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QUANTICA<sup>1</sup>CAPITAL

# QUARTERLY<sup>1</sup> INSIGHTS

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## TREND-FOLLOWING AND RISK FACTOR DIVERSIFICATION IN 2022 AND 2023: A TALE OF TWO EXTREMES

The relationship between trend-following performance, the number of independent risk factors and investment universe diversification

#17 | MARCH 2024

## Executive summary

In this research note, we explore the relationship between trend-following CTA performance and the number of independent risk factors required to explain such performance. More specifically, we show that historically, trend-following CTA performance has been strongest when trends were primarily driven by only a few systemic global cross-asset risk factors, such as in 2022 (or 2008). Conversely, trend-following performance has been weaker when trends were driven by a wider range of market-specific or idiosyncratic risk factors, such as in 2023 (or 2018). In fact, 2023 stood out as a year unlike any other in the last 25 years, requiring more than 30 independent statistical risk factors to replicate the performance of a generic trend-following CTA approach simulated on a diversified investment universe of more than 100 instruments. In contrast, only 8 factors were required in 2022, the lowest number ever recorded for a given year, except for 2008, since the start of our analysis period in 2000.

More generally, we outline an inverse linear relationship between the number of independent risk factors and the

resulting trend-following performance. The lower the identified number of risk factors is, the higher the recorded trend-following performance, as confirmed by the CTA industry performance in 2008 and 2022.

We conclude that investment universe diversification for a trend-following CTA becomes more important in less attractive market regimes governed by many different idiosyncratic risk factors. The larger and the more diversified the investment universe, the more likely a trend-following strategy is to successfully gain exposure to the many idiosyncratic, market-specific risk factors that drive profitable price trends. A trend-following program running on a more concentrated investment universe is likely to perform as well as a more diversified CTA in years with only a few strong macro risk factors. However, only a highly diversified investment universe can capture a higher number of idiosyncratic risk factors, providing an ability to outperform a more concentrated approach over the long run.

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The performance data shown in this note is gross of fees but net of estimated trading costs. As such, it does not reflect the deduction of fees and expenses which would have lowered performance. Returns contained herein are shown as excess returns (excl. cash income) and include reinvestment of earnings. The estimated trading costs are based on Quantica's proprietary cost models.

Hypothetical results presented in this note are calculated by taking the prevailing market prices available at the relevant point in time. The case studies included in this presentation are for illustrative purposes only. The information is intended to be educational and is not tailored to the investment needs of any specific investor. There are numerous factors related to the markets in general or to the implementation of any specific program that cannot be fully accounted for in the preparation of hypothetical performance results.

## Introduction

From a trend-following perspective, 2023 will likely be remembered as a challenging year. Indeed, after posting its best calendar year on record in 2022 with a net return of +27.3%, the SG Trend Index, which serves as an industry benchmark consisting of ten of the largest trend-following CTAs globally, spent most of 2023 under water, and ended the year with a negative return of -4.1%, the sixth worst year for the index since its inception in 2000<sup>1</sup>.

In this note we examine how the trend-following market environment went from the most attractive to one of the most challenging and relate trend-following performance to one objective statistical measure: the effective number of independent risk factors needed to explain the trend-following performance attribution.

We start by first reviewing the key performance drivers for the trend-following industry in terms of asset class and individual market return contribution for each of the last two years. For that purpose, we rely on Quantica's in-house generic trend-following model, which has been designed to replicate the positions and returns of a typical trend-following benchmark such as the SG Trend Index. Our generic strategy applies a generic bottom-up trend-following model to a representative well-diversified investment universe of 103 of the most liquid exchange-traded futures contracts across equities, government bonds, short-term interest rates, currencies, and commodities.

Purely looking at the attribution of strategy returns at the asset class or individual instrument level does not reveal how many different *risk factors* are driving those returns. In fact, an

apparently well-diversified set of instrument returns may potentially represent nothing more than exposure to a few single risk factors. Risk factors may be of "idiosyncratic" nature, meaning that they are specific to a single market. As an example, the futures price of certain soft commodities may be specifically affected by certain climate conditions, while most financial futures markets remain unaffected by this specific risk factor.

Other risk factors may be of a more "systemic" nature, reverberating across multiple markets or even across multiple asset classes. As a relevant example, the significant rise in inflation between 2021 and 2022 was a main driver of substantial price moves across government bond futures, short-term interest rates futures, equities, currencies, and of course many commodities markets. These price moves were not idiosyncratic in nature but could all to some extent be attributed to one single underlying macro-economic, systemic risk factor: inflation risk.

