

## Hand in assignment 2: Multivariate conditional volatility models

The answers to these questions need to be submitted on moodle by the 27th November 2022 11:59pm. Your work should include two files: 1) a brief report with graphs, numerical results and clear explanations (\*.pdf file) and; 2) R code.

Download daily prices for FB (META), Amazon (AMZN), Tesla (TSLA), Apple (AAPL), Netflix (NFLX) and Alphabet (GOOG) stock from 1/1/13 to 15/10/22.

1. Using your data perform a principal component analysis. What fraction of the total variance is explained by each component? Give an interpretation of the first three principal components. (25 marks)
2. Using all principal components and the GARCH(1,1) specification, estimate the conditional covariance matrix. (25 marks)
3. Plot the estimated conditional correlations for Tesla vs Apple stock. Comment on your results. (20 marks)
4. Estimate a second conditional covariance matrix using the minimum number of principal components such that the fraction of the total variance explained is at least 85%. (20 marks)
5. For Tesla vs Apple stock plot your conditional correlation estimates from part (2) and (4). How do they compare? (10 marks)

Assignment Project Exam Help

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