CTA Style Evolution

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Over the past few decades, the systematic CTA space has evolved as markets change, competition increases, and new tools and techniques are applied to find trends and other opportunities. Strategies and approaches that were once highly innovative have become more mainstream, more publicized, and better understood by investors. In this note, we use a set of over 50 systematic strategies to measure differences and themes in CTA styles both over time and across managers. Our approach allows us to document key themes in the CTA space: trading speeds, style tilts, and asset class tilts. At the aggregate level, we find that managers have added more trading styles over time and that trend speeds have slowed down. We also find that style choices do vary across managers.

Analyzing CTA Styles

Quantitative CTA managers trade a range of different identifiable strategies, commonly known as risk premia, in an attempt to capture certain features of market returns. The most common investment styles are **momentum**, **carry**, and **value**. The implementation of these styles can be either directional (dir) or cross-sectional (cs). Directional models allow for a net long position or net short position across time whereas cross-sectional models often have market neutral exposure over time.[1] Figure 1 provides a summary of these styles. Arguably, the most common strategy is long risk premia which involves simply holding an asset.

Momentum	Carry	Value
Cross-Sectional Momentum	Cross-Sectional Carry	Cross-Sectional Value
Directional Momentum (Trend Following)	Directional Carry	Directional Value

Figure 1: Summary of common trading styles in Managed Futures.

To encompass a wide range of potential style choices available to a systematic manager when creating a strategy, we consider four key dimensions:

    (1) **Investment strategy or style** (momentum, carry, value, and long risk premia);
    (2) **Implementation approach** (directional or cross-sectional);
    (3) **Time horizon** (ranging from 2 weeks to up to 5 years);
    (4) **Asset class allocation** (equities, fixed income, currencies, and commodities).

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[1] Managers may define market neutrality differently, e.g., sector beta neutral, volatility adjusted position neutral, or net position neutral.

Given a manager's returns, we follow an iterative process to find the set of factors and their corresponding allocation tilts that best describes the return series (for more information, see endnote). The result of this process is a "factor representation" with risk loadings and selected factor sets to represent a CTA portfolio. These factor sets can then be used to better understand what styles, speeds, and asset class tilts may be driving the manager's returns.

Analyzing Styles Across Time

Over the last few decades, the CTA industry has grown from a boutique industry to one of relative scale. Some have claimed that over time CTA managers have evolved from pure trend into a more multi-style approach. One simple way to examine this conjecture is to consider how the average CTA's strategic factor weights and styles have changed over time. To do this we take short slices of CTA index returns and examine their "factor representations." Using the SG Trend Index, SG CTA Index, and the somewhat newer SG CTA Mutual Fund Index, we divide return histories into four-year intervals and examine how the style of CTA strategies may have changed. Figure 2 plots the style decomposition in percentage terms for each of these indices over time.[2] These factor loadings are grouped together by theme to simplify the 50+ possible factor choices.
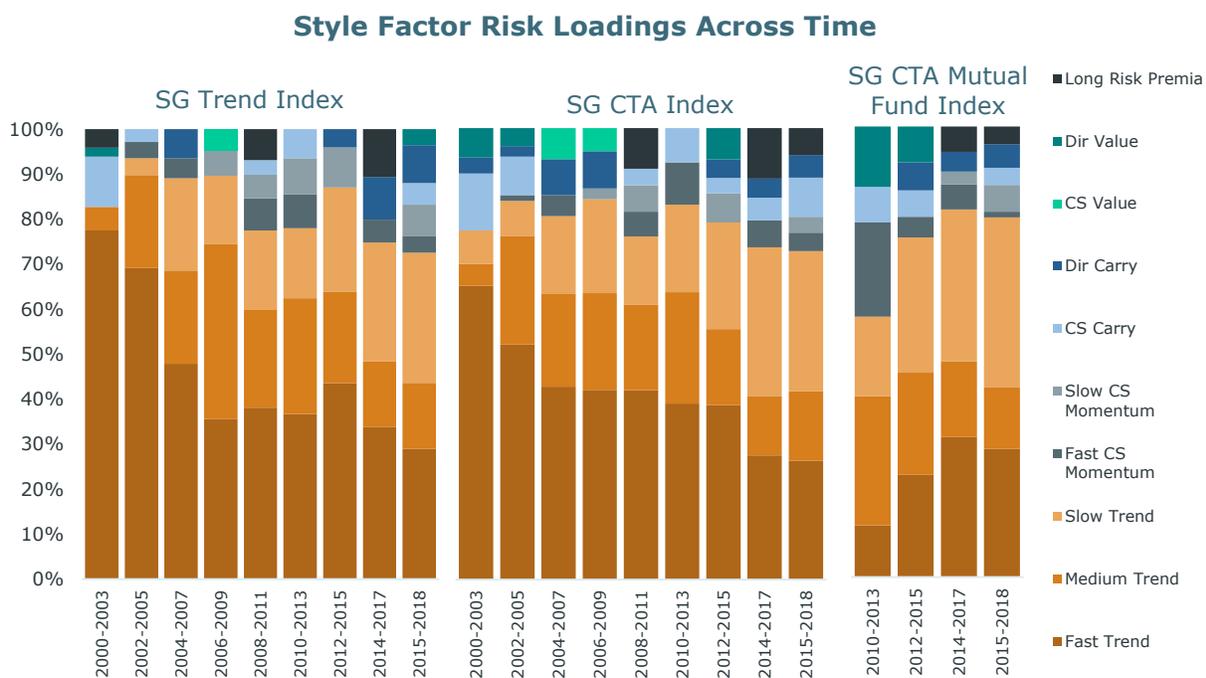
Style Factor Risk Loadings Across Time

