Homework

Master in Big Data

Helena Veiga[1]

[1]Address: Department of Statistics, Universidad Carlos III Madrid, Calle Madrid 126, 28903 Getafe, Spain. E-mail: mhveiga@est-econ.uc3m.es. Phone:+34916248902.

Contents

0.1 Data Analysis

Problem 1 *The aim of this part of the section is to analyze some financial time series returns.*

1. *Download a daily series of quotes from http://finance.yahoo.com/. Range January 3, 1990 till March 11, 2019. If data is not available from January 3, 1990 use the oldest date available.*

2. *Analyze the series in terms of sample properties and comment the results.*

0.2 Univariate GARCH models

Problem 2 *The aim of this part of the section is to fit a GARCH-type model to a financial time series returns.*

1. *Fit a GARCH(1,1) model with errors that follow a Gaussian distribution to the daily returns and comment on the implied volatility persistence obtained with this model.*

2. *Is the model able to fit the characteristics of the data (mainly asymmetry)? Use a test to justify your answer.*

3. *According to the previous answer, fit a GARCH-type model to your data and compare its estimation results to those obtained with the GARCH(1,1).*

4. *Plot the NIC of the chosen model and explain it.*