Practices to Price Fluctuations

András Zempléni

March 21,2019

1 Bivariate GEV distributions (contd)

Task 1.1 *Let us fit bivariate extreme value models to simulated data and to the block-maxima of the Nasdaq-DJIA data set and compare the estimated quantiles to the observed (known) ones!*

2 Peaks-over-threshold models

Task 2.1 *To be solved on paper: which Pareto distribution do we get if the observations are iid a/uniform b/exponential?*

Task 2.2 *Let us check the dependence of GPD distributions on the parameters! Use maximum likelihood method for estimating the parameters of simulated GPD samples!*

Task 2.3 *Let us estimate the VaR (return level) values for GPD models! Apply the profile likelihood method for estimating confidence intervals!*

Task 2.4 *Investigate the effect of the threshold selection for the parameter estimation in case of normal samples! Calculate the mean excess plot!*

Task 2.5 *Let us fit GPD models to the Nasdaq-logreturn data, check the goodness-of-fit and compare the estimated quantiles to the observed ones!*