



ETA30



The ETA30 Portfolio

Overview



Investment Objective

The Partnership's investment objective is to outperform the S&P 500 Index over time with significantly lower volatility. Investment returns may deviate from the Index in any particular year.

Investment Strategy

The Partnership's investment strategy is based on three principles: (1) superior long term returns are more readily achieved by minimizing losses than by pursuing short term maximization of returns; (2) because the direction of individual assets and the market as a whole is random in the short term, loss minimization is best accomplished by maximizing the variance of returns among portfolio components, and (3) systematically maximizing the variance of returns among portfolio components requires robust quantitative analysis and dynamic portfolio rebalancing.

Using Entropy To Evaluate Correlations:

The Greek letter "Eta" symbolizes entropy. Entropy describes randomness in a system, denoting a lack of certainty or predictability. The Partnership employs three entropy measures to construct a portfolio that exhibits low volatility: structural, non-structural, and market. Structural entropy evaluates the diversification of a portfolio based on the assets and their respective weights, while non-structural entropy focuses on the interconnectedness of assets. Market entropy assesses the overall uncertainty in the financial markets.

Optimization Techniques:

The Partnership employs **Equal Entropy Risk Nested Cluster Optimization (EERNCO)**, a proprietary algorithm that merges nested clustering with entropy optimization.

In its first stage, EERNCO uses nested clustering to group stocks with the objective of maximizing their second order randomness of volatility correlation coefficients. Second order volatility correlations measure how the volatility of one asset changes relative to another. Nested clustering diversifies risk through multi-layer asset groupings. For example, stocks might first be clustered into broad sectors like Technology, or Finance. Within Technology, a second layer might cluster companies by primary revenue source, placing stocks like Microsoft and Salesforce in one group (software) and stocks like Apple and Intel in another group (hardware). Further layers refine these clusters based on numerous other relevant metrics. This layered structure reveals any hidden cluster dynamics that could expose the portfolio to unanticipated risks.



After this initial optimization, **Eigenvector Centrality Distribution (ECD)** is used to measure an asset's importance within the portfolio by considering both the number and quality of its connections to other assets. This technique produces insights into the portfolio's structure and potential vulnerabilities. The algorithm maximizes the ECD entropy to facilitate "Equal Entropy" in the portfolio, which ensures that the diversification benefits of the clustering are evenly spread throughout the portfolio. A low ECD entropy indicates a portfolio that is overly dependent on a few key assets, making it susceptible to stock and sector-specific downturns. Conversely, high ECD entropy suggests that the portfolio is less reliant on any single asset, enhancing its resilience and long-term performance.

Temporal EERNCO and Advanced Algorithms:

Temporal EERNCO integrates time-sensitive factors into its algorithm, thereby dynamically adapting its recommendations in response to new data. Quantitative and qualitative data from several sources are input to the model via APIs. Feature points, which are specific data classes that may influence stock volatility, have been coded into the algorithm. Generative feature engineering, enabled by machine learning, creates additional feature points for evaluation. Each feature point is continually evaluated for relevance, with the most relevant data receiving greater weight in the volatility estimates. Collectively, this suite of inputs, algorithms, statistical measures, pricing methods, risk management techniques and machine learning approaches is referred to as the "model".

Portfolio Components:

(1) Stocks: The core of the portfolio consists of long stock positions selected from among the 30 stocks in the Dow Jones Industrial Average, as optimized by the Temporal EERNCO algorithm.

(2) Stock Options: Options play a significant role in the portfolio. To enhance returns, covered calls are sold against long stock positions. Put spreads may also be established for additional income. Options are also used for hedging purposes, with the model recommending the purchase and/or sale of options on components of the S&P 500 which increase the ECD entropy of the portfolio. The Partnership employs a neural network to analyze changes in the implied volatility of the underlying asset and its impact on option decay and expiry value. Using this information, the model evaluates possible pricing paths and expiry values and identifies the strike price of the option which best fits the Partnership's risk and return parameters.

