

“ *By prevailing over all obstacles and distractions,
one may unfailingly arrive at his chosen goal or destination* ”

- Christopher Columbus

Overview

The Columbus allocation strategy dynamically allocates a portfolio of ETFs among the world’s major asset classes by continuously adapting to market conditions. It is designed to achieve returns generally in line with global equity markets while placing emphasis on containing drawdowns during turbulent times. It invests in up to 8 ETFs at any given time selected from a universe of 15 highly liquid ETFs. These were carefully chosen to represent the financial markets major asset classes. The strategy trades monthly around the end of the calendar month.

Columbus ETF Universe

During any given month, the strategy invests in up to 8 ETFs from the following set:

Symbol	Description	Symbol	Description
SPY	SPDR S&P 500 ETF	VNQ	Vanguard REIT Index ETF
EFA	iShares MSCI EAFE Index ETF	VWO	Vanguard FTSE Emerging Mkts ETF
VXF	Vanguard Extended Market ETF	IEF	iShares 7-10 Year Treas. Bond ETF
EWJ	iShares MSCI Japan ETF	TLT	iShares 20+ Year Treas. Bond ETF
GLD	SPDR Gold Shares	TIP	iShares TIPS Bond ETF
DBC	PowerShares DB Commodity Index Tracking Fund	LQD	iShares iBoxx \$ Investment Grade Corporate Bond Fund
UUP	PowerShares DB US Dollar Bullish Index Fund	PCY	PowerShares Emerging Markets Sovereign Debt Portfolio
		SHY	iShares 1-3 Year Treas. Bond ETF

Allocation Method

The Columbus strategy uses a quantitative method to make its allocation decisions. It selects ETFs and adjusts their portfolio weights based on price momentum, asset price volatility and correlation of asset returns against the overall portfolio.

Every month, the strategy evaluates all ETFs in its universe and assigns a relative score to each based on a combination of momentum, volatility and correlation. In general, high momentum ETFs score higher while volatile ones score lower. Portfolio weight limits are imposed on all assets and are dynamically reduced when the asset exhibits high recent price volatility. In addition, a machine learning technique called regularization is used to give higher priority to assets exhibiting low correlation to the overall portfolio. In aggregate, these measures are used to contain portfolio risk and minimize the likelihood of large drawdowns.

Portfolio assets that don’t achieve an acceptable score are sold and replaced by assets with the highest scores currently available in the universe.

If no assets with acceptable scores are available, then the cash-like asset (SHY) is used. During turbulent markets, the portfolio may be fully invested in this cash asset to protect investor wealth.

Portfolio weights are determined through an optimization process designed to capture price momentum while simultaneously containing portfolio volatility. A tradeoff is made between momentum and volatility to capture the best risk-adjusted return.

Maximum Exposure Limits

The maximum portfolio exposure limits for each ETF are shown in the table below. These limits are dynamically adjusted downwards in a typical market situation due to volatility and correlation, but in no event can the portfolio exceed these limits.

Symbol	Exposure Limit	Symbol	Exposure Limits
SPY	50%	VNQ	30%
EFA	35%	VWO	25%
VXF	35%	IEF	50%
EWJ	25%	TLT	40%
GLD	35%	TIP	40%
DBC	30%	LQD	30%
UUP	50%	PCY	30%
		SHY	100% (Cash ETF)

The Columbus strategy implements a dynamic tactical asset allocation methodology. By design, no constraints have been imposed on asset class weights. It is therefore conceivable that in some situations the strategy may be allocated 100% to equity ETFs while it may be 100% in fixed-income ETFs or cash in other situations, notwithstanding the per-ETF exposure limits highlighted above. Care must therefore be taken to ensure asset class allocation limits are not violated in a given investor's portfolio.

Typical Applications

The Columbus strategy may be used in several ways to suit an investor's situation and risk tolerance.

In one application, an investor may wish to track the strategy "as-is" without adjustments. In such case, asset class portfolio weights will not be constrained as discussed above. While diversification among multiple ETFs will be achieved to respect the maximum exposure limits shown in the table above, the strategy may potentially allocate the entire portfolio to a single asset class in some situations. In such situations, adjustments to the investor's portfolio may be required to fit the investor's profile.

Another approach is to set a fixed strategic allocation for a portion of the portfolio while the Columbus strategy is used to manage the dynamic tactical allocation portion of the portfolio, understanding that at times it may allocate all of its assets to a single asset class. This split allows direct management of asset class exposure and is generally the preferred method to implement the strategy in specific situations.

A third approach is to use the strategy as general guidance for tactical asset allocation to provide a high level view of the market's current regime through the strategy's asset class exposure.