mgarch dcc postestimation — Postestimation tools for mgarch dcc

Postestimation commands	predict	margins	Remarks and examples
Methods and formulas	Also see		

Postestimation commands

The following standard postestimation commands are available after mgarch dcc:

Description
contrasts and ANOVA-style joint tests of parameters
Akaike's, consistent Akaike's, corrected Akaike's, and Schwarz's Bayesian infor- mation criteria (AIC, CAIC, AICc, and BIC, respectively)
summary statistics for the estimation sample
variance-covariance matrix of the estimators (VCE)
cataloging estimation results
table of estimation results
dynamic forecasts and simulations
point estimates, standard errors, testing, and inference for linear combinations of parameters
likelihood-ratio test
marginal means, predictive margins, marginal effects, and average marginal effects
graph the results from margins (profile plots, interaction plots, etc.)
point estimates, standard errors, testing, and inference for nonlinear combinations of parameters
linear predictions, residuals, variances, correlations
point estimates, standard errors, testing, and inference for generalized predictions
pairwise comparisons of parameters
Wald tests of simple and composite linear hypotheses
Wald tests of nonlinear hypotheses

predict

Description for predict

predict creates a new variable containing predictions such as linear predictions and conditional variances, covariances, and correlations. All predictions are available as static one-step-ahead predictions or as dynamic multistep predictions, and you can control when dynamic predictions begin.

Menu for predict

Statistics > Postestimation

Syntax for predict

predict [type] { stub* | newvarlist } [if] [in] [, statistic options]

statistic	Description	
Main		
xb	linear prediction; the default	
<u>r</u> esiduals	residuals	
variance	conditional variances and covariances	
<u>c</u> orrelation	conditional correlations	
These statistics are available the estimation sample.	both in and out of sample; type predict if e(sample) if wanted only for	
options	Description	
Options equation(eqnames)	names of equations for which predictions are made	

Options for predict

Main 🗋

xb, the default, calculates the linear predictions of the dependent variables.

dynamic(time_constant) begin dynamic forecast at specified time

residuals calculates the residuals.

variance predicts the conditional variances and conditional covariances.

correlation predicts the conditional correlations.

Options

equation(*eqnames*) specifies the equation for which the predictions are calculated. Use this option to predict a statistic for a particular equation. Equation names, such as equation(income), are used to identify equations.

One equation name may be specified when predicting the dependent variable, the residuals, or the conditional variance. For example, specifying equation(income) causes predict to predict income, and specifying variance equation(income) causes predict to predict the conditional variance of income.

Two equations may be specified when predicting a conditional variance or covariance. For example, specifying equation(income, consumption) variance causes predict to predict the conditional covariance of income and consumption.

dynamic(*time_constant*) specifies when predict starts producing dynamic forecasts. The specified *time_constant* must be in the scale of the time variable specified in tsset, and the *time_constant* must be inside a sample for which observations on the dependent variables are available. For example, dynamic(tq(2008q4)) causes dynamic predictions to begin in the fourth quarter of 2008, assuming that your time variable is quarterly; see [D] **Datetime**. If the model contains exogenous variables, they must be present for the whole predicted sample. dynamic() may not be specified with residuals.

margins

Description for margins

margins estimates margins of response for linear predictions and conditional variances, covariances, and correlations. All predictions are available as static one-step-ahead predictions or as dynamic multistep predictions, and you can control when dynamic predictions begin.

Menu for margins

Statistics > Postestimation

Syntax for margins

<pre>margins [marginlist] [, options]</pre>			
<pre>margins [marginlist], predict(statistic) [predict(statistic)] [options]</pre>			
statistic	Description		
default	linear predictions for each equation		
xb	linear prediction for a specified equation		
variance	conditional variances and covariances		
<u>c</u> orrelation	conditional correlations		
<u>r</u> esiduals	not allowed with margins		

xb defaults to the first equation.

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

For the full syntax, see [R] margins.

Remarks and examples

We assume that you have already read [TS] **mgarch dcc**. In this entry, we use predict after mgarch dcc to make in-sample and out-of-sample forecasts.

Example 1: Dynamic forecasts

In this example, we obtain dynamic forecasts for the Toyota, Nissan, and Honda stock returns modeled in example 2 of [TS] **mgarch dcc**. In the output below, we reestimate the parameters of the model, use tsappend (see [TS] **tsappend**) to extend the data, and use predict to obtain in-sample one-step-ahead forecasts and dynamic forecasts of the conditional variances of the returns. We graph the forecasts below.

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

```
. quietly mgarch dcc (toyota nissan = , noconstant)
```

```
> (honda = L.nissan, noconstant), arch(1) garch(1)
```

- . tsappend, add(50)
- . predict H*, variance dynamic(2016)



Recent in-sample one-step-ahead forecasts are plotted to the left of the vertical line in the above graph, and the dynamic out-of-sample forecasts appear to the right of the vertical line. The graph shows the tail end of the huge increase in return volatility that took place in 2008 and 2009. It also shows that the dynamic forecasts quickly converge.

4

Methods and formulas

All one-step predictions are obtained by substituting the parameter estimates into the model. The estimated unconditional variance matrix of the disturbances, $\widehat{\Sigma}$, is the initial value for the ARCH and GARCH terms. The postestimation routines recompute $\widehat{\Sigma}$ using the prediction sample, the parameter estimates stored in e(b), and (2) in Methods and formulas of [TS] mgarch dcc.

For observations in which the residuals are missing, the estimated unconditional variance matrix of the disturbances is used in place of the outer product of the residuals.

Dynamic predictions of the dependent variables use previously predicted values beginning in the period specified by dynamic().

Dynamic variance predictions are implemented by substituting $\widehat{\Sigma}$ for the outer product of the residuals beginning in the period specified in dynamic().

Also see

- [TS] mgarch dcc Dynamic conditional correlation multivariate GARCH model
- [U] 20 Estimation and postestimation commands

Stata, Stata Press, and Mata are registered trademarks of StataCorp LLC. Stata and Stata Press are registered trademarks with the World Intellectual Property Organization of the United Nations. StataNow and NetCourseNow are trademarks of StataCorp LLC. Other brand and product names are registered trademarks or trademarks of their respective companies. Copyright © 1985–2025 StataCorp LLC, College Station, TX, USA. All rights reserved.



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