
Alpha Quantum Portfolio Optimiser

Alpha Quantum

Quantitative. Innovative. Robust. Researched. Alpha.

The Alpha Quantum Way.

Our solutions

Portfolio Optimiser, Risk Management, Security Analyser, News Analytics

Alpha Quantum Portfolio Optimiser

- Alpha Quantum Portfolio Optimiser is a state of the art software solution for portfolio optimization and asset allocation.

- It can be used in a wide variety of companies: asset management firms, investment banks, hedge funds, pension funds, insurance companies and wealth managers.

- Applications of software:
  - asset allocation,
  - funds of funds allocation,
  - management of stock portfolios,
  - fixed income portfolios,
  - sophisticated quantitative strategies for hedge funds,
  - ALM for insurance companies (optimal for new Solvency II framework),
  - investment advisory tailored to individual risk profile of investors (for wealth managers, RIA and private investors),
  - engine for the new online robo-advisors,
  - solutions tailored for CTAs (trend following and others),
  - sophisticated quantitative investment products (constant volatility, momentum, smart beta and many others).

Features

Mean CVaR, Mean Variance optimisation

- Mean variance, mean cvar, mean cdar optimisation
- Different formulations: target risk, target return, risk aversion formulation
- Support for many different constraints: weights of securities, asset classes, tracking error, etc.
- Support for optimisation based on alpha returns

Efficient Frontier

- Efficient Frontiers for mean variance, mean cvar optimisations
- Interactive analysis of risk, return differences between current portfolio and portfolios on the Efficient Frontier
- Support for many types of constraints

Multiperiod portfolio optimisation and backtesting

- Powerful multiperiod portfolio optimization framework for backtesting and research of strategies
- Detailed statistics for backtesting results: NAV, drawdown, dynamic structure curves, many different performance and risk quantities (sharpe, sortino, etc.)
- Detailed return attribution for multiperiod investment strategies

Advanced methods

- Optimisation based on dynamic relative returns of securities and cointegrated prices
- Modelling expected returns with time series methods, discretionary expectations, quantitative models
- Use of correlation matrix based on Random Matrix Theory approach

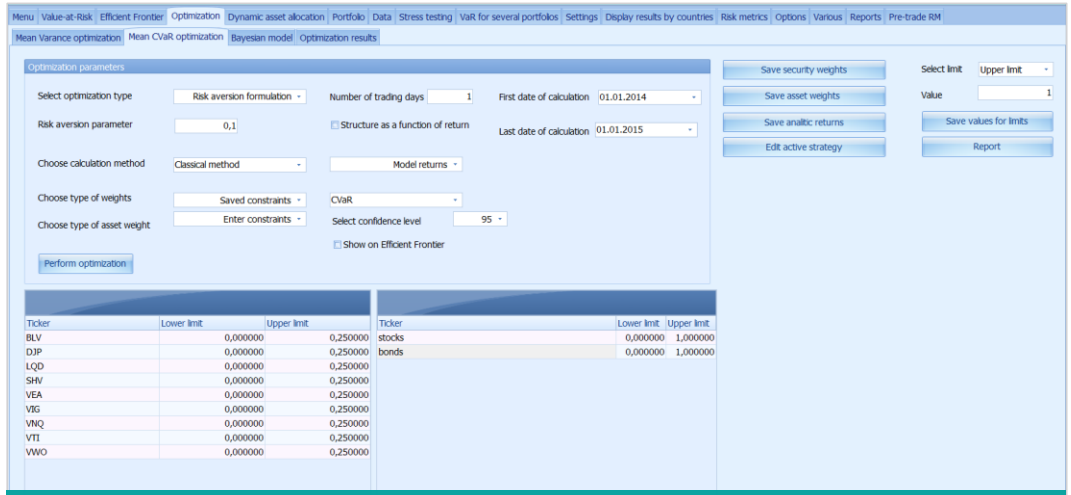
Automation, integration with our other solutions

- Backtesting for a wide multidimensional grid of investment strategy parameters. Jobs can be defined and saved in bulk for processing in multithread environment
- Optimal weights of all active portfolios can be calculated with batch requests on intraday, daily basis or other periodic intervals
- Continuously optimized portfolios can be easily exported via API to broker solutions

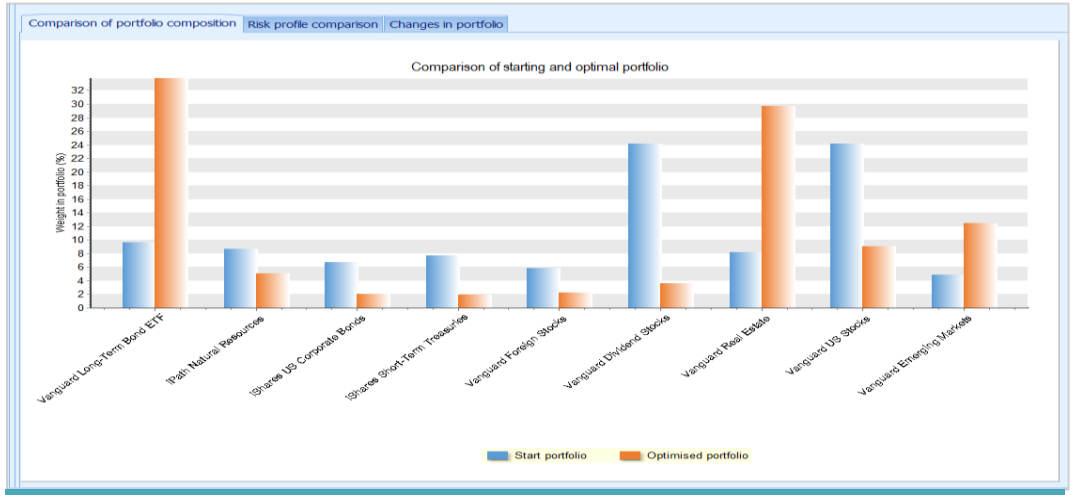
Competitive advantages

- Powerful multiperiod portfolio optimization framework for backtesting and research of strategies.
- Various risk metrics: mean variance, mean cvar, mean cdar optimization
- Cleaned correlation matrix for Monte Carlo simulations (RMT approach).
- Portfolio optimization on cointegrated prices and alpha returns.
- Framework for management of practically unlimited number of different portfolios with different strategy settings with batch calculation of optimal portfolios on a daily or intraday basis (with possibility of API integration with brokers solutions).
- Powerful reporting and document generation capabilities including the automated generation of factsheets and marketing materials for investment products (drastically reducing the time from research to product).

