

Stress Testing with R-Adamant

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Value-at-Risk (VaR) and Expected-Shortfall are standard and widely used risk-management tools.

The calculation of such metrics is generally based either on some a-priori assumption on the statistical distribution of the time series or on historical data analysis and simulations.

Even when assumptions are made on the form of the distribution, the estimation of the related parameters is typically based on historical data and the choice of how much history should be used is a non trivial problem: short data history produces noisy estimates while long historical analysis results in biased estimations which may not be reflective of the changing nature of the markets and their volatilities.

An alternative approach is to exploit the correlation between the performance of the managed portfolios and the macro economic conditions in which the underlying sectors of the investment are operating.

Once the link is established, it is possible to evaluate the impact of macro economical changes on the performance of the given investments and generate a multitude of possible forecast scenario outcomes from which the risk metrics (VaR, ES) can be computed.

Stress scenarios/events can also be analysed and the associated risks quantified, leading to a more dynamic and consistent assessment of the financial position of the investments.

During the presentation we will demonstrate how to exploit **R-Adamant** to simulate several possible scenarios for the economy and the market, and attempt to forecast financial trend and returns of a portfolio in each of those scenarios.

We will use the statistical and graphical tools contained in **R-Adamant**, like: Efficient Portfolio estimation, VaR and ES estimation, Vector Autoregressive models, and Monte-Carlo simulations.

The tutorial scope is to show how a valuable tool as **R-Adamant** can be a powerful ally for researchers and university students for their thesis and for companies.

References

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