

# Don't Mistake Style for Skill

## The Impact of Style Factors on Performance Among Trend Followers

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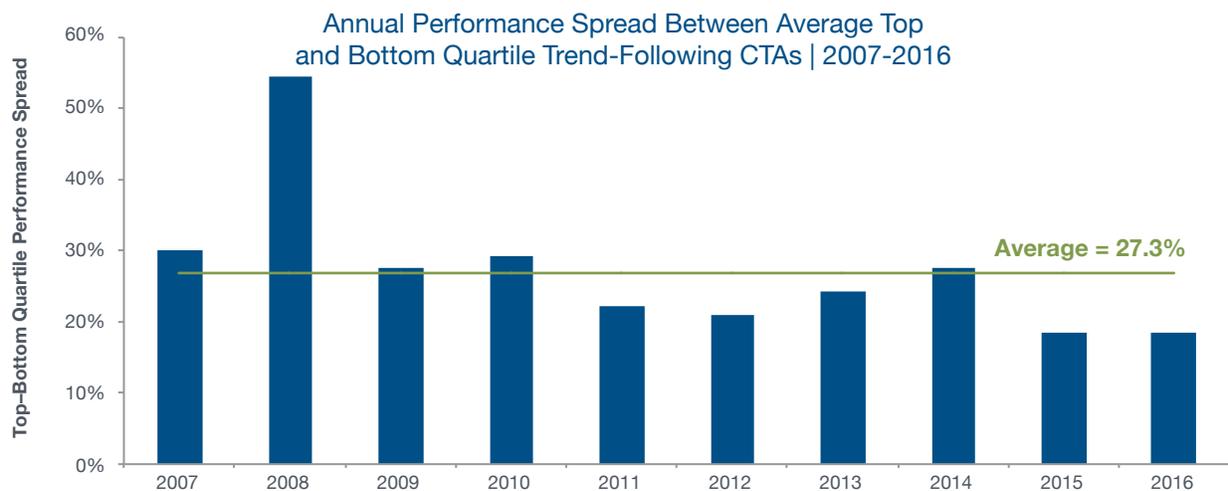
Our study shows that style factors including volatility targets, speed and sector exposures explain many of the historical short-term performance differences among trend followers.

Managed futures have become an alternative asset class that is widely used by investors seeking overall portfolio diversification and absolute returns independent of the direction of broad equity and bond markets. The most common managed futures trading strategy is trend following, a strategy that attempts to exploit momentum in more than 200 global futures markets (including commodities, equities, fixed income, and currencies) by taking long positions in rising markets and short positions in falling markets.

While investors have embraced the potential benefits of managed futures, the causes of the large performance dispersion among trend following commodity trading advisors (“CTAs” or

“managers”) are not well understood given that their trading programs are conceptually similar. The research team at Steben & Company set out to find answers.

From 2007 to 2016, the annual performance gap between the year’s top and bottom quartile trend followers averaged 27.3 percentage points, a very wide margin (Chart 1). Furthermore, in 2008, when investors were most reliant on trend followers to deliver performance to offset stock market losses, the performance gap between top and bottom quartile trend followers grew to 54 percentage points. With managed futures, we believe, manager selection is paramount.

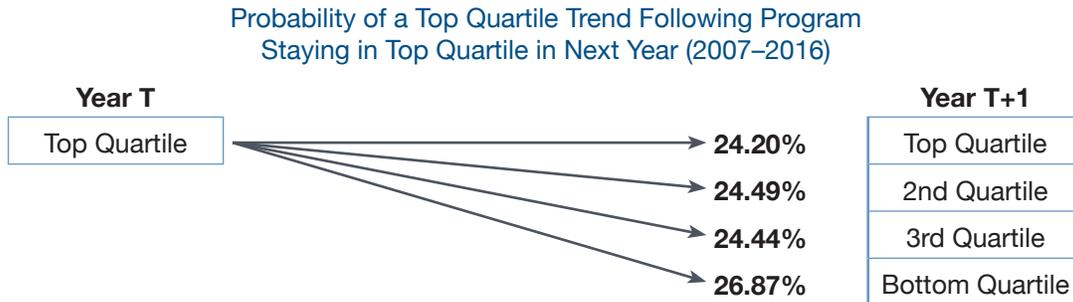


PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. DIVERSIFICATION DOES NOT ASSURE A PROFIT OR GUARANTEE AGAINST A LOSS. We ranked the year over year performance of all Trend-Following CTAs in the Barclay CTA Index for the 10-year period ended 2016. We then calculated the median performance of the bottom and top quartiles for each year. The difference or “spread” between the two medians is reflected in the chart. Trend-Following CTAs represent all CTAs included in the Barclay CTA Index each year during the period whose performance was at least 0.5 correlated to the Barclay CTA Index. Source: Barclay CTA Database. See Glossary for further information on the Database.

