

LIABILITY-DRIVEN INVESTING IN ALGO RISK

Advanced portfolio optimization for insurers and asset managers

Algo Risk, an enterprise-wide risk management and decision-support solution, includes a fully integrated optimization module as part of its core functionality. Designed to help insurers optimize asset portfolios relative to the market consistent valuation of their projected liability cash flows, Algo Risk enables users to maximize risk-adjusted returns from both absolute and relative risk perspectives.

Algorithmics



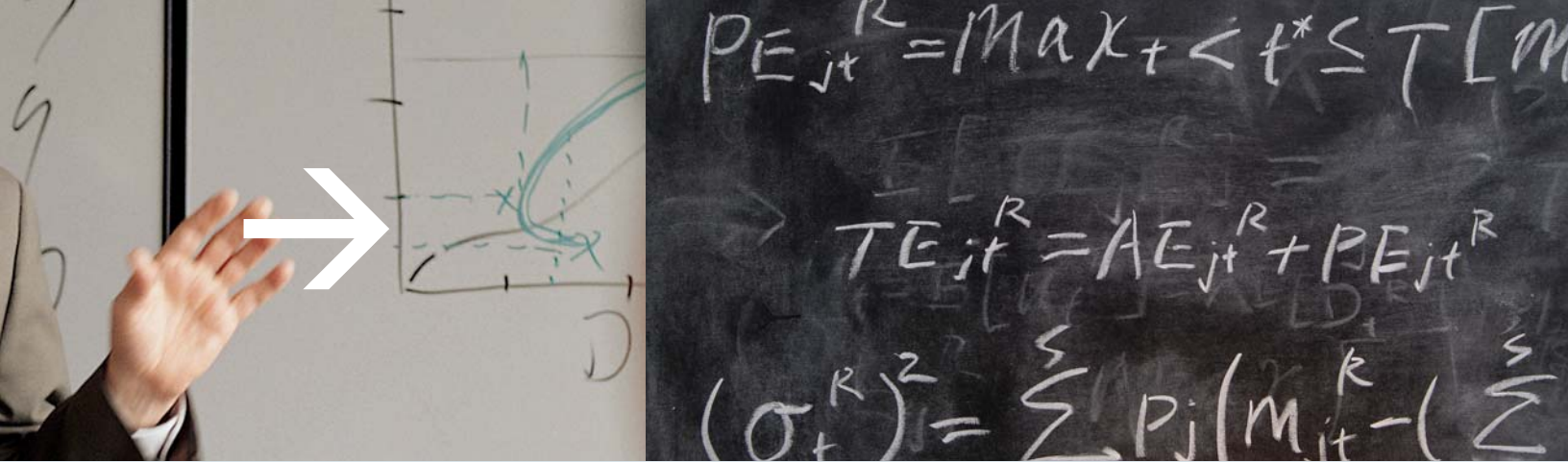
In the quest for higher returns and reduced capital requirements, insurance asset managers face a host of challenges. Exotic derivatives, in addition to more established fare such as bonds, futures, and equities, have increased the variety and quantity of investment instruments. In addition, regulatory developments such as Solvency II are compelling insurers to manage assets in relation to a market consistent valuation of liabilities. To help organizations adapt to these industry changes, Algorithmics has integrated portfolio optimization and liability-driven investing within Algo Risk.

Integrated portfolio optimization and liability-driven investing

Algo Risk is a comprehensive risk management solution that brings together asset and liability projections within a consistent, market-based framework. Within the asset simulation engine, clients have access to Algorithmics' full and comprehensive asset coverage including fixed income, equity, and derivative valuation models. Liability projections can be imported from any existing actuarial projection system, providing consistency and integrated reporting across business lines and geographic borders.

Liability-driven investing is fully integrated within the solution, enabling users to construct and model flexible, efficient optimization problem sets. In particular, liability cash flows can be imported into Algo Risk and used directly or via a replicating portfolio as a benchmark for evaluating liability-driven investment strategies. Portfolio managers can enter and analyze potential trades against projected liability cash flows, using a host of relative risk measures to help maximize risk-adjusted performance. Alternatively, the Algo Risk optimizer can be used to generate an optimal portfolio that matches the liabilities and maximizes investment return while simultaneously minimizing the required capital.

Through its support for liability-driven investing, Algo Risk enables decision makers at all levels to share a common view on the effectiveness of investment strategies. 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. With its integrated support for all asset classes, 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 and functions including risk minimization, expected return maximization, minimize regret, 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 conditions including 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. trade restrictions, bounds on group allocations and risk measures, maximum number of trades, cash inflow/outflow, etc).

Industry-leading optimization technology

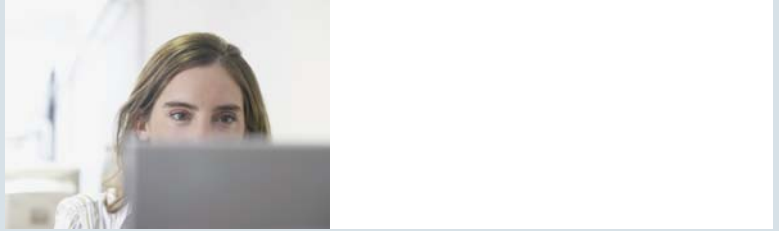
The optimization functionality leverages ILOG CPLEX technology as its mathematical framework. More than 1,000 corporations and government agencies, along with over 500 universities, use ILOG CPLEX's mathematical optimization technology to enable better decision-making for efficient resource utilization. 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's framework has been designed with the flexibility to formulate and solve individual optimization problems spanning multiple users (or multiple requests by the same user) in the background while each user maintains functionality within the solution. This optimization pattern was created to aid institutions in matching resource requirements to usage patterns.

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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