

Practices to Price Fluctuations

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1 Copulas

Task 1.1 *Let us investigate the dependence of the bivariate stock-index data `nasdaqdjia2005-2010.txt` by copulas.*

1. *Test the ellipticity of the data*
2. *Fit different copulas to the data, check the fit by graphical methods and check the stability of the parameters by moving window-method*
3. *Check the goodness of fit by the Kendall-process and the Rosenblatt-transformation*

Task 1.2 *Let us utilize the advantage of the copula approach: it allows for the separation of the marginal distributions from the dependence. Let us simulate data from bivariate distribution, which has Clayton copula for its dependence and exponentially and normally distributed margins. Let us estimate the parameters and compare the original data to the estimations.*

2 Vine copulas

Task 2.1 *Fit a 5-dimensional vine copula to the first 5 stocks in the "50 equities" data*

1. *Fit a vine copula to the data*
2. *Check the goodness of fit by a simple procedure!*