Portfolio optimisation

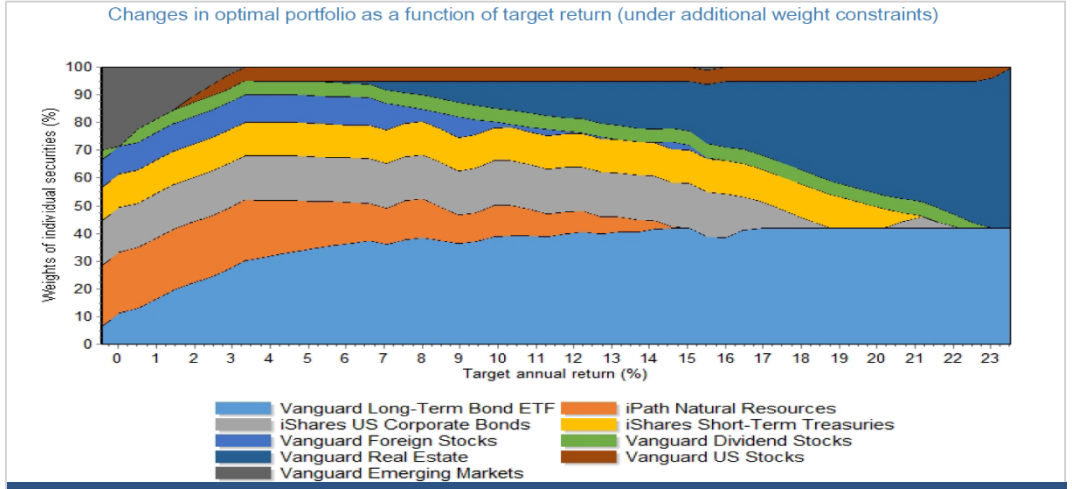


Example of portfolio optimisation input



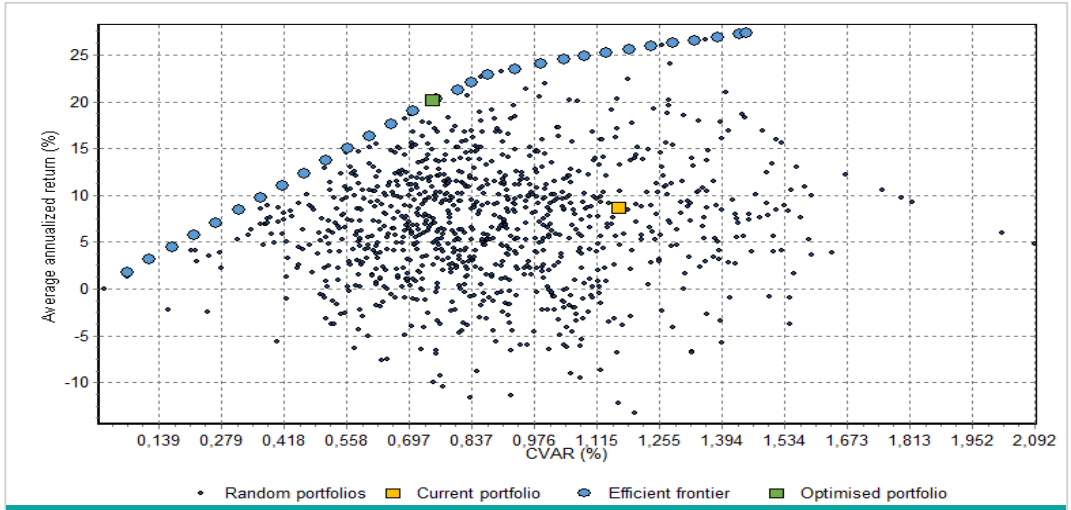
Comparison of weights between current and optimal portfolio