(3) Index ETF Options: Portfolio exposure is monitored throughout the trading day. When it deviates from a predetermined range, ECD entropy is assessed to ascertain whether it has also breached its specified range. If not, no action is taken, as the model anticipates that portfolio exposure will naturally return to the permissible range through anticipated market changes. If it has breached its specified range, portfolio exposure is not anticipated to return to the permissible range without intervention. Portfolio exposure is then adjusted by buying calls and/or puts on ETFs which track the Dow Jones Industrial Average (DIA), the S&P 500 Index (SPY) and/or the NASDAQ 100 (QQQ).



(4) DIA Puts: Expanding upon the principles of entropy theory, DIA is analyzed using an algorithm that monitors the velocity of changes in its non-structural entropy. When entropy increases to a specific level at a statistically significant velocity (the "critical value"), weekly DIA put options are sold, as determined by the model. Such an occurrence is indicative of a sustained rise in volatility for the forward period. However, once the critical value is exceeded, a subsequent plateau or decline signals a possible spike in market volatility and an attendant decline in DIA. At this point, no new put positions are initiated. By selling DIA puts when the critical value is reached, the Partnership captures increased premiums without assuming unnecessary risk. This period typically spans three to eight weeks.

(5) Sector Pair Trades: The model determines the structural entropy levels of the ETFs corresponding to each of the 11 stock sectors in the S&P 500, scaling the values between -1 and 1. The sector which entropy is expected to decline the most is purchased, while the sector which entropy is expected to increase the most is shorted. Concurrently, calls are sold against the long position and puts are sold against the short position, with the strike prices determined by the model. The income generated from the sold options reduces the reversion in entropy required for a profitable trade. A specific minimum entropy reversion must be identified before initiating a pair trade. This minimum reversion is defined independently of the option income, and it serves as a crucial parameter in determining viable trading opportunities that align with the overall risk management and diversification objectives of the portfolio.

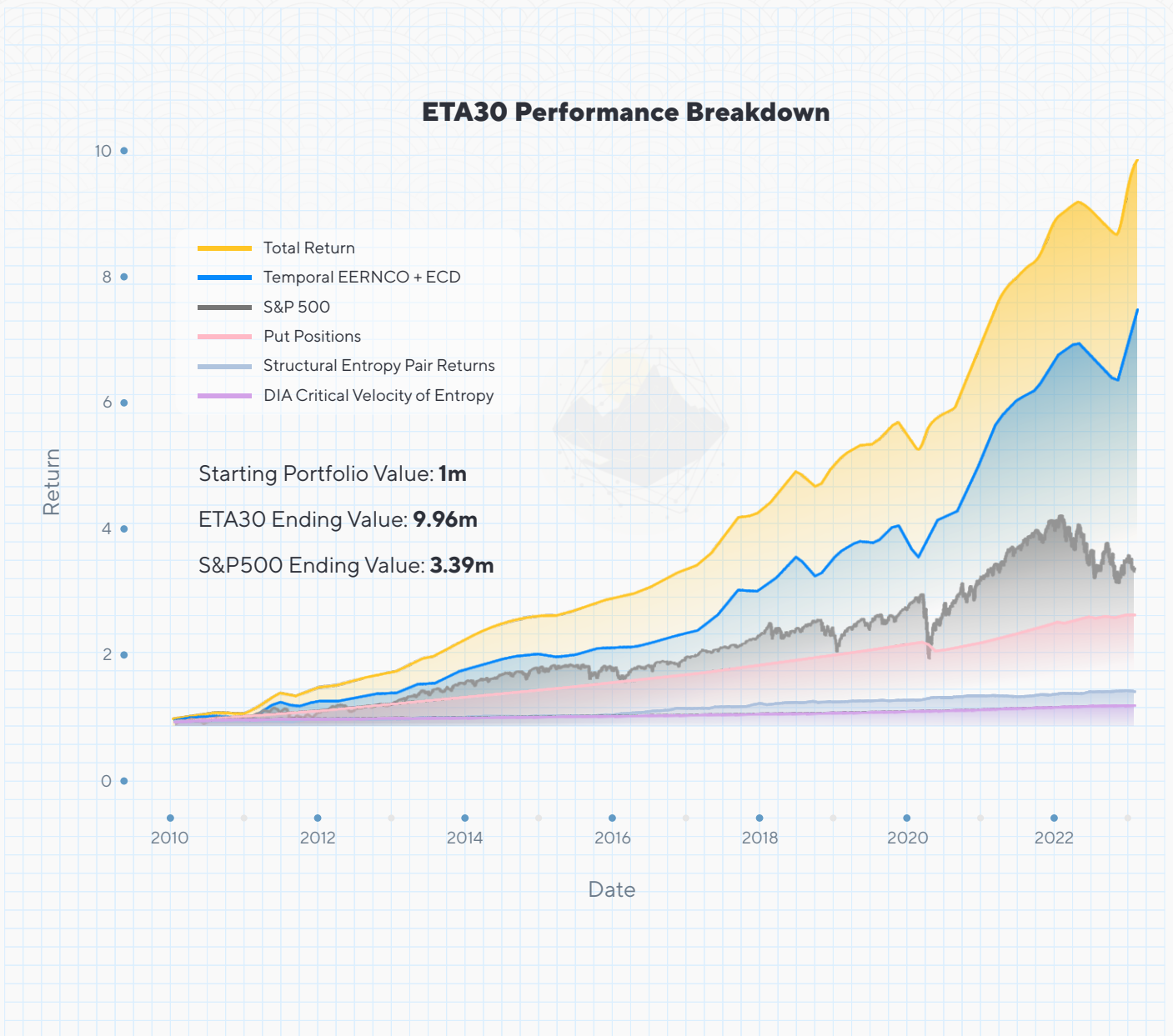
(6) Cash/Treasury Buffer: Approximately 20% of the portfolio is kept in cash or Treasury securities to reduce volatility, enhance cash flow, and/or secure short positions.