**CHART 1** Source: Barclay CTA Database

A comparison of historical performance is an obvious starting point for investors seeking to evaluate trend followers. However, investors will find that returns varied significantly from year-to-year. The question then is whether the stronger performing manager in a particular year had a superior trading system that could lead to better

than average returns in future years. Unfortunately, the answer is often no. As you can see in the chart (Chart 2) below, the top quartile trend following program in one year did not usually stay in the top quartile in the next year. There was little short-term persistence in the performance rankings.



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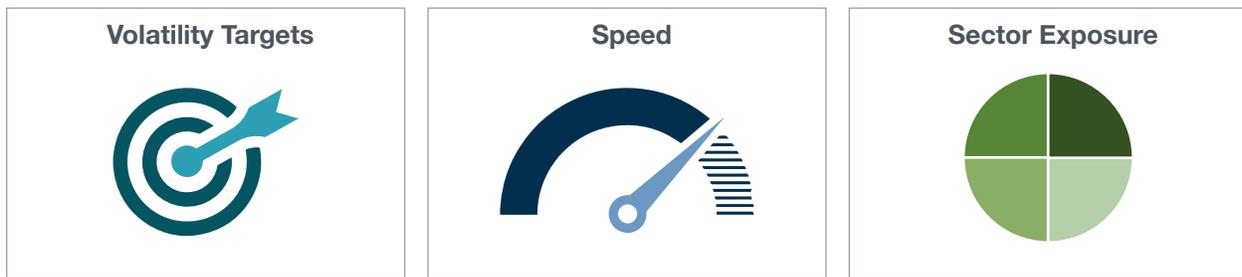
**CHART 2** Source: Barclay CTA Database

Despite the lack of persistence, there are major differences in the quality and sophistication of trading systems among trend followers, and these can manifest themselves in long run performance differences. Managers with a stronger focus on research, risk management and trade execution are more likely to have better performance when measured over multiple market cycles. But in a single year the wide dispersion in managed futures fund performance cannot be explained solely by differences in manager skill or “edge.”

have a particular style tilt (value vs. growth, large cap vs. small cap), trend following CTAs also have style biases. In the traditional investing world, a small cap growth equity fund manager may outperform a large cap value manager in a particular period, not because he or she has greater stock selection skill, but simply because small caps outperformed large caps and growth outperformed value. Similarly, in managed futures, a trend following program’s style choices can be the key drivers of short-term relative performance compared to its peers.

Instead, we found that style factors explain most of the performance differences between managers in a given year. Just as long-only equity funds may

In trend following strategies, we believe the three most important style differences are volatility targets, speed and sector exposure.

