aquantec
ocean

Software for Pricing and Trading,
Portfolio and Risk Management

Stochastic Simulation in Aquantec Ocean

Aquantec launches new module for stochastic portfolio simulation

The new module *Stochastic Simulation* extends the existing functionality of *Aquantec Ocean* by introducing a powerful engine that generates simulation paths for the stochastic projection of market data in a short- or long-term portfolio simulation.

Cross-asset model for stochastic projection

The extension allows modeling the time evolution of risk factors across all asset classes both under a real-world measure and under a risk-neutral measure.

The simulation models available range from geometric Brownian motions and one-factor short-rate models (e.g., Vasicek, CIR) to multi-factor affine term-structure models such as the arbitrage-free generalized Nelson-Siegel model.

Individual models can be correlated and combined with the help of an incremental approach to simulate the complete economy that is relevant for the portfolio under consideration with a cross-asset model.

The initial state values and the model parameters can be calibrated to current market data and time series. The calibration uses efficient analytical and numerical methods, e.g., least-squares minimization and Kalman-filter maximum-likelihood estimation.

Combining market projection with portfolio rebalancing and balance-sheet valuation

The new scenario generator can be combined with the existing rebalancing framework for a forward-looking portfolio simulation within *Aquantec Ocean*. All the management rules that can be applied to each single deterministic simulation path are also supported for the multitude of stochastic simulation paths.

In addition, with the help of the valuation and accounting routines, the user can now compute and analyze market-value distributions and risk measures for various trading strategies as well as related figures for P&L, liquidity, and asset-liability management.
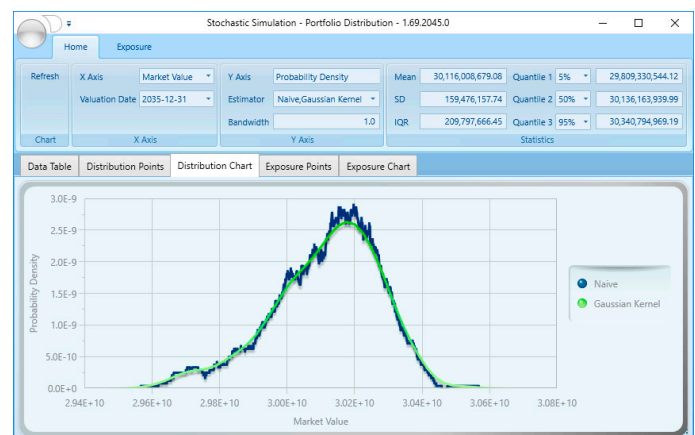
Distribution and risk figures for the market value of a portfolio

Benefits for users of the new module

- Estimation of market- and book-value distributions and risk measures (e.g., quantiles)
- Simulations for asset-liability management (ALM)
- Balance-sheet and P&L projections
- Evaluation of trading strategies
- Value-at-risk calculations (VaR)
- Analysis of liquidity risk
- Exposure profiles for XVA calculations

For more information, please contact us

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Navigates through risky waters without making waves.