Forecast [TD]

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Forecast in python

To forecast with arch library we can use

f = fitted_model.forecast(horizon=tout)

then f.variance is the conditional variance. The last row of the data-frame is the forecast. The first row is the last in-sample estimate.

To execute Monte-Carlo simulations
f = fitted_model.forecast(horizon=tout,simulations=nsim,method='simulation')

then f.simulations.variances to obtain the simulations.

To use the calibrated a calibrate model on an out-of-sample data-set you can set up a last observation during the regression and then fitted_model.fix(params) to extend to the out-of-sample

TD

Use the long_series_logret.csv. Starts from 2006. Uses 1500 days in-sample 5 days out-of-sample

1. Fit a GARCH(1,1) and plot the predicted conditional variance till convergence. Can you obtain the convergence value from the parameter of the regression.
2. Simulates with a Monte-Carlo 1000 realizations and plot the expected value the confidence intervals and the realized out-of-sample for all the lags.
3. With a sliding window of 5 days verify that the coverage of the Monte-Carlo confidence is respected for all the lags. Plot the average L1 deviation between the model expectation and the realization.
4. Do the same of point 3 with an ARCH(5), and compare the results.