

We study multivariate ARCH and GARCH models and their subsequent application to simulated and real data. In discussed models the conditional variance matrix is considered to be a function of lagged data process which is the subject of study. In case of GARCH models the conditional variance matrix is dependent on own lagged values, too. First of all, we deal with univariate ARCH and GARCH models to get some theoretical basis. The subsequent study extends this basis to multivariate models. A survey of multivariate GARCH models is presented in the next part of this thesis. Further study is devoted to maximum likelihood estimators of these models and we deal with alternatives to multivariate normal distribution which is a standard assumption of this method. We occupy ourselves with tests of these models, too. We mention both preestimation tests and postestimation tests to verify the adequacy of models. In conclusion we give practical examples which show difficulties of applications of these models for real data.