

OPTIMIZATION IN ALGO RISK

Advanced portfolio modeling analytics for the enterprise

From sudden changes in investment mandates to shifts in benchmark compositions, exotic investment opportunities, or the anticipation of market turmoil, fund managers require portfolio construction tools more than ever before. In response to this demand, Algo Risk includes fully integrated optimization at the core of its risk management and decision-support functionality, designed to help institutions maximize risk-adjusted returns from both absolute and relative risk perspectives.

Algorithmics



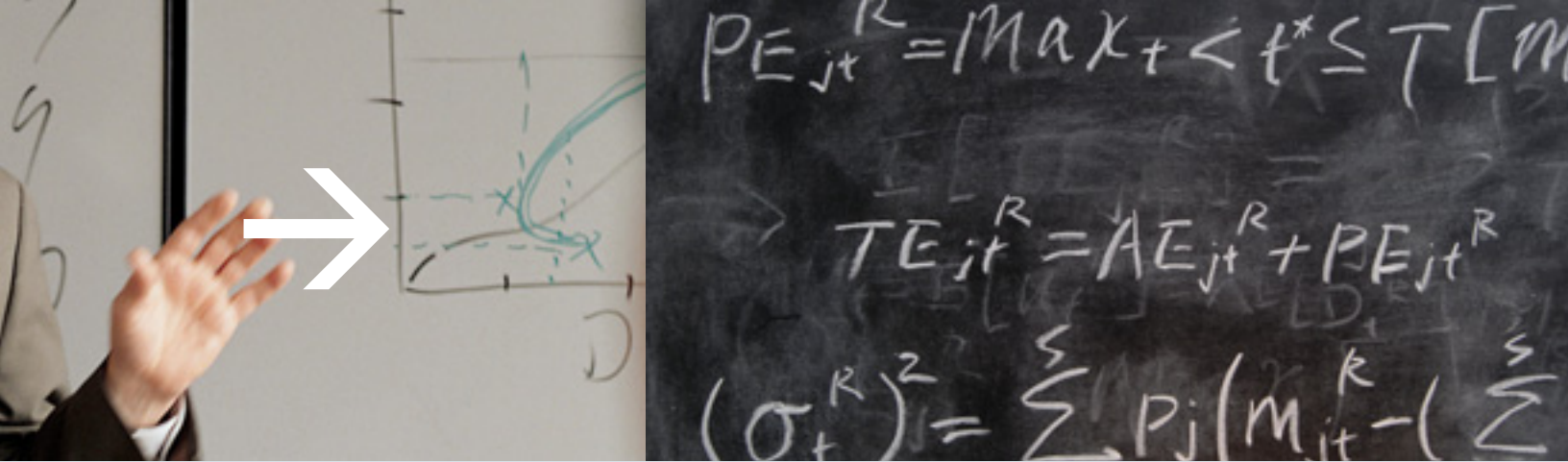
In the quest for higher returns and broader diversification, fund managers face a host of challenges. Exotic derivatives, hedge funds, and funds of funds, in addition to more established fare such as bonds, futures, and loans, have dramatically increased the variety and quantity of investment instruments. To assist organizations that aim to match portfolios to desired investment objectives, Algorithmics has integrated optimization within Algo Risk, supporting all asset classes.

Integrated portfolio modeling and risk analytics

Algo Risk is a comprehensive risk management solution that enables portfolio managers, traders, risk managers, and quants to measure, monitor, and manage investments and risks in real-time. Supporting a wide range of advanced portfolio and risk analytics, valuation methodologies, scenario generation techniques and optimization algorithms, Algo Risk combines real-time risk monitoring and an easy-to-use, customizable interface within an enterprise-wide data management system.

Optimization is fully integrated within the solution, enabling users to construct and model flexible, efficient optimization problem sets. These sets can be selected to: define multiple objective functions (such as maximize return, minimize variance, minimize tracking error, or minimize regret); global constraints (including trade restrictions, bounds on group allocations and risk measures, and maximum number of trades); specify multiple position levels, group level; and to produce efficient frontiers of optimal portfolios.

