

Case-Study: Hedge Funds Optimizer

Client

AlternativeSoft is a Swiss company who aims to stay the leader in quantitative portfolio construction with hedge funds and to become the leader in hedge funds quantitative selection and tactical asset allocation for hedge fund indices.

Problem Background

The main goal of the system is creation of Hedge Fund Optimization solution and risk management system. A hedge fund is an investment fund charging a performance fee and is typically open to a limited range of investors. Investing in hedge funds requires knowledge of the extreme risks, which are always undergoing the increased scrutiny of both investors and regulators. It is a common thing that taking financial decisions supported by solid scientific models is the best way to add value to investors' portfolios in the long run and to outperform their peers. The specific complexity of the hedge fund industry requires state-of-the-art financial solutions.

Project Overview

The HFOptimizer platform includes three modules:

Module I: Portfolio Construction

The HFOptimizer platform optimizes the fund of funds or the portfolios containing hedge funds. It uses the Modified VaR, the Conditional VaR, the Maximum Drawdown, the Local Correlation or the Mean-Variance optimizations. The optimizations, based on the Value-at-Risk, are in line with the market risk regulations proposed by the Bank for International Settlements (BIS, Basel II, 1996). The use of downside risk optimization techniques allows the user to construct portfolios with low probabilities of extreme negative events. The volatility, the skewness and the kurtosis are taken into account in the optimizations.

The speed makes it one of the fastest available on the market. In addition, the user has the ability to adjust manually his current portfolio by selling / purchasing the assets with the lowest / highest contribution to portfolio volatility or beta. This module includes data reading from Excel workbooks or some market databases, portfolio simulation, shortfall risk analysis, stress testing and hedge fund equilibrium returns using the Four-Moment Capital Asset Pricing Model.

Module II: Hedge Fund Selection

The HFOptimizer platform gives a rating to the funds by combining a quantitative and a qualitative rating. The quantitative rating incorporates several criteria, but is mainly based on a cutting edge stepwise regression with a Sharpe based style analysis. The alpha of the manager over time is computed. The qualitative criteria can be tailor-made by the user. As the rating is fully automated, selecting the best assets easily creates the portfolios. The use of this new method offers a competitive advantage for the fund of funds manager. This technique, to select the best future hedge fund performers, has been published by academics in 2004. Each rated asset is downloadable to Excel reports.

Module III: Return Forecast

The HFOptimizer platform integrates a Tactical Asset Allocation module. Each hedge funds indices are forecasted for the next 1 to 6 months. A stepwise regression with lags based on significant economic factors is used. This technique is used to forecast the hedge fund or hedge fund index returns.

Results have proven to beat any competitor, with Information Ratio (i.e. out-performance above benchmark divided by the tracking error) up to 3.0 and with annualized alphas often between 1% and 4%.

Benefits for the customer

- Top of the notch investment analysis tool was elaborated using latest complex mathematical techniques
- Despite of its complexity the system is extremely user-friendly

Used Technologies and Products

The application uses Delphi, SQL/PLSQL, XML, WebSnap, VBScript programming technologies under Windows 9x/2000/XP operation system. MS SQL 2000/2005 and Firebird 1.5/2.0 database management systems supported for store software data. Software is fully multi-user. For keeping software clients data actual the software provides online updates using AlternativeSoft web service by HTTP and SOAP protocols.

Project workload

The project team was composed of 6 developers per 20 months project duration (development is in process).