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Risk Measurements on Financial Indexes: Different Approaches to Value at Risk Estimation

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ABSTRACT

Risk management in recent years has become increasingly important for companies. The surging amount of attention on risk management indicates the fluctuation of financial markets and investors' willingness to hedge risks. Realizing importance of risk management, this paper addresses and compares several methods of risk measurement, Value-at-Risk (VaR), on financial indexes. In particular, this article introduces methods and applications of econometric modeling (GARCH model), RiskMetrics and historical simulation approaches to Value at Risk (VaR) calculation. Moreover, one-step-ahead forecasts of VaR are calculated for real data, and backtesting were conducted to access the accuracy of VaR estimation using parametric methods. Implementation of the three approaches shows that historical simulation provides very different one-step-ahead VaR forecast compares with the two parametric methods. And GARCH(1,1) model with student-t innovation relatively outperforms GARCH(1,1) model with normal innovation and RiskMetrics when implementing on selected stocks.