Individual users are able to interactively rebalance portfolios with respect to multiple desired investment objectives under a wide range of hard and soft constraints. Functions, analytics, and views can be shown or hidden, depending on the task at hand, allowing users to navigate seamlessly through and ascertain the key contributors to overall risk. Algo Risk can help meet the diverse risk and optimization requirements of multiple audiences within the institution.



KEY BENEFITS AND FEATURES

Parametric and scenario-based optimization

Algo Risk provides classic variance-covariance matrix-based optimization as well as scenario-based optimization. Objective functions and constraints are applied to multiple risk and return statistics that are associated with the underlying distribution of asset returns, or in the case of scenario optimization, individual scenarios themselves. Algo Risk allows users to formulate various types of optimization problems including risk minimization, expected return maximization, benchmark replication, and efficient frontier analyses.

Absolute and relative risk-return approaches

Algo Risk supports optimization that is based on absolute risk-return measures as well as measures relative to one or more user-defined benchmarks. Optimization problems can be easily formulated to include examples such as: minimum variance subject to group weighting constraints; minimum tracking error subject to sector/beta neutrality constraints; minimum duration deviation subject to expected active return constraints; and maximum expected return subject to a maximum number of trades.

Efficient frontier analysis

Algo Risk enables the generation of risk-return efficient frontiers as well as individual maximization/minimization analyses. Efficient frontiers can be defined on the basis of any risk minimization problem for a user-defined range of expected returns. A series of optimal portfolios are generated and become available to the user to analyze, compare, and further optimize with respect to the original holdings. All optimized portfolios are able to seamlessly access Algo Risk's risk and portfolio analytics.

Flexible constraint specification

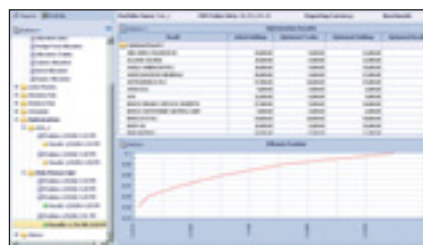
Optimization problems within Algo Risk can be specified under a dynamic array of absolute and relative constraints that may represent corporate policy, investor guidelines, or regulatory limits, among other conditions. Categories of constraints include: bounds on individual securities (e.g. long and/or short, percentage allocation, etc); allocation to user-defined groups (e.g. percentage weight by sector, issuer, asset-class, PV01 bucket, etc); group targets (e.g. duration, market capitalization, etc); and global constraints (e.g. maximum number of trades, cash inflow/outflow, etc).

Industry-leading optimization technology

The optimization functionality leverages ILOG CPLEX technology as its mathematical framework. More than 1,000 corporations and government agencies, along with over 500 universities, use ILOG CPLEX's mathematical optimization technology to enable better decision-making for efficient resource utilization. ILOG CPLEX has solved problems with millions of constraints and variables, and consistently sets new standards for mathematical programming software performance.

Scalable architecture optimized for multiple users

Algo Risk has been architected so that individual optimization problems spanning multiple users (or multiple requests by the same user) may be formulated and solved in the background while each individual user maintains functionality within Algo Risk. The optimization server has been designed in this manner to aid institutions in matching resource requirements to usage patterns.



An interactive report illustrating a risk-reward efficient frontier generated using optimization in Algo Risk.



Algo Risk provides a robust and interactive interface for defining instrument, group, and global constraints.

About Algorithmics

Algorithmics is the world's leading provider of enterprise risk solutions. Financial organizations from around the world use Algorithmics' software, analytics, and advisory services to help them make risk-aware business decisions, maximize shareholder value, and meet regulatory requirements. Supported by a global team of risk experts based in all major financial centers, Algorithmics offers proven, award-winning solutions for market, credit, and operational risk, as well as collateral and capital management. Algorithmics is a member of the Fitch Group.



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