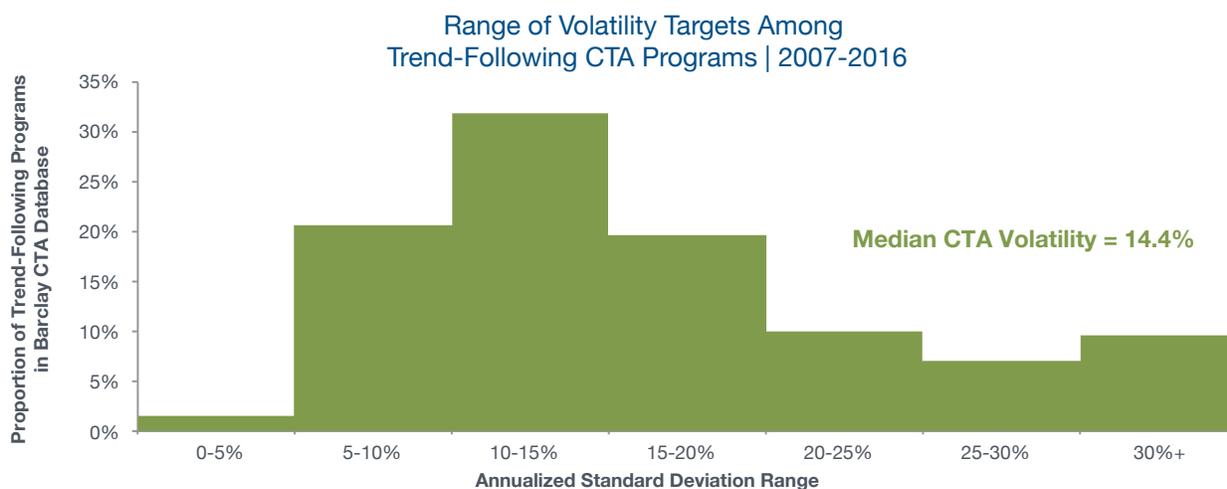


We will explore each of these style factors in turn, and then conclude with our thoughts on how investors should consider allocating capital to trend followers given the different styles that are available.

## Style Factor 1: Volatility Targets

One of the most fundamental differentiators within any investment strategy is the amount of risk assumed by a manager. Traditional long-only strategies generally do not target specific risk levels, but passively bear the amount of risk generated by the broader market. For example, an equity mutual fund is generally fully invested in stocks and takes on the volatility of the broad stock market. In contrast, trend following strategies typically target a specific level or range of volatility as an inherent element of the investment process. They actively adjust the size of their futures positions in inverse proportion to changes in market volatility in order to achieve that target.

The key aspect is that different trend followers target different levels of volatility. This target is a purely subjective choice on the part of the manager. A higher volatility target is achieved through higher leverage. The chart (Chart 3) below shows the very wide range of manager volatilities, as represented by their annualized standard deviation. The median annualized standard deviation of trend following programs was 14.4% (close to the S&P 500's volatility of 15.3% over the same time frame). While the most popular range for volatility is 10%-15%, there were plenty of programs with an annualized standard deviation in excess of 30%.

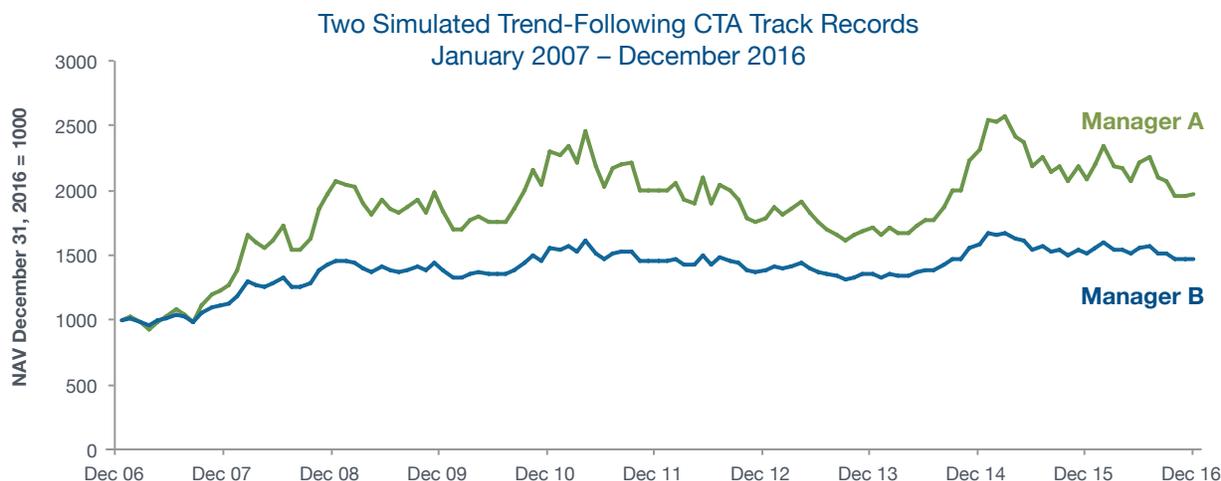


PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. DIVERSIFICATION DOES NOT ASSURE A PROFIT OR GUARANTEE AGAINST A LOSS. We ranked the average volatility of all Trend-Following CTAs in the Barclay CTA Index for the 10-year period ended 2016. We then broke out the averages down by the percentages shown above. Trend-Following CTAs represent all CTAs included in the Barclay CTA Index each year during the period whose performance was at least 0.5 correlated to the Barclay CTA Index. Source: Barclay CTA Database. See Glossary for further information on the Database.

