LUCENA RESEARCH
MACHINE LEARNING TECHNOLOGY
FOR THE STRATEGIC INVESTOR

PROTECT YOUR PORTFOLIO WITH
HEDGE FINDER

Lucena's unique hedging technology identifies additional securities for optimal risk management for your portfolio.

About Hedge Finder

Lucena's Hedge Finder can reduce a portfolio's risk and volatility while preserving return of the core holdings. The Hedge Finder uses a proprietary pattern matching algorithm unique to Lucena to discover and recommend additional securities to add to the portfolio to accomplish this goal. The Hedge Finder does not use derivatives, but instead recommends appropriate stocks or ETFs as hedges. Because it uses a unique approach to hedge discovery, the Hedge Finder can find short-only, long-only, or long/short hedges.

How It Works

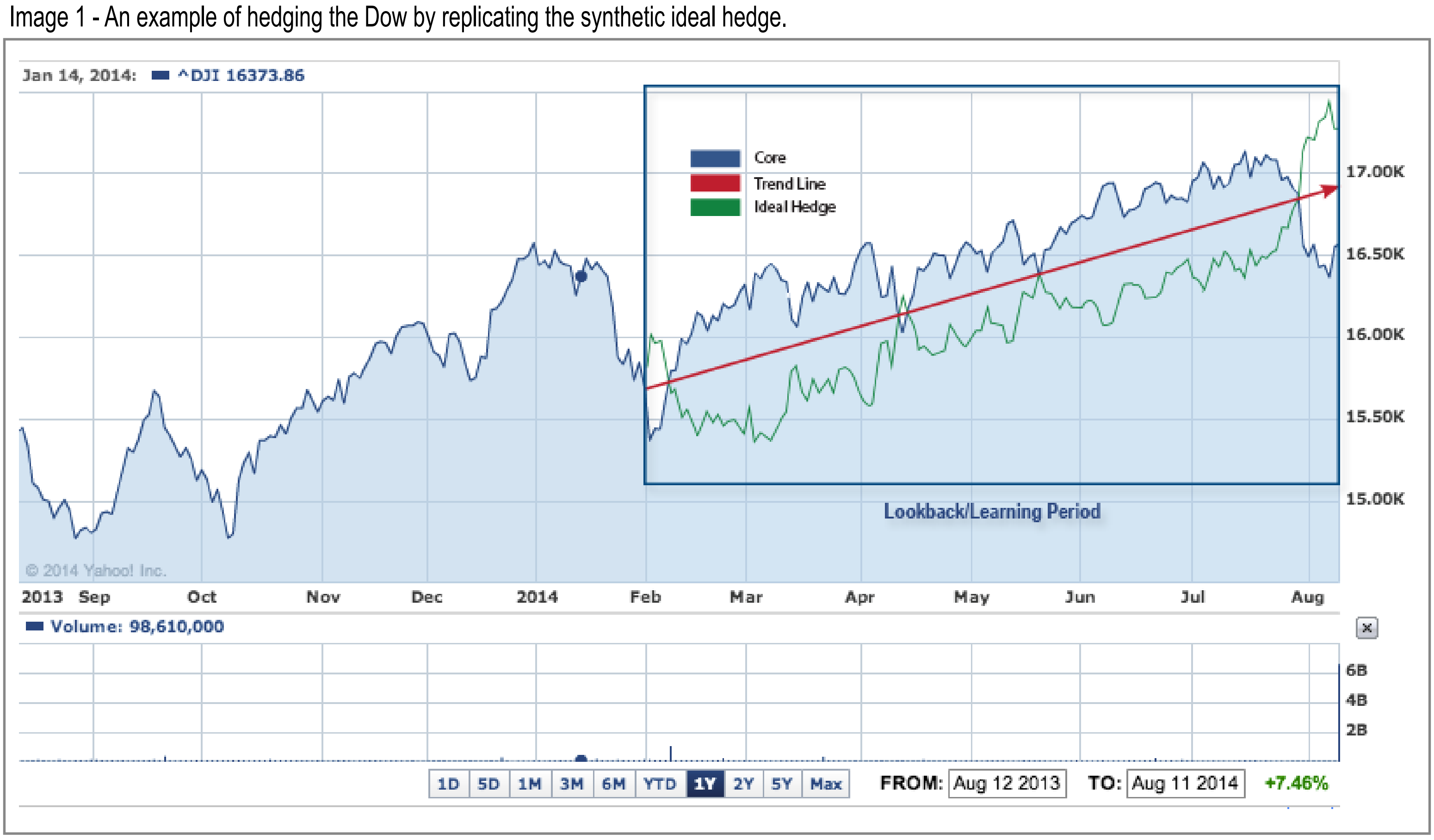
The Hedge Finder follows three steps to discover a basket of securities for your hedge:

1 **Load Your Portfolio:**
In order to hedge your portfolio going forward, we must first reconstruct its historical pattern so we can discover securities that would have hedged it well in hindsight.

2 **Find the Ideal Hedge:**
The Ideal Hedge is the historical price pattern that when combined with the core portfolio preserves the original return while cancelling out volatility (see chart at right). We compute this pattern by "flipping" the core portfolio's performance about its trend line.

3 **Identify the Ideal Hedge Basket:**
Once we have the Ideal Hedge pattern as a target, the algorithm attempts to build a basket of securities to match it. It uses a "whitelist" of securities selected by you from which to build the basket. The whitelist can include stocks, ETFs, ADRs or mutual funds.

Image 1 - An example of hedging the Dow by replicating the synthetic ideal hedge.



Long-only hedges? Yes. Many of our clients need to protect portfolios in long-only accounts such as IRAs. Our hedge discovery algorithm seeks to construct a basket of equities that, together, match the price history of an "ideal hedge" using long-only positions, long/short positions or short-only positions.

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Other Options and Features

The Hedge Finder includes several options and features that enable you to find and test the hedging strategy that best meets your objectives:

Backtesting: Test the hedger against your portfolio using an accurate market simulator. This enables you to scientifically validate the approach before committing capital.

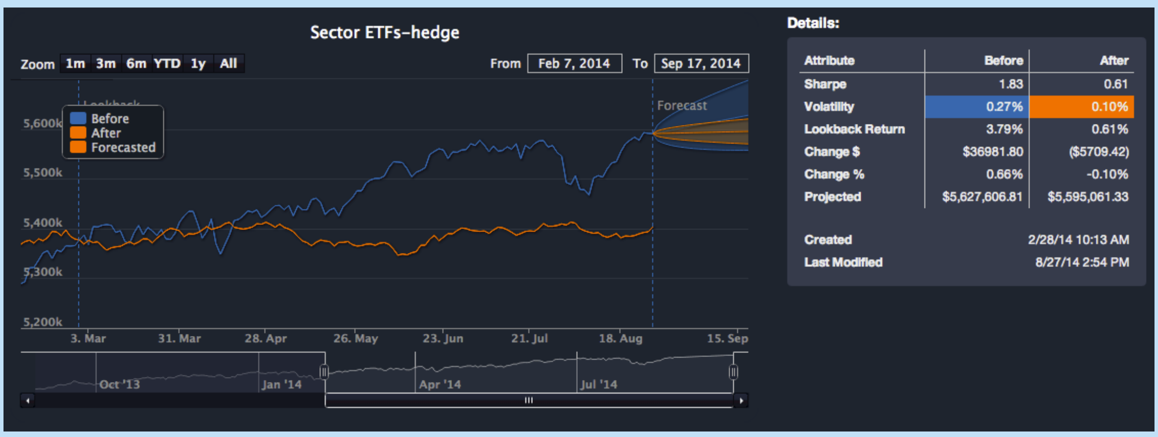
Hedge goal options include Preserve Return, Min Risk, and Blend: Preserve Return prioritizes finding securities that maintain the return of the core portfolio; Min Risk emphasizes minimum volatility, perhaps at the expense of reduced return; Blend seeks a compromise between minimum volatility and return.

Number of positions: You can ask the Hedge Finder to construct a basket of 1 to 100 securities to hedge the core portfolio.

Beta: If you'd like to allocate a smaller portion of your portfolio to the hedge, you'll need a more reactive hedge. So you can set the Beta for the hedge target accordingly.

