

The first result indicates that we should consider using newey to fit the model for toyota. The point forecasts would not be actually affected because newey produces the same OLS coefficient estimates reported by regress. However, if we were interested in obtaining measures of uncertainty surrounding the point forecasts, we should then use the results from newey for that first equation.

Let's illustrate the use of forecast with newey for the first equation and regress for the two other equations. We first declare the forecast model:

```
. forecast create stocksmodel
  Forecast model stocksmodel started.
```

Then we refit the equations and add them to the forecast model:

```
. quietly newey toyota l(1/2).toyota, lag(1)

. estimates store eq_toyota

. forecast estimates eq_toyota
  Added estimation results from newey.
  Forecast model stocksmodel now contains 1 endogenous variable.

. quietly regress nissan l(1/2).nissan l.toyota

. estimates store eq_nissan

. forecast estimates eq_nissan
  Added estimation results from regress.
  Forecast model stocksmodel now contains 2 endogenous variables.

. quietly regress honda l(1/2).honda l.toyota

. estimates store eq_honda

. forecast estimates eq_honda
  Added estimation results from regress.
  Forecast model stocksmodel now contains 3 endogenous variables.
```

We use `tsappend` to add the number of periods for the forecast, and then we obtain the predicted values with `forecast solve`:
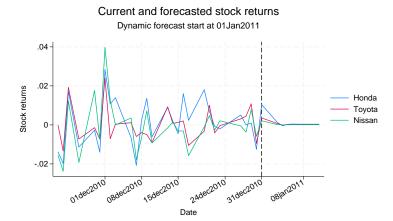
```
. tsappend, add(7)
. forecast solve, prefix(stk_)
Computing dynamic forecasts for model stocksmodel.
─────────────────────────────────────────────
Starting period:  2016
Ending period:    2022
Forecast prefix:  stk_
2016:  ...........
2017:  ..........
2018:  ..........
2019:  .........
2020:  ........
2021:  .......
2022:  .......
Forecast 3 variables spanning 7 periods.
─────────────────────────────────────────────
```

The graph below shows several interesting results. First, the stock returns of the competitor (`toyota`) does not seem to be a leading indicator for the stock returns of the two other companies (otherwise, the patterns for the movements in `nissan` and `honda` would be following the recent past movements in `toyota`). You can actually fit the models above for `nissan` and `honda` to confirm that the coefficient estimate for the first lag of `toyota` is not significant in any of the two equations. Second, immediately after the second forecasted period, there is basically no variation in the predictions, which indicates the very short-run predicting influence of past history on the forecasts of the three stock returns.

Current and forecasted stock returns
Dynamic forecast start at 01Jan2011

Also see

[TS] **newey** — Regression with Newey–West standard errors

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

For suggested citations, see the FAQ on citing Stata documentation.