**CHART 3** Source: Barclay CTA Database

Any given manager can increase a program's target rate of return (assuming it is positive) by increasing leverage and hence increasing volatility. The next chart (Chart 4) presents returns of two simulated trend following programs. Manager A exhibits a higher return between 2007 and 2016. Some investors might consider Manager A superior to Manager B, however, these simulations are identical in every way, with one important exception. The

simulation for Manager A targets 20% annualized volatility whereas Manager B runs the identical program with an annualized 10% volatility target. Manager A generated its outperformance from simply taking twice as much risk over the life of the investment. This emphasizes the importance of looking at risk-adjusted returns in making any comparison between trend followers.



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**CHART 4** Source: Steben & Company, Inc.

In managed futures, there is a close relationship between leverage and volatility. For a given trading program, doubling the leverage generally doubles the standard deviation of returns, all else equal. Managers have a lot of flexibility in setting their leverage levels since futures are traded on margin. In managed futures, leverage is usually measured by the margin-to-equity ratio, which is essentially the percentage of the net capital of the fund that is being put up as margin to support its positions in futures contracts. The higher the margin-to-equity, the higher the leverage and hence the higher the volatility. A reasonable rule of thumb for a diversified trend following program is that x% margin-to-equity translates into approximately the same x% expected annualized standard deviation

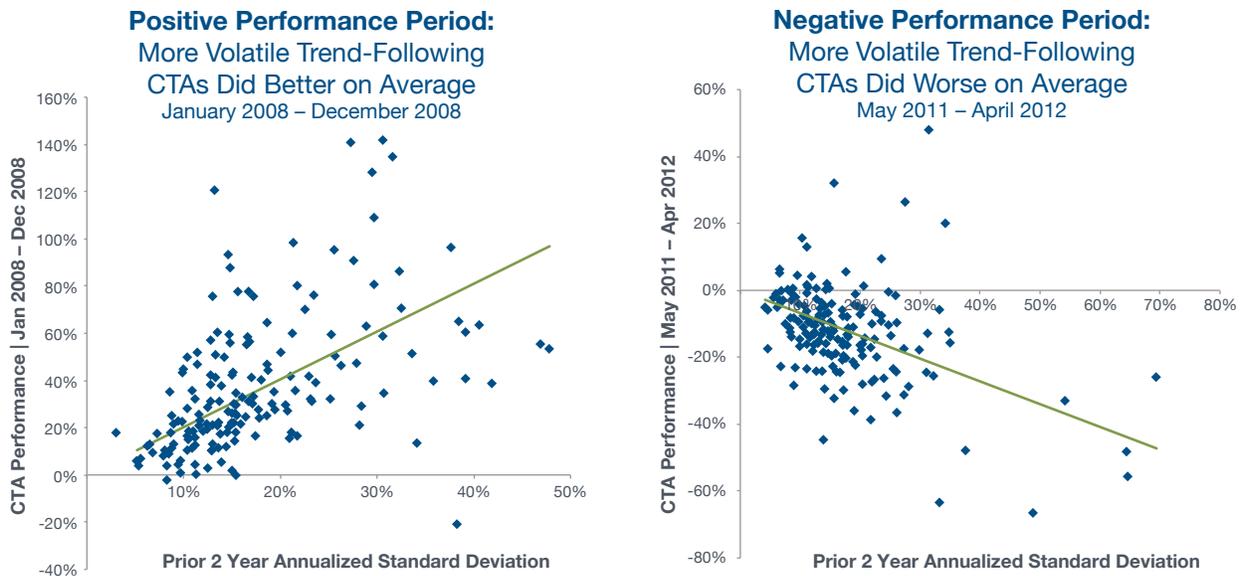
of returns (give or take a couple of percent). So 10% margin-to-equity would imply roughly a 10% standard deviation; 20% margin-to-equity would imply a 20% standard deviation, and so on.

The charts on the following page (Charts 5 and 6) reflect the performance and volatility of every trend following program in the Barclay CTA database during an example of a strong and a weak period for managed futures. In good periods for trend following (such as 2008), more volatile managers tended to do better. In contrast, in difficult periods for trend following (such as the period from May 2011 to April 2012), more volatile managers generally lost more.

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As demonstrated by charts 5 and 6 on the following page, more volatile managers tended to perform better during positive periods for trending following, but also tended to lose more during difficult periods for trend following.

