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Estimating value at risk - an extreme value approach

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Abstract

Assessing the probability of extreme and rare events is an important issue in financial risk management, in order to account for potential losses. To model and estimate tail risk adequately, such as value at risk (VaR), is of typical interest. Recent financial disasters has made the common distribution assumption of normality for asset returns questionable. This assumption makes modeling easy but inefficient when the return distribution exhibits heavy tails. An interesting solution to this problem is the extreme value approach, estimation of extreme quantiles. In this thesis we demonstrate how the use of univariate extreme value theory (EVT) can be combined with a GARCH model in order to estimate daily VaR properly. Using backtesting based on historical daily log-returns for OMXS30 and Ericsson the results indicate that the GARCH-EVT approach outperforms other well-known techniques.

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