Abstract:
The thesis describes commonly used measures of risk, such as volatility, Value at Risk (VaR) and Expected Shortfall (ES), and is tasked with creating models for measuring market risk. It is concerned with the risk over daily and over monthly horizons and shows the shortcomings of a square-root-of-time approach for converting VaR and ES between horizons. Parametric models, geometric Brownian motion (GBM) and GARCH process, and non-parametric models, historical simulation (HS) and some its possible improvements, are presented. The application of these mentioned models is demonstrated using real data. The accuracy of VaR models is proved through backtesting and the results are discussed. Part of this thesis is also a simulation study, which reveals the precision of VaR and ES estimates.