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PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. DIVERSIFICATION DOES NOT ASSURE A PROFIT OR GUARANTEE AGAINST A LOSS. We plotted the prior 2-year volatility of all Trend-Following CTAs in the Barclay CTA Index and their subsequent returns for the periods January 2008 to December 2008 and from May 2011 to April 2013. Trend-Following CTAs represent all CTAs included in the Barclay CTA Index each year during the period whose performance was at least 0.5 correlated to the Barclay CTA Index. Source: Barclay CTA Database. See Glossary for further information on the Database and volatility.

**CHARTS 5, 6** Source: Barclay CTA Database

For investors, the appropriate level of volatility depends on their tolerance for losses. If an investor wants to allocate to a particular trend following program, but feels its volatility target is too high, they have the option to allocate a smaller amount and hold cash against it, so the blended CTA plus cash position hits the desired volatility level. For

a portfolio of multiple managed futures funds, it can be helpful to size manager allocations in inverse proportion to their volatility to balance the risk contribution of each manager. Again, if the mix is more volatile than desired, cash can be held alongside the position to bring the blended volatility down.

## Style Factor 2: Speed

A second differentiator between trend following managers is their speed. Fast trend following systems look to exploit short term trends and will react more quickly to market price changes. In contrast, slow trend systems look to profit from long term trends and tend to react less to short term price moves. The speed of a trend following system can generally be defined by the length of its lookback period, and there is a continuum of possible speeds from which to choose. A fast system might look back at futures prices over the past 30-60 trading days. If prices are higher today than the start of that period, there is a positive trend, and a manager would likely take a long

position. If prices have fallen over the lookback period, they would likely take a short position. A medium speed trend system might have a 60-120 day lookback period to determine the direction of the trend. A slow system might look back 120-240 days or even longer to determine the direction of the trend. Most CTAs employ a blend of multiple speeds, but they may choose to weight one end of the speed spectrum more heavily than the other.

Different trend following speeds will have very different performance depending on the market environment. When there are large sudden turning points in prices, such as the dramatic rise and collapse of oil prices during the 2008 crisis, fast

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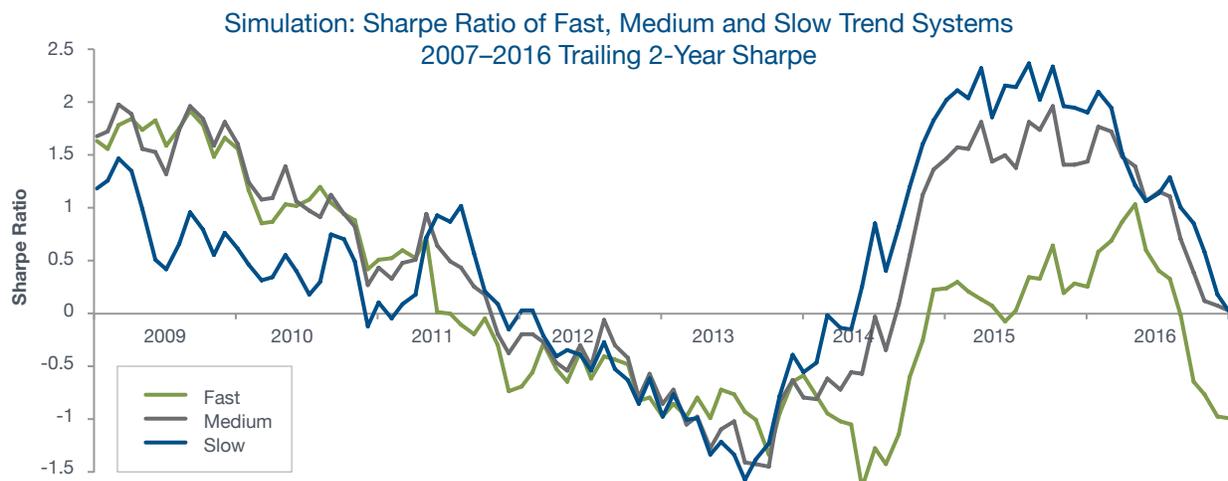
Trend following programs with different speeds outperformed during different periods.

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systems tend to react more quickly and can capture more of the early profit in the new trend. Slower systems react more gradually and may sustain larger initial losses in this scenario before they register that the long term trend reversed from bullish to bearish. However, there are environments where slow managers do better. Slow managers tend to outperform when there is a sustained but choppy long-term trend, such as the bullish trend in US equities from 2009-2016, which was punctuated by occasional sharp sell-offs and equally sudden recoveries. Fast managers tend to get whipsawed in this environment, as they flip from long to short right before a sudden recovery, sustaining losses on each reversal. Slow managers keep a relatively constant position through the short-term noise and capture much more of the long-term price move.