Figure 2: Risk factor loadings grouped by style of trading for three CTA indices (SG Trend Index, SG CTA Index, and the SG CTA Mutual Fund Index). Factor loadings are estimated using daily return data over 4-year horizons for the period of 2000-2018. The SG CTA and SG Trend Indices began in 2000 while the SG CTA Mutual Fund Index began in 2010. Risk varies over time; the proportion of the total risk of each index explained by strategic factors as a fraction of the total risk explained by all factors is plotted for clarity. Source: Bloomberg, Societe Generale, AlphaSimplex.

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[2] Since the volatility profile for CTAs has come down since 2000, we use the percentage contribution for each factor to compare them directly.

Taking a closer look at Figure 2, we can make several key observations. First, the average speed of trend appears to have become more evenly diversified across time horizons. During the most recent period, the overall influence of long risk premia seems to be more pronounced in the SG CTA and SG CTA Mutual Fund Index. Outside of trend strategies, there appears to be a moderate amount of momentum, carry, and value being used in the CTA space.

From Figure 2 we can also see that since 2000 there has been a clear reduction in the speed across the space towards slower trend speeds. For the recent periods, programs in the SG CTA Mutual Fund Index have seemed to focus more on long-term trend (9 to 12 months) and short-term trend (2 weeks to 4 months) with medium-term horizon trend (5 to 8 months) showing less risk weight. For investors interested in the potential for "crisis alpha" or risk mitigation, several studies suggest that (1) faster trend speeds tend to navigate crisis better and (2) non-trend strategies tend not to be as successful in crisis periods as trend. The presence of long-only asset class risk premia also suggests the potential to be negatively exposed to any crisis event in exchange for better performance outside of crisis periods.

Comparing Styles Across Managers

Given the style drift over time across the industry, as measured using the index returns, we consider how style choices vary across a set of managers over the recent period. Using daily return data from 23 Managed Futures 1940 Act mutual fund managers from 2015-2018, we consider their representative factor loadings. Figure 3 plots the factor loadings for 16 managers with at least a 40% R-squared value from our two stage iterative process.[3] The Mutual Fund managers are ranked by their overall risk weight to trend strategies. From this graph, we can clearly see that some managers use more non-trend strategies than others, including cross-sectional momentum and strategies such as value or carry. There are several managers with long asset class risk premia exposure. The ratio between trend and non-trend strategies varies across the space. For example, Manager 2 has mostly trend driving returns whereas Manager 9 has a roughly even split between trend and non-trend strategies. Figure 3 also shows that the trend speeds seem to vary substantially across managers from fast trends to slow trends.

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[3] Managers with low R-squared values or short history were removed from the evaluation, as the factor loadings do not represent the performance of these funds. The funds that were removed were often short-term only or have a short history.