Comparison of historical returns and risk

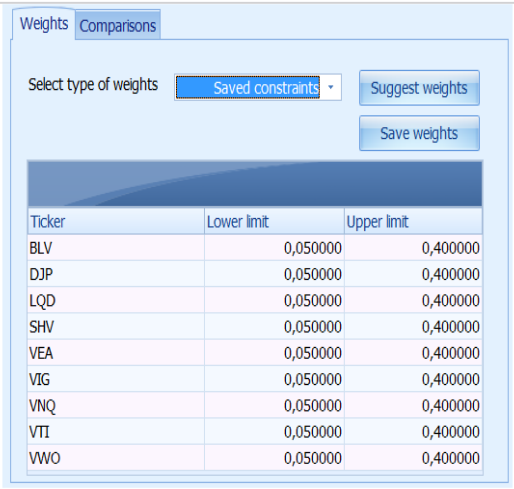


Optimal portfolio as a function of target return

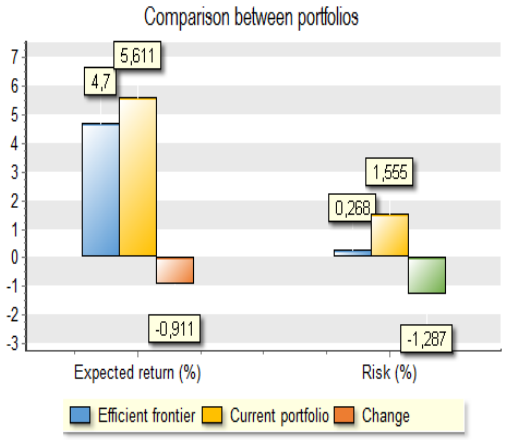
Efficient Frontier

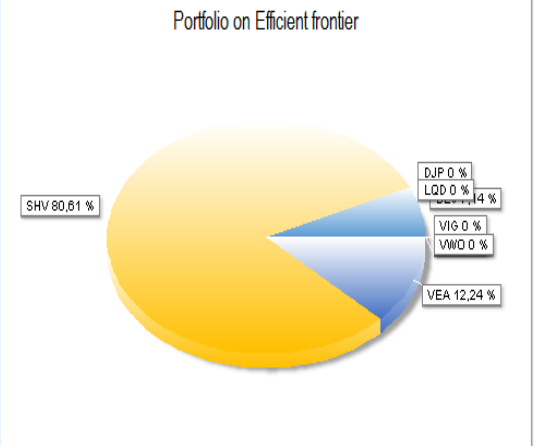


Efficient Frontier



Efficient Frontier can be constructed under different constraints



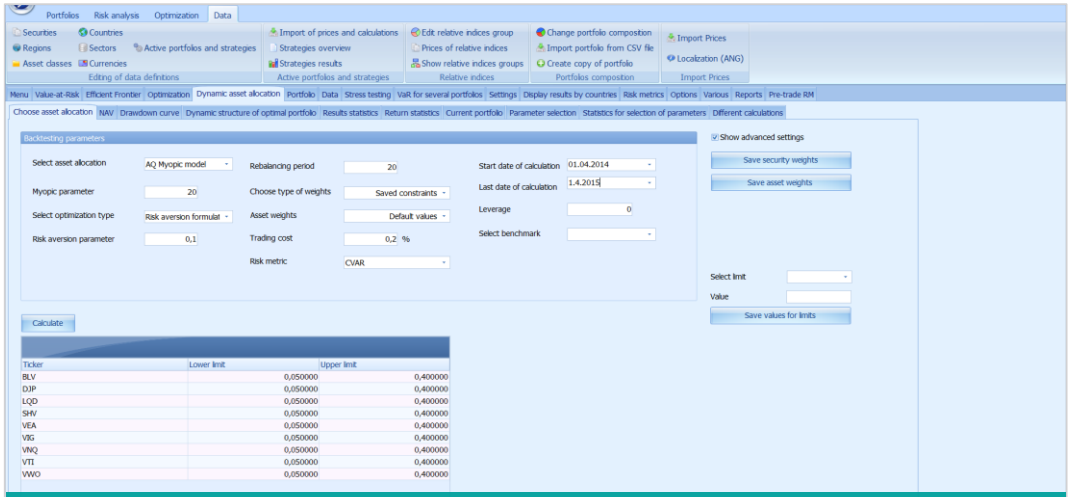


Interactive comparison between current and Efficient Frontier portfolio

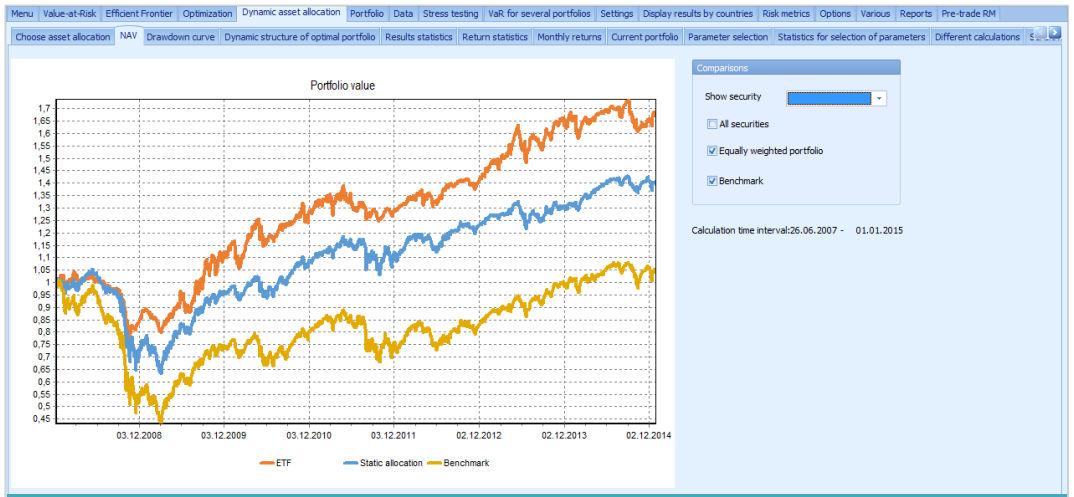
- Efficient Frontiers for mean variance, mean cvar optimisations,
- Interactive analysis of risk, return differences between current portfolio and portfolios on the Efficient Frontier,
- Support for many types of constraints.

