

Trend Aggregation: An Advanced Approach to Tactical Asset Allocation

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Trend Aggregation is a strategy that diversifies investment methodologies in order to adapt to all types of market environments. Trend Aggregation shares elements with Tactical Asset Allocation (TAA) while also attempting to improve upon some common tactical management issues, such as performing well in choppy market conditions.

Trend Aggregation vs. Traditional Tactical Asset Allocation

Tactical Asset Allocation has become more popular as investors prefer a methodology that can help protect from large market downturns while still participating in market upside. Unfortunately, many tactical methodologies fail to do well in all markets. Traditional tactical management styles generally excel in a straight up or straight down market, but they tend to struggle to perform well in choppy markets.

Trend Aggregation is differentiated from a traditional tactical style in that Trend Aggregation uses a multi-dimensional strategy that combines methodologies that have different, uncorrelated return streams, such as intermediate-term momentum methodologies and short-term countertrend methodologies. The goal of this approach is to have well-defined strategies for all market climates.

As a result, Trend Aggregation methodologies are designed to have better chance to protect against large losses during market downturns, while still positioning investors for gains when the market is trending upward. This management style analyzes trends and countertrends, positioning investments according to confirmed information from the markets.

The Trend Aggregation approach includes a strategy not only for markets with a clearly defined trend, but also for choppy, directionless markets, something traditional tactical strategies struggle to accomplish.

There are generally three types of markets:

- Markets that go up in a fairly straight line
- Markets that go down in a fairly straight line
- Choppy markets that could go in either direction

Despite regular rebalancing, generally, traditional asset allocation strategies tend to ride a bull market up, ride the bear market down, and move with the choppy market, hoping for a positive result.

In a traditional tactical approach, investors generally participate in a portion of bull market returns and avoid large losses of a bear market. However, choppy markets present a problem as there is no defined trend for the tactical investor to follow.

Additionally, while some tactical methodologies may protect investors from significant losses, generally no one methodology works in all markets. This is why trend aggregation uses multiple methodologies.

For example, if a tactical strategy relies solely on a momentum methodology, it can perform well in some markets and experience unnecessary losses in other types of markets. This is because a momentum methodology relies on whatever asset class happens to be strong, remaining strong for a long-enough period to profit. But a momentum methodology tends to struggle during choppy market environments, as market leadership will often vary with no discernible trend to latch onto.

When using a Trend Aggregation approach, each type of market is handled differently. In bull markets, investors can be mostly or completely in stocks. In bear markets, investors are generally out of stocks, but have the ability to participate in bear market rallies through countertrend methodologies. Additionally, with the use of specific methodologies, investors can participate in the overreactions of choppy markets.

How Trend Aggregation Strategies are Formed

The process of forming Trend Aggregation strategies starts with a premise, based on

market psychology, which is evaluated using walk-forward testing. If a premise passes the walk-forward test, parameters are chosen based on where they fall in the distribution and what nearby parameters do. Time dilation is also considered; strategies with too much downside are thrown out. Finally, dynamic market hedging is used as models are evaluated based on forward-looking due diligence from the standpoint of:

1. Why are returns likely to persist into the future?
2. What can go wrong?
3. How will the model adapt when market dynamics change?

Walk-Forward Testing

Trend Aggregation strategies are formed with the use of walk-forward testing, which is the most rigorous form of backtesting. This helps to avoid curve fitting and determines how robust a strategy could be going forward. Many managers do not employ the use of walk-forward testing, since it is extremely complex, time consuming, and often exposes dangers in their current strategies. However, when used, walk-forward testing may help to filter out personal biases held by managers.

Walk-forward testing allows one to accurately test a strategy without using clients' money. If the strategy is robust throughout this process, there is a better chance it will continue to be robust when it is traded live with actual money.

Time Dilation

Time dilation refers to the fact that investors and portfolio managers tend to believe whatever is going on in the market or with their portfolios will persist for a long period of time. Drawdowns that could appear to be minor blips on a long-term backtest could turn into major problems for investors and could cause the portfolio manager to dump a winning strategy.

