*Report*

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Advanced Methods in Quantitative Finance

For the exercise I used the DCC GARCH to estimate the Value at Risk in Matlab. For the Data I used stock data from ten major automobile companies (Peugeot, Renault, Volvo, BMW, Daimler, VW, Toyota, GM, Ford and Fiat Chrysler), for which I took daily stock data between 1.3.2014 to 31.12.2015 resulting in 503 time points per stock. The stocks are equally weighted in the Portfolio. For the moving window I took 70 as size.

The expected shortfall of 38.8714 for the one percent level and 28.8114 for the five percent level, meaning a loss in the one-digit percentage area for the portfolio value moving around 700, is as expected.

In the backtest for the Value at Risk the violation ratio at one percent is with 0.0116 slightly higher than expected but still near the threshold. The violation ration for the five percent quantile on the other side is with 0.0394 more than one percentage point below, meaning the actual number of violations is ca. 20% lower than estimated.