Homework 8
Due Friday, April 8, 2016, at 5:00 p.m.
Total 10 points

Instructions. This is a group assignment. Groups may include up to 4 people. Please submit a Word or .pdf document with your solutions via the Compass site prior to 5:00 p.m. on Friday, April 8. Please also submit the R, Matlab, or Python scripts/computer programs and data files that you used.

Assignment. It is toward the end of the trading day on Tuesday, August 5, 2014. For simplicity, assume that it is just after the close of trading, so that you know prices and interest rates from the close of trading on August 5, 2014. Morgan Stanley, a major U.S. investment bank, is selling an issue of Fixed Income Buffered Securities due August 10, 2015, with Payments on the Securities Based on the Worst Performing of the iShares® Russell 2000® ETF and the iShares® MSCI EAFE ETF. The buffered securities are debt instruments issued by Morgan Stanley, but have cash flows based on the performance of the two ETFs. Your job is to estimate the fair market value of the securities as of the trade date August 5, 2014.

The buffered securities are described in detail in the pricing supplement:

http://www.sec.gov/Archives/edgar/data/895421/000095010314005563/dp48559_424b2-1554.htm

Please use NGARCH(1,1) and DCC(1,1) models and Monte Carlo simulation to estimate the value of the securities. In doing this, assume that there are no risk premia for bearing the risks of changes in volatilities or correlations.

Then, please prepare a Word or pdf file that describes what you did, e.g. the sample you used the estimate the models, and the parameter estimates you obtained, and the simulation you carried out to estimate the value of the security. Then please upload your Word or pdf file, computer programs, and data files to the Compass site.