Main features

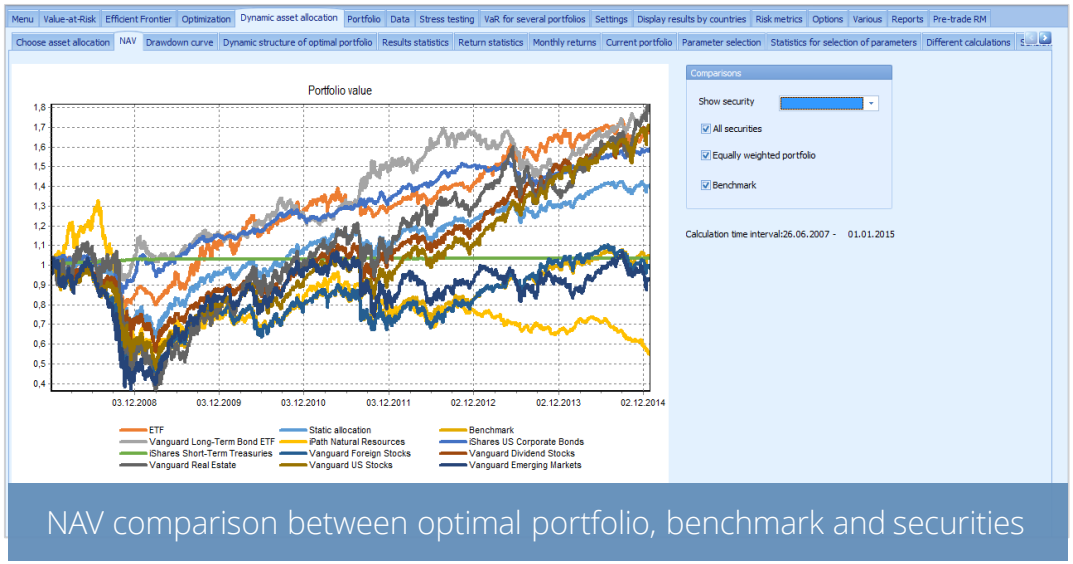
Multiperiod optimisation



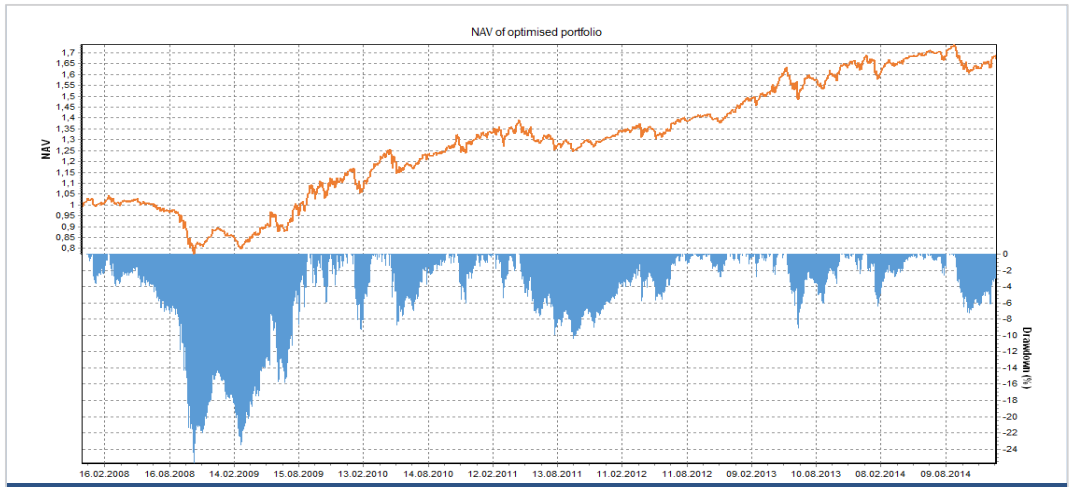
Example of multiperiod optimisation input



