ABSTRACT

Bachelor thesis: p. 76, fig. 7, tabl. 33, applications 3, references 19.

The topic of thesis is “Forecasting heteroscedastic processes and estimation of market financial risk”

Object of thesis - financial market risk and approaches to its analysis. The role of risk management has increased significantly over the past decade.

Subject of thesis - several approaches to measure the financial risk, including parametric VaR and its extension CVaR.

A comparative analysis of heteroscedastic models ARCH, GARCH and stochastic volatility estimated using the data on the share price if several IT sector corporations was done in the paper. Parameters of ARCH, GARCH models have been estimated using simple regression model. Parameters of stochastic volatility model were estimated by the method of Monte Carlo Markov Chain by Gibbs sampling. The accuracy of the conditional variance forecasts based on the selected by heteroscedastic models was compared.

The measures of financial market risk VaR and CVaR were analyzed. Measures of parametric risk were constructed using conditional variance forecasts obtained from ARCH, GARCH and stochastic volatility models. The using of heavy tail distributions to construct VaR was studied by an example of exponential distribution and compared with the results obtained by using normal Gaussian distribution. The properties of CVaR were compared to the usual VaR.

Measures of financial risk were estimated based on the number of events when the losses overwhelmed the financial reserves and based on statistic that measured the usage of additional capital reserves.

ARCH, GARCH, STOHASTIC VOLATILITY, MARKET RISK, VAR, CONDITIONAL VAR