Abstract

Multivariate volatility models, such as DCC MGARCH, are estimated under assumption of multivariate normal distribution of random variables, while this assumption have been rejected by empirical evidence. Therefore, the estimated conditional correlation may not explain the whole dependence structure, since under non-normality the linear correlation is only one of the dependency measures.

The aim of this thesis is to employ a copula function to the DCC MGARCH model, as copulas are able to link non-normal marginal distributions to create corresponding multivariate joint distribution. The copula-based MGARCH model with uncorrelated dependent errors permits to model conditional correlation by DCC-MGARCH and dependence by the copula function, separately and simultaneously. In other words the model aims to explain additional dependence not captured by traditional DCC MGARCH model due to assumption of normality. In the empirical analysis we apply the model on datasets consisting primarily of stocks of the PX Index and on the pair of S&P500 and NASDAQ100 in order to compare the copula-based MGARCH model to traditional DCC MGARCH in terms of capturing the dependency structure.