NAV comparison between optimal portfolio, benchmark and static allocation

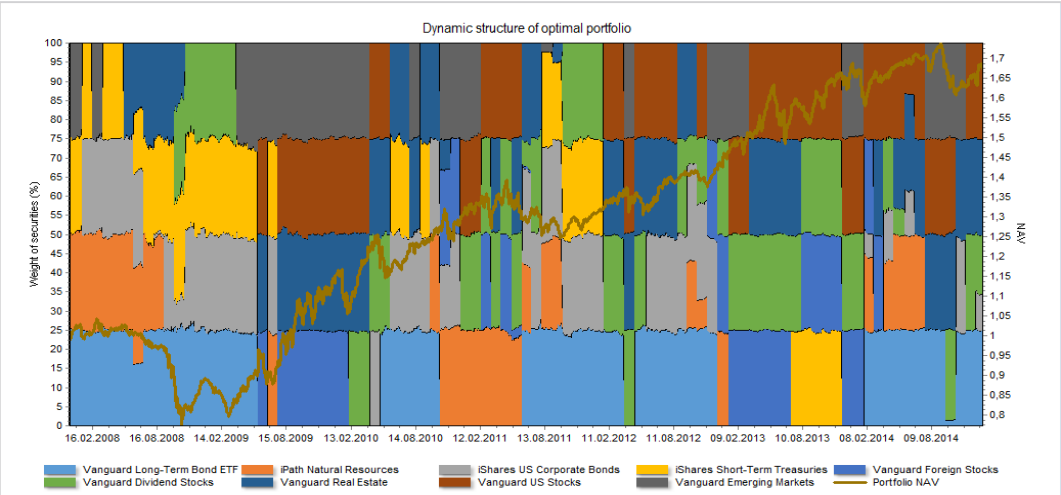


NAV comparison between optimal portfolio, benchmark and securities

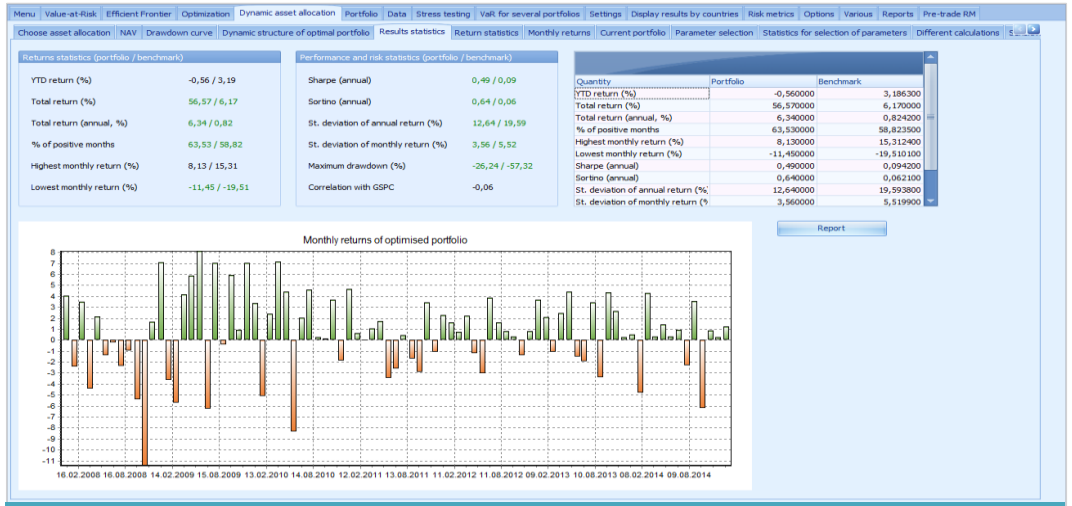


Drawdown curve

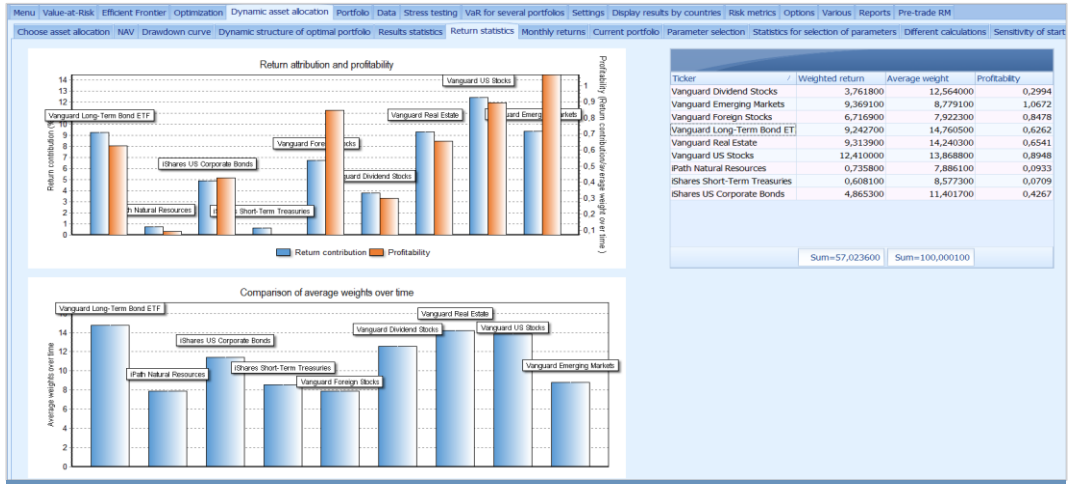
Multiperiod optimisation



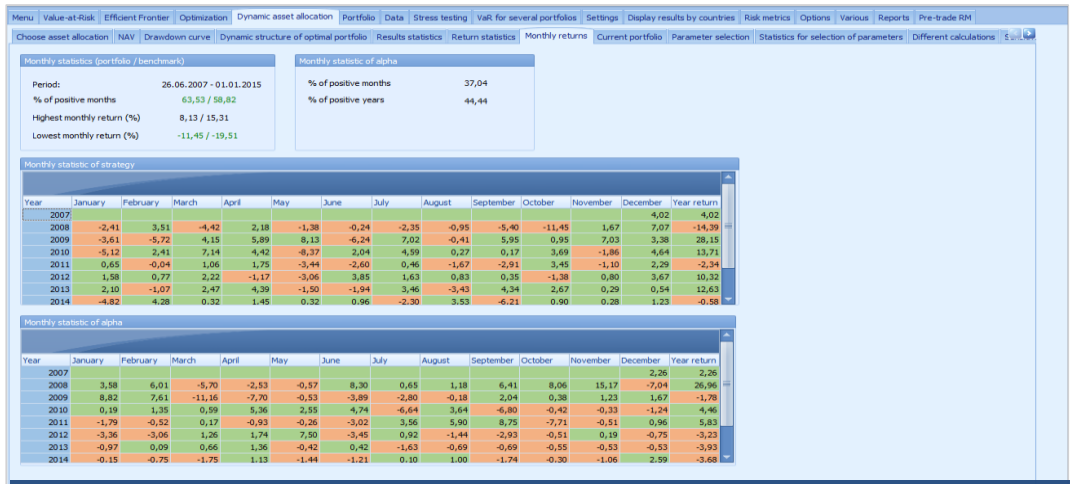
Weights of securities in optimal portfolio as a function of time