Forward-Looking Due Diligence

Trend aggregation methodologies are also developed using forward-looking due diligence. The forward-looking due diligence process consists of evaluating the methodologies of models and strategies to gauge how they will perform in the future. Although past performance is also reviewed, it does not provide an indication of future performance and is therefore not used as a method for assessing future abilities of a particular strategy. Rather, forward-looking due diligence focuses on how well that strategy is likely to perform on an ongoing basis.

Due Diligence of Individual Strategies: This process starts with standard measurement systems, such as track record, correlation, and volatility. Then it looks at every strategy against four filters:

1. *Return Attribution.* From a reverse-engineering standpoint, where have any recent returns come from?
2. *Attribution Persistency.* Will the current performance persist going forward, and, if so, why?
3. *Tail Risk Analysis.* What factors may contribute to potential loss?
4. *Portfolio Flexibility.* What changes in strategy, if any, should be made?

Due Diligence of Aggregated Strategies: When determining whether any changes are to be made to portfolios, additional questions are asked pertaining to the aggregation of strategies:

1. *Performance vs. Expectations.* How did portfolios of combined strategies, for example, perform against expectations?
2. *Portfolio Optimization.* What changes in allocation percentages, if any, are required to improve portfolios?
3. *Scenario Analysis.* What are possible market scenarios going forward on an immediate basis? How would current portfolios perform in those markets?
4. *Failure Mode and Effect Analysis.* How does what is going on in one model impact the others and the overall portfolio?

Trend Aggregation Rules

Trend Aggregation concentrates on several factors when striving to generate strong returns, including:

1. Utilizing Actual Diversification as opposed to Perceived Diversification.

Traditional asset management diversifies portfolios through different asset classes, which can be referred to as *perceived diversification*, since there are occasionally times when most, if not all, asset classes move downward simultaneously. To guard against this, trend aggregation combines non-correlated methodologies, timeframes, and return streams. This is referred to as *actual diversification*.

Actual diversification, a major component of Trend Aggregation, can better diversify

portfolios for safety purposes, as it diversifies through multiple tactical methodologies, time frame variation, market basket variations, underwater correlation analysis, and return streams.

2. Focusing on Underwater Correlation as opposed to Standard Straight Line Correlation.

Underwater correlation refers to tracking how different asset classes, as well as different methodologies, are correlated or uncorrelated during market downturns. Traditional asset allocation tends to manage risk by diversifying non-correlated asset classes. Trend Aggregation attempts to diversify methodologies that are correlated in an up market but non-correlated in a down market.

This is accomplished using uncorrelated methodologies with different return streams. This also works to protect portfolios from the pitfalls of traditional straight-line correlation, which takes a series of returns for two or more asset classes or methodologies to determine whether the return series is correlated. Straight-line correlation only establishes whether the asset classes or methodologies were correlated over a chosen time period. Another issue with straight-line correlation is that it doesn't always answer the most important question, as well as the reason for diversification, which is when one asset class or methodology is in a drawdown, how is the other one performing?

3. Staying heavily weighted in stocks when stock *momentum* is positive.

Momentum is the tendency of investments to persist in their performance. In other words, sectors that outperform during a given time period tend to continue to outperform.

Momentum analysis should first be used to determine whether to allocate money to stocks, bonds or cash and then to decide which stock and/or bond sectors are the strongest.

4. Using *countertrend analysis* to buy into short-term lows and sell into short-term highs for stocks.

Countertrend analysis looks for signals to buy when markets are oversold and to sell when they are over-bought. This type of analysis takes advantage of the fact that over the short term, markets are dominated by noise, fear, and greed. These factors can cause the market to overshoot on the upside and downside before eventually snapping back into equilibrium. Countertrend trades are typically much shorter in

duration than momentum trades.

For example, a momentum methodology will buy an asset when it is high and sell it when it starts to weaken. A countertrend methodology will buy an asset when it is weak and sell it when it starts to strengthen. One could apply each methodology to the same investment and get a completely different return stream.

Trend Aggregation hedges market risk by moving out of stocks during difficult markets and into either inverse stocks, volatility, bonds or cash, depending on which is more attractive.

Summary

Trend Aggregation uses a variety of different methodologies to attempt to do well in all market trends. Trend Aggregation can profit during market uptrends, avoid large losses during sustained market downturns, and retain the ability to perform well in choppy markets.

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