To illustrate this, we ran the simulated performance of three basic trend-following systems: fast, medium and slow. We then tracked the 2-year rolling Sharpe ratio of each trend following speed to look at relative performance over the 2007-2016 period. The results in the next chart (Chart 7) demonstrate that fast and medium speed systems outperformed slow systems in the 2008-2010 period, which saw big extended price swings over the course of the financial crisis and recovery. In comparison, slow systems did the best during the choppy period from 2013-2016, while fast systems did the worst.

Different speeds outperform in different historical periods and it is difficult if not impossible to forecast which speed will do better in the near future. Given this outcome, investors should consider a range of trend-following programs with different speeds.



The returns are for illustrative purposes only and do not represent the performance of any CTA. We created a simple exponentially weighted moving average crossover trend following model. The fast system has a blended 30 and 60 day lookback; the medium system has a blended 90 and 120 day lookback; and the slow system has a blended 180 and 240 day lookback. The systems are applied to 36 large futures markets over the period from 2007-2016. The systems are calibrated to deliver 10% volatility. The model simulations do not reflect and fees, expenses or trading costs.

**CHART 7** Source: Steben & Company, Inc.

## Style Factor 3: Sector Exposures

After a manager determines the volatility target and blend of trend following speeds, the next major decision is the universe of futures markets to be traded. Most managers are diversified in that they maintain at least some allocation to each of the four main futures sectors: commodities, equities, fixed income, and currencies. However, managers can select very different weightings in each sector, and that can have a major impact

on relative performance. If a manager allocates more to a sector that happens to trend better in a given period, then that manager is more likely to outperform. Since it can be difficult, if not impossible, to predict which sectors will trend better, there is a major element of luck in whether a particular market allocation scheme helps or hurts in any given year.

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Trend following programs with different sector exposures outperformed during different periods.

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The most common approach is for managers to allocate a quarter of the portfolio to each of the four sectors. However, there are some managers whose portfolio construction philosophy involves weighting the most uncorrelated markets more heavily, which generally leads to a larger than average allocation to commodities. In contrast, managers with high assets under management may have a larger allocation to financial futures sectors (equities, fixed income and currencies) since these have more capacity than commodities markets, which tend to be smaller. You might also see performance-chasing managers allocate more weight to the sectors that have performed the best in recent history, and these might be more heavily weighted to fixed income markets today. There can also be differences in manager allocations to the individual markets within a sector, with some preferring only the largest and most liquid markets, while others trade the smaller markets. In short, there can be a great deal of style diversity across managers in their market and sector allocation choices.

In the next chart (Chart 8) is a simulation showing how trend following profits vary across sectors, so that differences in sector allocations can lead to meaningful differences in overall performance. We apply a medium term trend strategy to each of the four major sectors and plot the rolling 2-year Sharpe ratio. You can see that a manager with a heavy fixed income weight would have had a distinct advantage in the 2009–2012 period. In comparison, a commodities-heavy manager would likely have struggled with performance headwinds in the 2012–2014 period. Each of the sectors had at least some rolling 2-year period in which it was the best performing sector, and going forward we think that sector performance is likely to be equally cyclical and unpredictable.

Since forecasting sector trend performance is so difficult, we believe that investors are best served by allocating to managers in a way that leads to a balanced sector allocation. Any single manager in the portfolio might have a bias, but this should be offset by allocations to other managers so that the overall portfolio has roughly equal risk weights to each sector.



The returns are for illustrative purposes only and do not represent the performance of any CTA. We use a simple exponentially weighted moving average crossover model with a blended 90 day and 120 day lookback window. We apply this to the 6 largest futures markets in each of the equities, fixed income and currencies sectors. For the commodities sector, we apply the model to the 6 largest markets in each of the energies, metals and agriculturals subsectors (so 18 commodities markets overall). The model simulations do not reflect and fees, expenses or trading costs.

**CHART 8** Source: Steben & Company, Inc.

## Manager Skill and Trading System Edge

In this white paper we have argued that much of the short-term dispersion in trend following performance among CTAs can be attributed to different style factors among managers, and that performance differences are largely a function of luck. Outperformance due to a style choice is usually unsustainable since different styles have historically outperformed at unpredictable times.

Manager skill and the edge in a trading system are the unique elements that lead to long run outperformance.