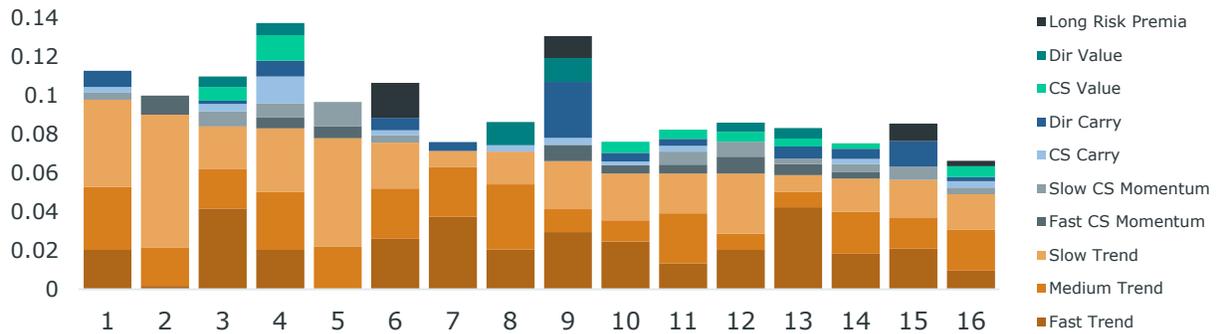**Mutual Fund Managers by Total Trend Loading**

Figure 3: Risk factor loadings grouped by style of trading for 16 Mutual Fund Managers, ranked by overall risk weight to trend strategies. Factor loadings are estimated using daily return data from 2015-2018. Source: Bloomberg, Societe Generale, AlphaSimplex.

Do Asset Classes Matter?

The prior analysis aggregates performance across styles, examining the importance of different styles for explaining CTA returns. Since our factor approach iteratively fits each factor jointly with its asset class allocation, this allows us to consider asset class tilts across time and across managers. Figure 4 plots the aggregate risk allocation per asset class for the SG Trend Index from 2000 to 2018. From this graph, we can see that risk allocation across asset classes is roughly equal, with short periods where there are slight tilts towards different asset classes. Notably, commodity and bond markets seem to take a slightly higher risk allocation than equities and currencies. Equity markets seem to be allocated the least risk with many years less than 20%. Commodities drive a larger portion of risk allocation, with an average of roughly 40% of risk for most periods. It is important to note that these risk loadings do not account for cross asset class correlation; given this, we would expect low correlated commodities to be a higher risk simply due to their correlation benefits.

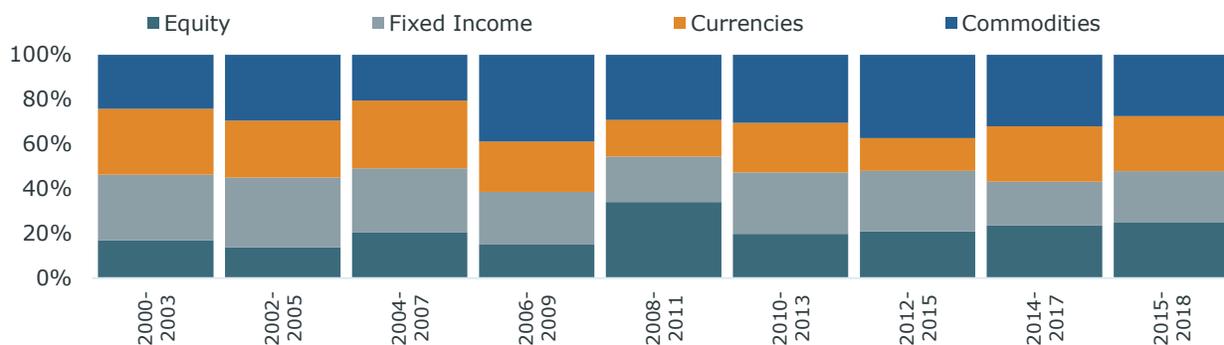**SG Trend Index Risk Allocation by Asset Class over Time**

Figure 4: Total risk allocation by asset class across all style factors for the SG Trend Index from 2000-2018. Factor loadings are estimated over overlapping 4-year windows. Source: Bloomberg, Societe Generale, AlphaSimplex.