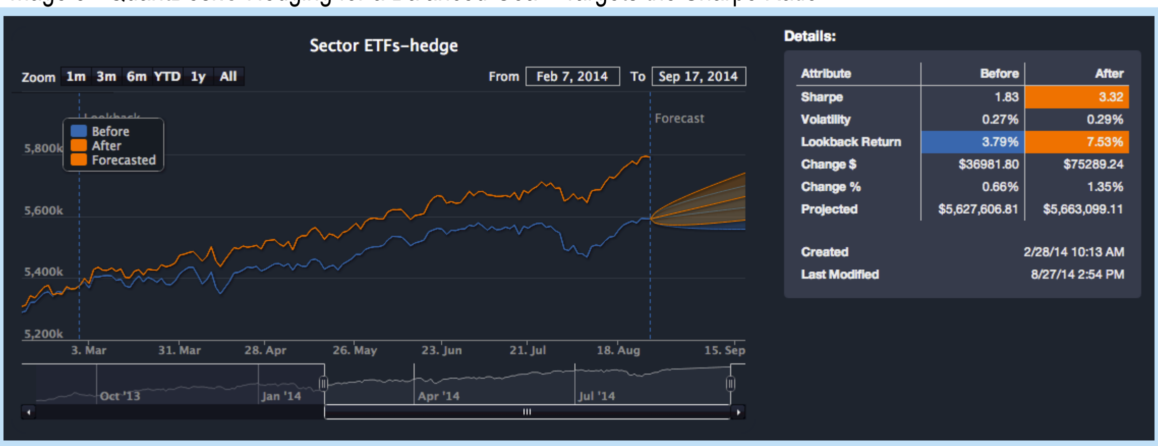
Whitelist and blacklist: We offer flexible tools for informing the hedger which securities it may use construct the hedge.

Image 2 - QuantDesk® Hedging for a Conservative Goal - Targets Minimum Volatility



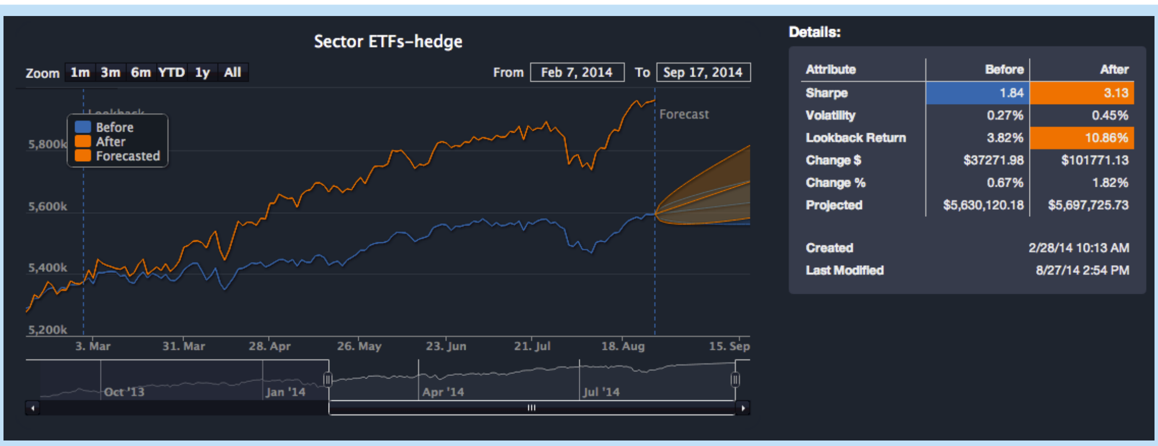
For the most conservative approach and capital preservation select minimum volatility as your hedge goal.

Image 3 - QuantDesk® Hedging for a Balanced Goal - Targets the Sharpe Ratio



If you'd like to maximize your Sharpe ratio, or risk adjusted return, select moderate risk as your hedge goal.

Image 4 - QuantDesk® Hedging for Preserved Returns Goal - Targets Total Return



If you'd like the Hedger to attempt to preserve your portfolio's trend line and its projected return, select preserve return as your hedge goal.

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