Performance and risk statistics

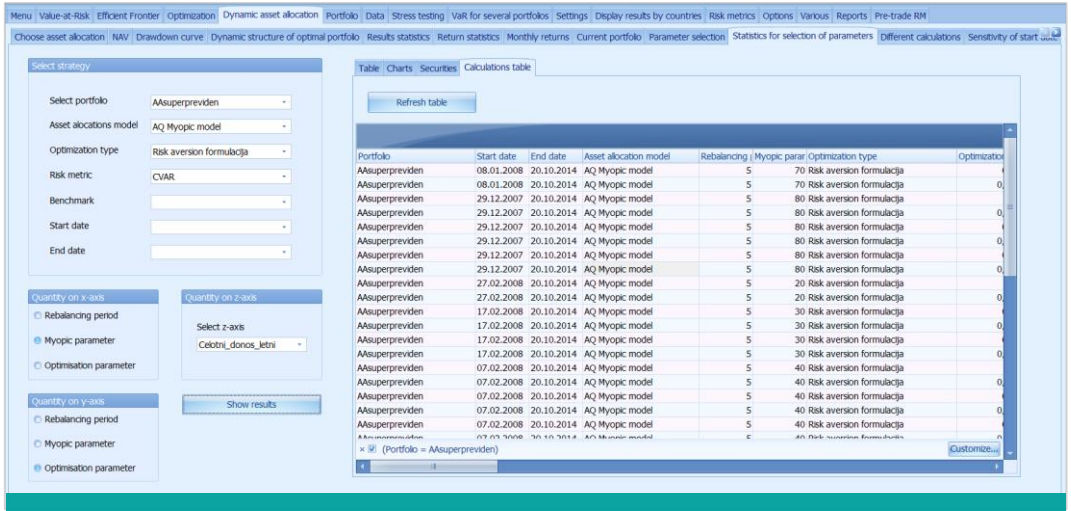


Return attribution

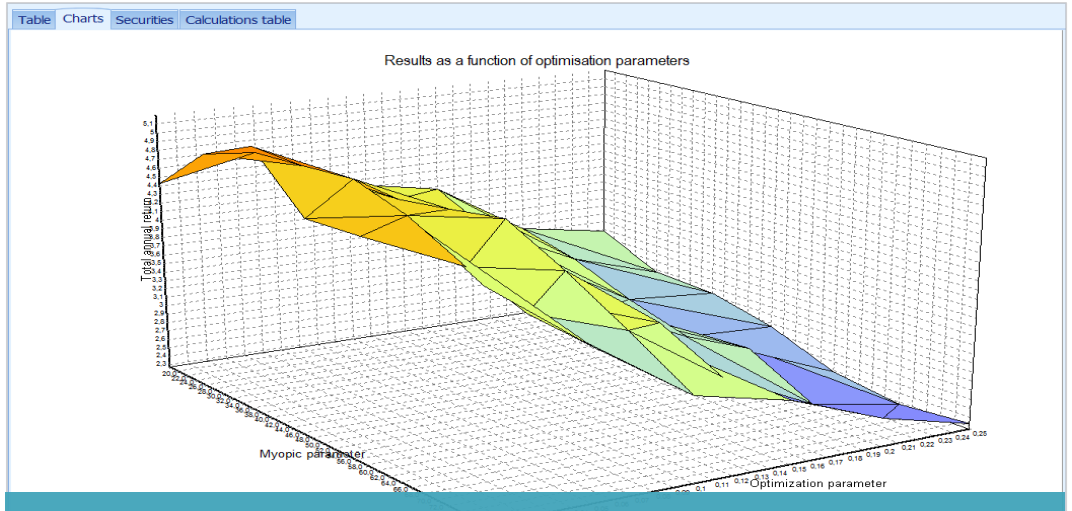


Monthly returns

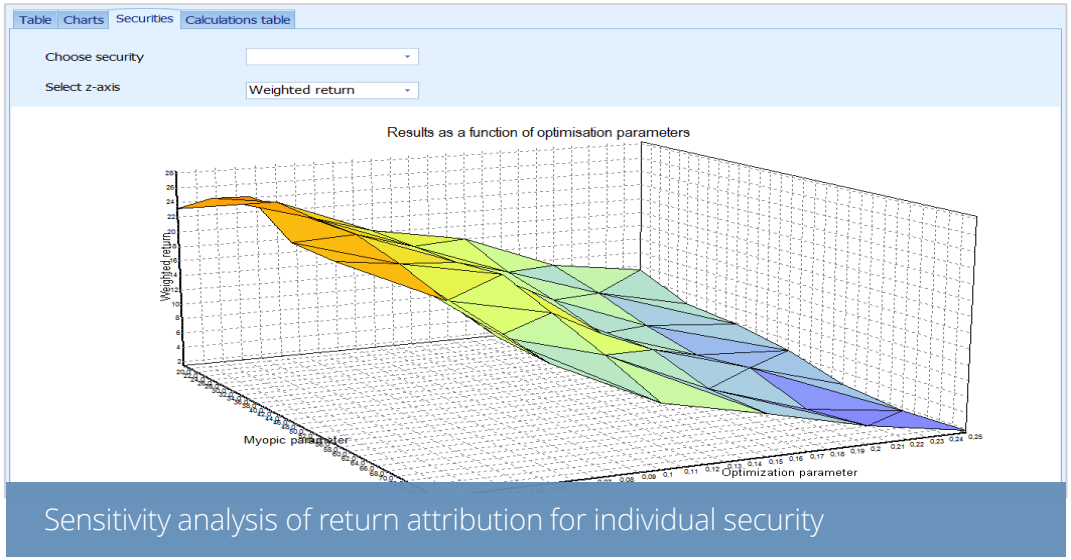
Multiperiod optimisation



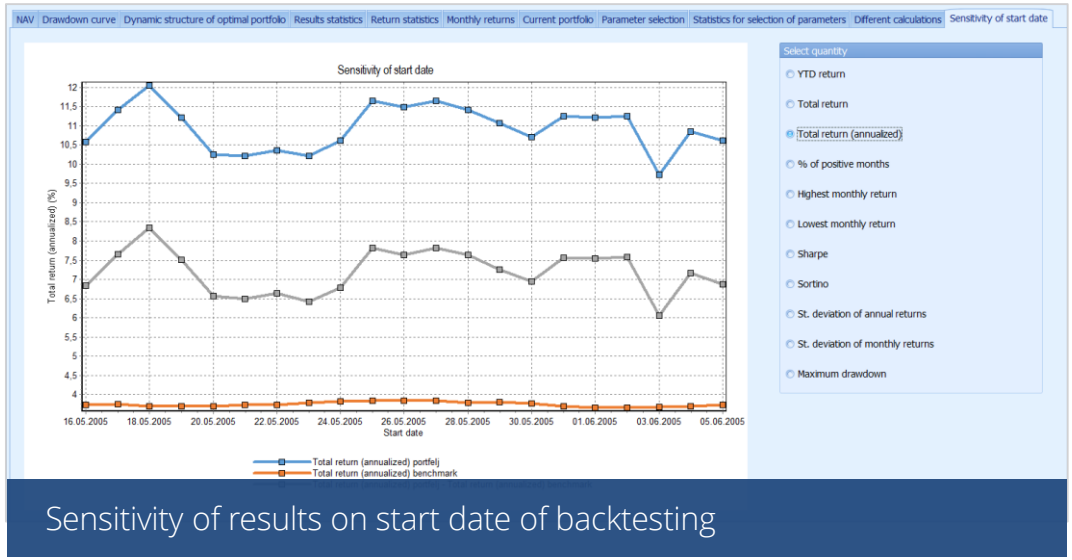
Performance and risk statistics



Results for multidimensional grid of investment parameters



Sensitivity analysis of return attribution for individual security



Sensitivity of results on start date of backtesting

Active portfolios

Portfolio optimisation - Alpha Quantum Portfolio Optimiser

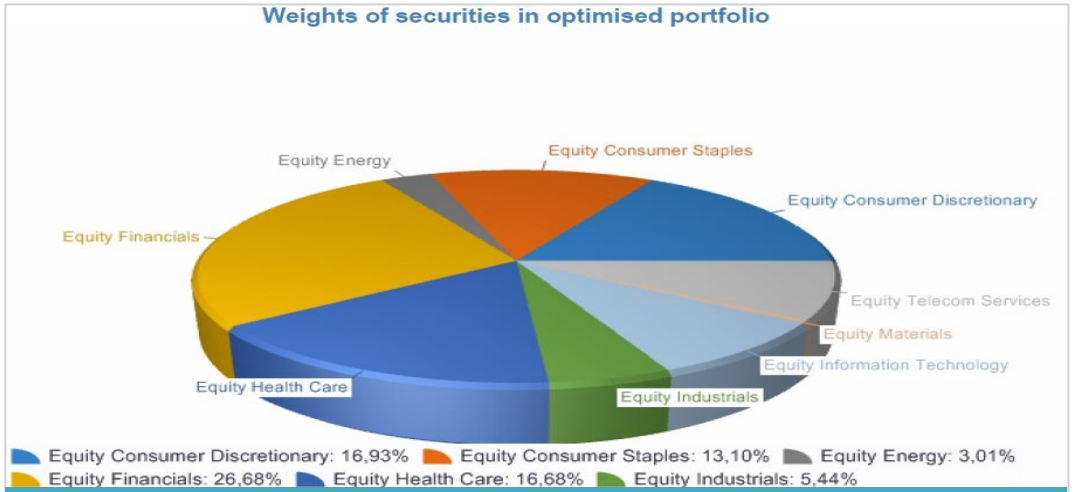
Active portfolios and strategies report

Alpha Quantum

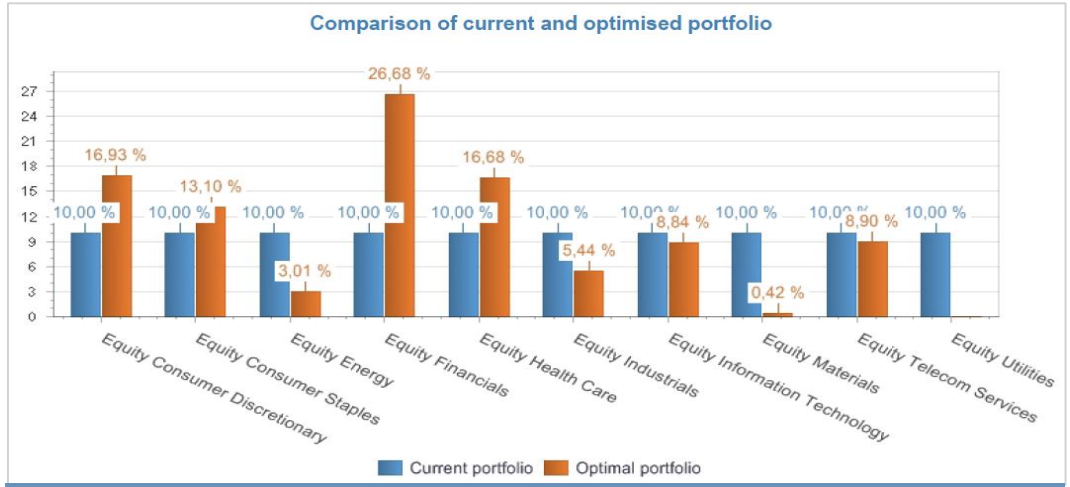
Strategy: **Dynamic Equities Sector Allocation**

Portfolio	Dynamic Equities Sector Allocation	**Method type**	Risk aversion formulation
Calculation method	Classical method	**Strategy type**	Mean CVaR
Time interval	3 months	**Weight type**	Saved constraints
Method parameter	0,01	**Asset weight type**	Default values
Type of returns	Model returns	**Last date of history**	16.07.2015

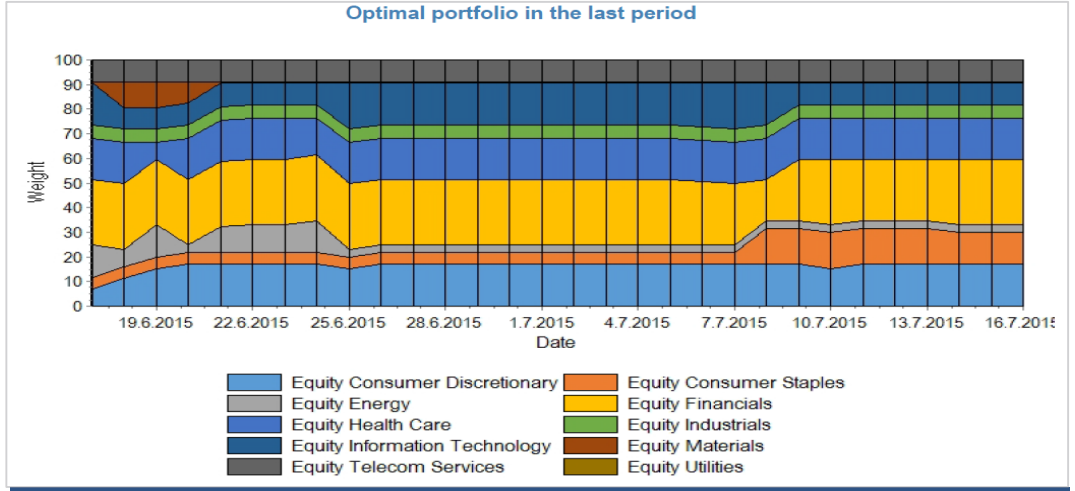
Active portfolios and strategies parameters



Weights of securities in optimised active portfolio



Comparison of current and optimised active portfolio



Active portfolio securities weights as a function of time

Automation

Our solution offers automation on many different levels.

Optimisation of portfolios

- Each portfolio can be defined as an active portfolio with one or more defined active strategies.
- Optimal weights of all active portfolios can be calculated with batch requests on intraday, daily basis or other periodic intervals.
- Continuously optimized portfolios can also be easily exported via API to broker solutions allowing automatic management of a vast set of portfolios with individual characteristics, e.g. time periods, constraints.
- Pre-trade risk management with VaR, CVaR and other limits is also integrated as an option forming a unified framework for automated quantitative asset management.

Backtesting

- Our solution allows backtesting for a wide multidimensional grid of investment strategy parameters.
- This feature is key for researching stability of quantitative strategies with respect to different parameters and time frames.
- Jobs can be defined and saved in bulk for processing in multithread environment.
- Backtesting results can be analysed in many different views and statistics.
- Automated generation of reports.