[see next pages for Performance charts]





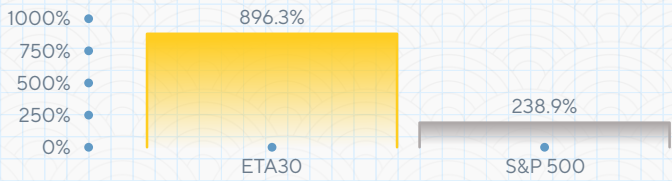
Performance | Dividends Not Included



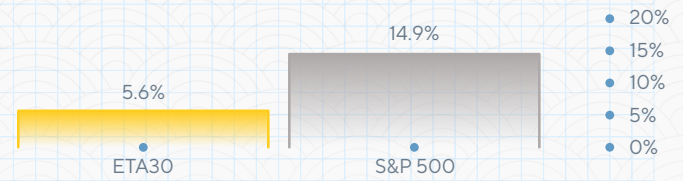


Performance | Dividends Not Included

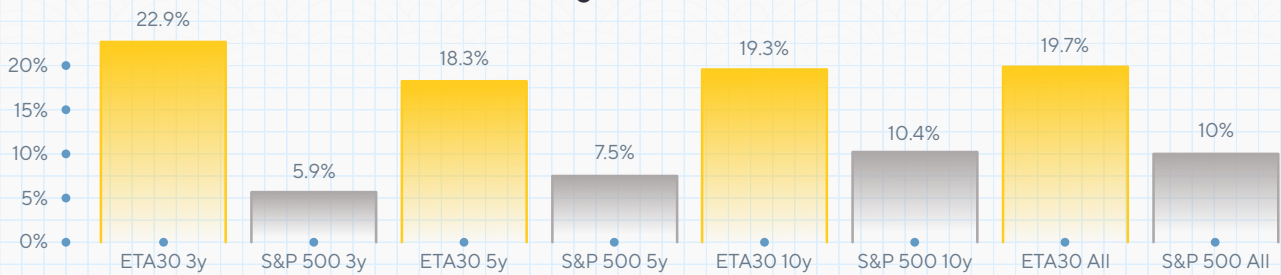
Cumulative Returns



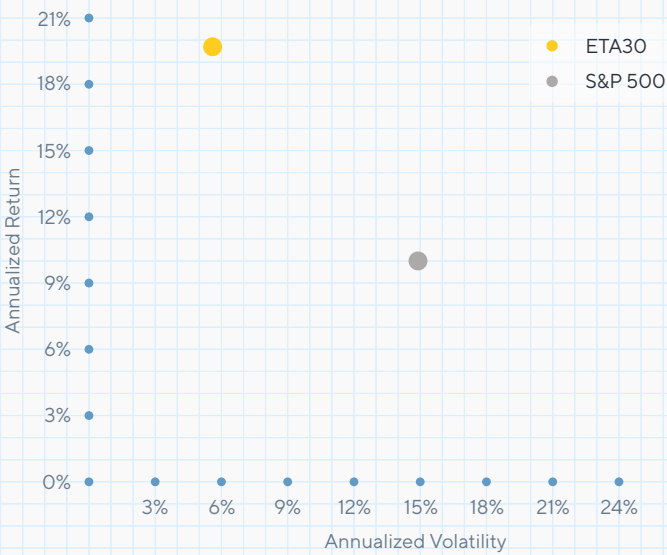
Annualized Volatility



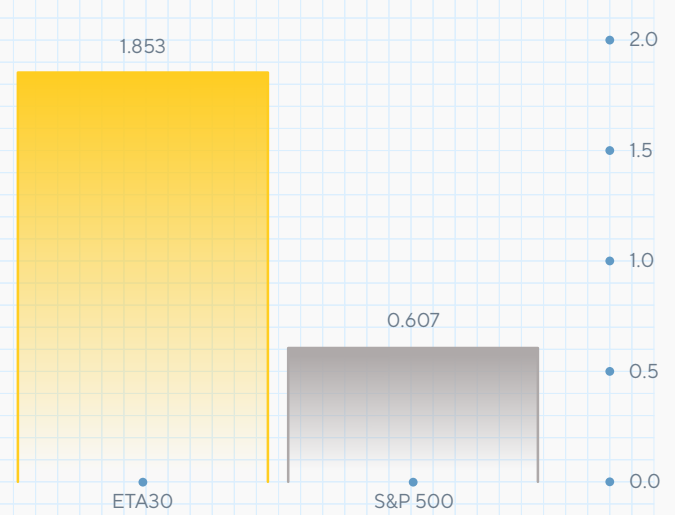
Average Annualized Returns



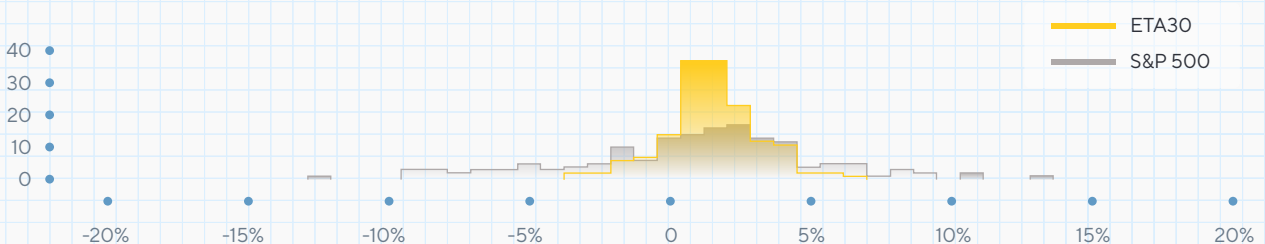
Return vs. Volatility



Sharpe Ratios



Distribution of Monthly Returns





Performance | Dividends Not Included

Quarterly Weighted Volatility of Each Section Compared Against S&P 500