Elements of skill or edge:

- Trend detection mechanism: Trends may be detected with a breakout system, a moving average crossover system, or a more sophisticated statistical filter.
- Position sizing mechanism: Given a particular trend signal, a model needs to determine how large of a long or short position to take. This may be a binary function, a continuous linear function or a non-linear function.
- Dynamic elements: Some more complex programs may systematically change their volatility target, trend speed or sector allocations based on the market environment.
- Asymmetric elements: Some managers may take long trend positions more readily than short trend positions (or vice versa). They may also have different speeds for position entry versus exit.
- Non-trend elements: Managers may add diversifying strategies to the mix such as carry, mean reversion, or pattern recognition systems. These may be separate modules in the program, or may be blended with trend following. For example, perhaps only trends in the same direction as carry signals are traded.
- Risk management: Systems vary in the speed of risk reduction after a market reversal and trading loss. Some systems may even take off risk pre-emptively in anticipation of a reversal on a mature trend.
- Trade execution: Managers, especially larger ones, may focus on how to spread their trades out to minimize negative market impact.
- Ongoing research: Part of the skill of a manager is investing in research and development to be able to make continuous evolutionary improvements to the trading program in response to changing market regimes and new competition.

## Key Take-Away

Style factor differences among trend following CTAs have historically had a larger impact on short-term performance than many investors appreciate.

As our analysis shows, simply allocating to last year's top performing CTA programs was usually not a recipe for long-term success, since there is a strong chance that the style factors that drove the outperformance are the same style factors that could lead to underperformance in the next year.

Since style factor contributions to performance can be so unpredictable, investors should consider diversifying their allocation to different trend speeds and maintain a balanced overall sector allocation. Sizing of the allocation should take into account the volatility target of the CTA program so it is consistent with an investor's risk tolerance.

Certain investors may be able to accomplish manager evaluation, selection and allocation tasks on their own, while other investors may prefer to access the asset class through a multi-manager CTA fund. Multi-manager CTA funds offer professional manager due diligence, manager selection, portfolio construction, and ongoing risk monitoring. Multi-managers also seek to provide diversified exposure to different style factors by allocation to different types of managers.

We believe investors should look at long-term, multi-cycle risk-adjusted returns when evaluating trend following CTAs, complemented with a qualitative analysis of the unique elements of a trading program that constitute a manager's edge or alpha.

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*movements may result in large changes in the value of a leveraged investment. The potential loss on such leveraged investment may be substantial relative to the initial investment therein. In addition, they can be highly illiquid; are not required to provide periodic pricing or valuation information to investors; may involve complex tax structures and delays in distributing important tax information; are not subject to the same regulatory requirements as mutual funds; and often charge high fees which may offset any trading profits. Diversification does not ensure a profit or guarantee against a loss. Alternative investment managers typically exercise broad investment discretion and may apply similar strategies across multiple investment vehicles, resulting in less diversification. Trading may occur outside the United States, which may pose greater risks than trading on US exchanges and in US markets.*

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*There may not be a secondary market for an investor’s interest in alternative investments, and none may develop. There may be restrictions on transferring interests in some types of alternative investments.*

## Glossary

This glossary is intended as a reference for commonly used investment terms but does not contain all relevant terms nor all possible definitions of any individual term. You may wish to contact your investment professional for additional information. The information set forth was obtained from sources believed to be reliable, but we do not guarantee its accuracy or completeness.

**Barclay CTA Database:** Provides data on more than 1,000 commodity trading advisors (CTAs) including holdings, performance returns, assets and fees. Monthly returns are updated daily.

**Correlation:** A measure of the degree to which two variables relate to each other.

**Leverage:** The use of various financial instruments or borrowed capital, such as margin, to increase the potential return of an investment.

**Long:** A position that will profit from an increase in a security's price.

**Sharpe Ratio:** A calculation meant to illustrate the amount of return one is achieving per unit of risk. It is derived by dividing the average annual return by the standard deviation of an investment. A higher number tends to signify a better return/risk relationship, whereas a lower number may be seen as unfavorable.

**Short:** A position that will profit from a decrease in a security's price.

**Standard Deviation:** Measures the dispersal or uncertainty in a random variable (in this case, investment returns). It measures the degree of variation of returns around the mean (average) return. The higher the volatility of the investment returns, the higher the standard deviation will be.

**Volatility:** The relative rate at which the price of a security moves up and down.

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