ABSTRACT

Thesis: 102 p., 26 fig., 6 tab., 2 applications, 13 sources.

Object of the study – transient heteroscedastic financial and economic processes.

Subject of the research – mathematical models and methods that describe heteroscedastic processes, the estimation models of market risks and estimation and analysis of the quality of forecasts.

Methods - theory of modeling and forecasting time series, statistical methods of analizing financial risk.

The aim is to analyze the subject of a study to investigate the effectiveness of existing traditional methods of market forecasting financial risk Value at Risk - historical method and the Monte Carlo method and apply a modified risk algorithm Conditional Value at Risk.

In this paper a review of the main approaches to the estimation of market risks is presented, the method for estimating VaR also was considered and analysed. Results of modeling and estimation processes were analyzed in order to select the best model for estimation of market risks.

An information analitycal system was created to model and forecast financial and economic processes based on VaR and CVaR models and to estimate the risk value with their help.

The system is implemented in a multi-paradigm numerical computing environment Visual Studio by using a proprietary programming language C#. Examples of application software for forecasting and estimating the market risk on real financial data are shown.

MARKET RISK, FORECASTING, VAR, CVAR.