The risk allocations for the SG Trend index represent the aggregate exposure of a basket of CTA managers. We can also examine how risk loadings vary by asset class across individual managers. Figure 5 plots the risk loading per asset class across the 16 managers ranked by the largest trend allocation left to right. We note that there is some heterogeneity across managers. Certain managers seem to maintain varying asset class tilts. For example, Manager 13 seems to have an overweight to currencies, Manager 1 seems to have an overweight to commodities, Manager 7 seems to have an overweight to equities, and Manager 11 seems to have an overweight to fixed income.
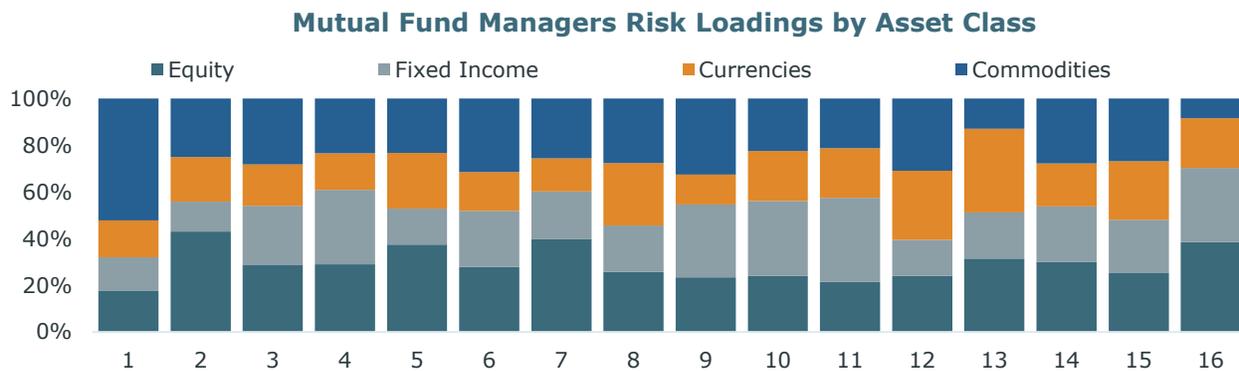

Figure 5: Total risk allocation by asset class across all style factors for 16 Mutual Fund Managers from 2015-2018. Source: Bloomberg, Societe Generale, AlphaSimplex.

Given the dispersion in asset class loadings, this could be driven by a particular style of trading being tilted to particular asset classes. To examine this issue, we consider the factors and their tendency to maintain a particular asset class tilt. For example, cross-sectional momentum tends to be more common in equities and currencies. Table 1 lists the top 15 factors across all 16 managers ranked by the largest asset class weighting tilt for the recent period (2015-2018). Only factors with loadings of over 0.25% are included in the table to avoid focusing in on insignificant factors. Equity tilts tended to be more common in both fast and medium trend strategies as well as cross-sectional momentum strategies. Fixed income tilts tend to be more common in relative value and carry, as well as medium-term trend. Currency tilts tend to occur in cross-sectional momentum with some medium trend. Commodity tilts occur in value factors and medium trend strategies. This suggests that carry is more common in fixed income, value in commodities and fixed income, and cross-sectional momentum in currencies and equities. For trend speeds, medium trend speeds seem to be the most pervasive across asset classes. These observations are illustrated in Figure 6.

	Equity Factor Tilt	Fixed Income Factor Tilt	Currency Factor Tilt	Commodity Factor Tilt
1	Trend (8mo)	Trend (1mo)	CS Value (12mo)	Trend (7mo)
2	Trend (7mo)	Trend (10mo)	CS Momentum (3mo)	Trend (8mo)
3	Trend (5mo)	Trend (7mo)	CS Momentum (4mo)	CS Value (5yr)
4	Dir Value (5yr)	CS Value (12mo)	CS Momentum (6mo)	Trend (1mo)
5	Trend (7mo)	CS Value (5yr)	CS Momentum (12mo)	DIR Carry (12mo)
6	CS Momentum (5mo)	Trend (9mo)	CS Momentum (6mo)	Trend (1mo)
7	Trend (4mo)	CS Value (12mo)	CS Momentum (6mo)	DIR Value (2w)
8	Dir Value (2w)	CS Carry (5yr)	CS Momentum (12mo)	Trend (3mo)