Powerful reporting capabilities

Example of portfolio optimization report

Powerful reporting capabilities

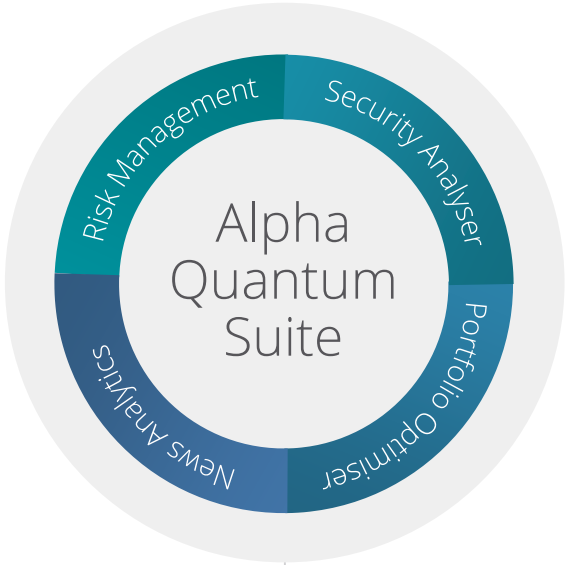
Example of multi-period backtesting report

Powerful reporting capabilities

Example of active portfolios and strategies report

Vision

We offer a complete and integrated platform for asset management, ranging from risk management, analysis, valuation and ranking of companies, portfolio optimisation, asset allocation, versatile backtesting of strategies and analysis of news.



The Alpha Quantum Way

Quantitative.
The core of our philosophy.

Innovative.
The main source of alpha returns.

Robust. Researched.
The cornerstone of our solutions is stability.

Alpha.
The consequence.

Alpha Quantum Risk Management

Main features of risk management solution are VaR methods, stress testing, pre-trade risk management and risk attribution. They also include limits monitoring, regulatory compliance and performance measurement.

Alpha Quantum Security Analyser

Innovative solution for financial analysis, valuation and ranking of companies. Comprehensive and versatile platform for researching, backtesting and using quantitative strategies based on fundamental, pricing, news analytics and other data.

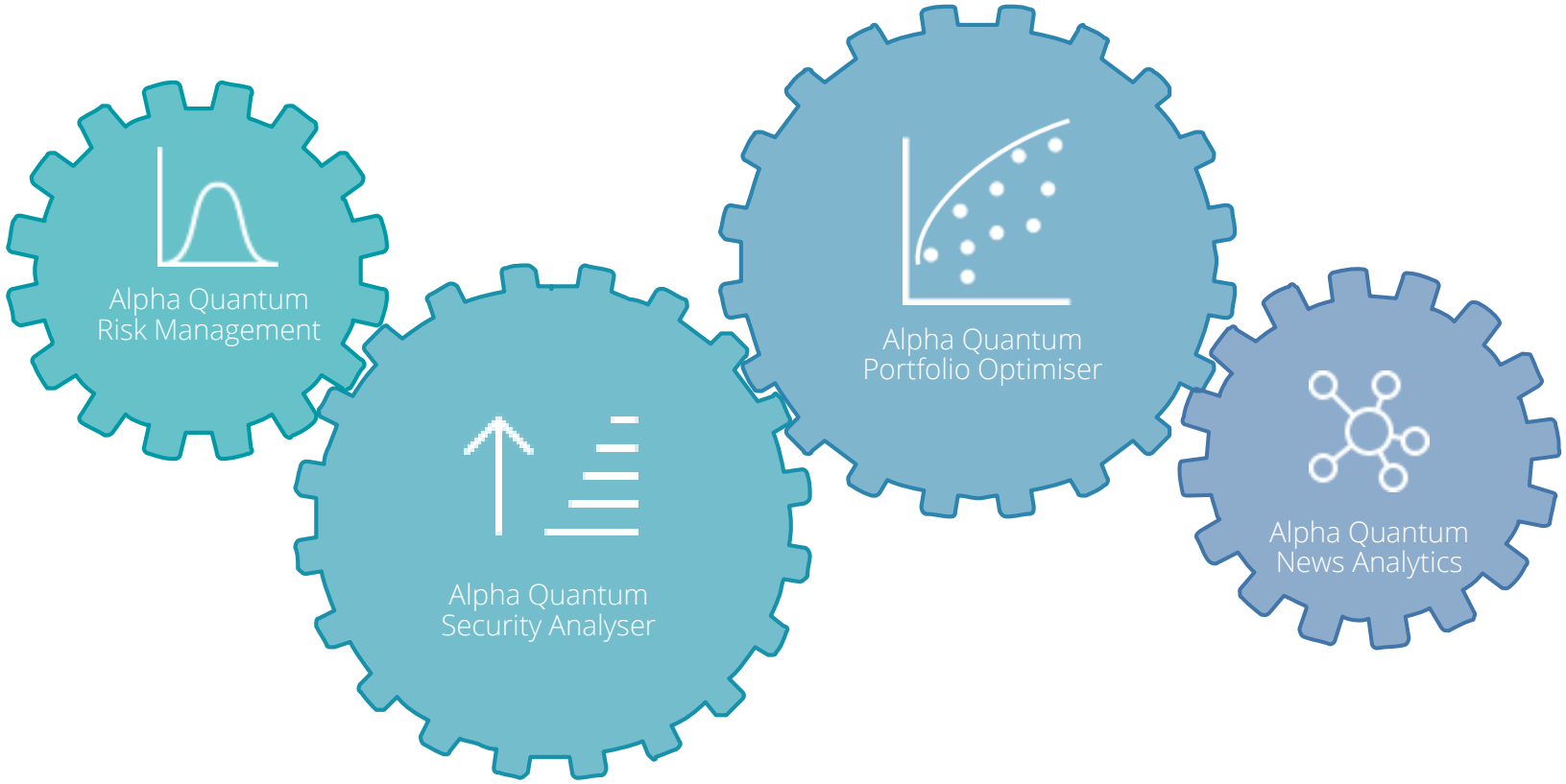
Alpha Quantum Portfolio Optimiser

Sophisticated solution for portfolio optimization and asset allocation with a wide array of features which support many different applications, investment products and form a platform for automated asset management services.

Alpha Quantum News Analytics

Platform for scanning, annotating, storing and analysing in real time data from news, blogs, social media and other sources. Tools for identifying and analysing macro and sector trends. Sentiment scoring methodology. News analytics signals for quantitative trading strategies.

High integration and interconnectedness of solutions in Alpha Quantum Suite



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Our solutions

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