
In this paper, we present a brief description of multivariate GARCH models. Usually, their parameter estimates are obtained using maximum likelihood methods. Considering new methodological processes to model the volatilities of time series, we need to use another inference approach to get estimates for the parameters of the models, since we can have great difficulties to obtain the maximum likelihood estimates due to the complexity of the likelihood function. In this way, we obtain the inferences for the volatilities of time series under a Bayesian approach, especially using popular simulation algorithms as the Markov Chain Monte Carlo (MCMC) methods. As an application to illustrate the proposed methodology, we analyze log-returns of IBOVESPA and Dow Jones Industrial in a weekly basis from 04/27/1993 to 11/03/2008.

Key words: multivariate GARCH, stochastic volatility models, financial time series, bayesian methodology, MCMC methods. JEL: G17, G19, C11, C32, C53.