9	Trend (6mo)	CS Value (12mo)	CS Momentum (5mo)	Trend (12mo)
10	CS Momentum (12mo)	CS Carry (5yr)	Trend (4mo)	Trend (1mo)
11	CS Momentum (12mo)	CS Carry (5yr)	CS Momentum (1mo)	Trend (6mo)
12	CS Momentum (5mo)	Trend (6mo)	CS Carry (5yr)	Trend (5mo)
13	Trend (11mo)	Trend (2w)	CS Momentum (12mo)	Trend (3mo)
14	CS Momentum (12mo)	Trend (5mo)	Trend (4mo)	Trend (5mo)
15	Dir Value (12mo)	Trend (11mo)	Trend (11mo)	Trend (7mo)

Table 1: Top fifteen factors in risk allocation by asset class tilts across Mutual Fund Managers. Each factor has a minimum risk loading of 0.25% to avoid small less significant factors. Source: Bloomberg, Societe Generale, AlphaSimplex.
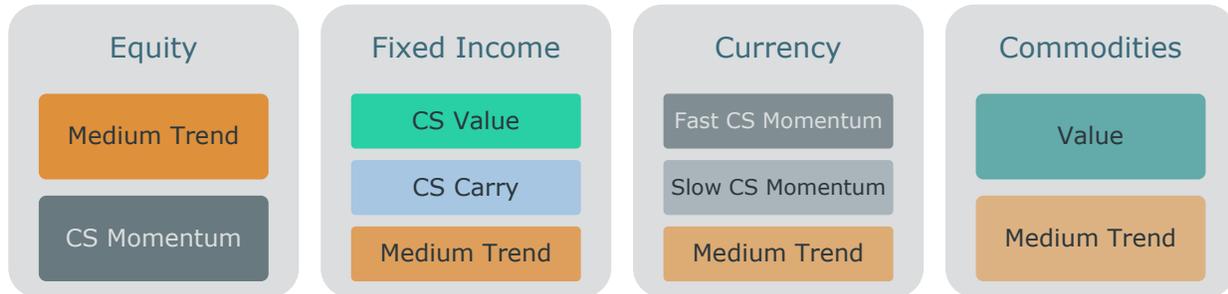

Figure 6: Themes in style factors with specific asset class tilts across Mutual Fund Managers using daily return data from 2015-2018. Source: Bloomberg, Societe Generale, AlphaSimplex.

Summary and Conclusions

Systematic managers in the CTA space incorporate a wide range of trading styles across time horizons, implementation style, and asset classes. These styles vary both over time and from manager to manager. Using over 50 factors across trading styles, time horizons, trading approaches, and asset classes applied to CTA index-level return data, we estimate how CTA styles have evolved over time and find that (1) trend speeds have slowed down and (2) more non-trend and long risk premia seem to be present in CTA strategies in the recent past. These results represent the aggregate trends in the industry but may not be representative for each individual manager. We also consider daily returns for mutual fund managers and examine how styles vary from one manager to another. We find that the trend speed and ratio of non-trend strategies also vary across managers. Finally, we consider the importance of asset class allocations across time and across managers. We find that asset class allocations are roughly similar with occasional tilts during short periods of time. Equity risk loadings are generally lower and commodity risk loadings are generally higher, which is consistent with the correlation benefits of commodities.

Endnote

Our factor specification is an iterative process that includes two main stages, inspired by classic Expectation-Maximization techniques. First, the entire factor set (50+ factors) is winnowed to an initial factor set using penalized non-negative regression. Second, these factors are fit, on a factor by factor basis, to determine the asset class allocation mixture for each factor that best describes the residuals of the fund/index return series after regressing the remaining selected factors. Finally, after each factor's asset class allocations are identified, a final non-negative factor selection process is used and factor weights that are no longer significant are dropped from the factor set. Non-negative regression helps deal with the high correlation across different factors where we assume that managers only go long quantitative strategies and do not go against the underlying investment strategies. This means the managers do not take the opposite sign of the classic set of risk premia strategies; the managers may take long or short positions.

References

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Kaminski, Kathryn M. 2011. "In Search of Crisis Alpha: A Short Guide to Investing in Managed Futures." CME whitepaper.

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