That is why we are looking at quantifying the set of statistically significant risk factors that have been driving the performance of our generic trend-following strategy in each of the past two calendar years, 2022 and 2023. For each calendar year, we attribute the performance of our generic trend-following strategy to the set of identified statistical risk factors. The next step is then to extend the analysis to every calendar year since 2000. We seek to identify any relationship between the performance of a typical trend-following CTA and the number of independent risk factors required to explain such performance.

Finally, in a last step, we look at the interplay for any calendar year between the performance of the trend-following industry, the number of risk

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<sup>1</sup> Even more striking is the fact that, excluding the contribution of cash, 2023 was the worst calendar year for the SG Trend Index since its inception in 2000.

factors required to replicate such performance, and the size of the underlying investment universe. For that final analysis, we run historical simulations of our generic trend-following strategy on two additional subsets within the investment universes: (1) a less diversified, more traditional universe, composed of a subset of only 50 of the most liquid futures contracts, and (2) an even less diversified, highly concentrated universe composed of 13 of the most liquid and most representative global futures markets. Equipped with these three investment universes, we seek to assess the impact of increasing levels of diversification on the performance of a trend-following strategy in different market environments where trends may be determined by a large number of independent and idiosyncratic risk factors as opposed to a few cross-asset risk factors.

### Inflation and interest rates were the key drivers of trend-following performance in both 2022 and 2023

The easiest way to get a quick visual sense of the performance drivers of any strategy is to look at the attribution of its performance across individual instruments and asset classes. To estimate the contribution of each major asset class to the overall performance of the CTA industry in 2022 and 2023, we rely on our in-house generic trend-following model, which has been designed to replicate the positions and returns of a typical trend-following industry benchmark such as the SG Trend Index.

As can be seen from Figure 1, fixed income and interest-related instruments had a material impact, both in 2022 and 2023, for the trend-following industry, replicated by our generic trend-following model. This may not come as a surprise as stubbornly high inflation rates, a coordinated monetary tightening cycle by the

major central banks, ongoing market speculation about peak interest rates and the potential scale of potential subsequent rate cuts have been largely dominating the market narrative in the past two years.

Figure 1: Annual asset class return attribution for 2022 & 2023

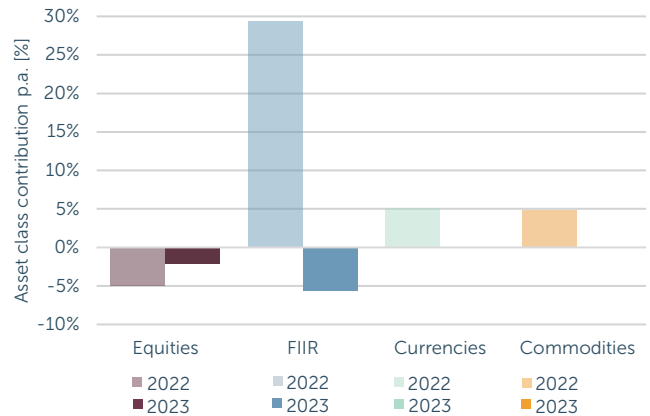


Figure 1: Annual gross excess return attribution by asset class for a hypothetical generic trend-following strategy for the two calendar years 2022 and 2023. Gross performance results do not reflect the deduction of investment advisory fees and other expenses, which would reduce an investor’s actual return. Excess returns do not reflect any interest payments on cash- and margin-accounts. HYPOTHETICAL RETURNS. PLEASE SEE IMPORTANT DISCLAIMERS ON PAGE 2. Data as per 31.12.2023. Source: Quantica Capital.

In 2022, it is the market’s continued underestimation of the future path of interest rates that trend-followers were able to successfully capitalize on, most notably by running significant short exposures across government bond and short-term interest rate futures markets. In 2023, a similar pattern of persistent underestimation of the future rise in interest rates was at play. But unlike in 2022, two significant reversals of a very different kind occurred, causing some significant challenges to medium-term trend-following strategies:

- a very abrupt and short-term one in March 2023, triggered by the sudden collapse of the US Silicon Valley Bank (SVB) and the subsequent crisis of confidence in the global banking system, which led to an almost

immediate reassessment of interest rate risks across all maturities and regions<sup>2</sup>, and

- a more gradual and steadier one in November, associated with a progressive shift and reversal in market expectations about the future path of interest rates in both the US and Europe and pricing up to 1.5% of rate cuts for the 12 months ahead.

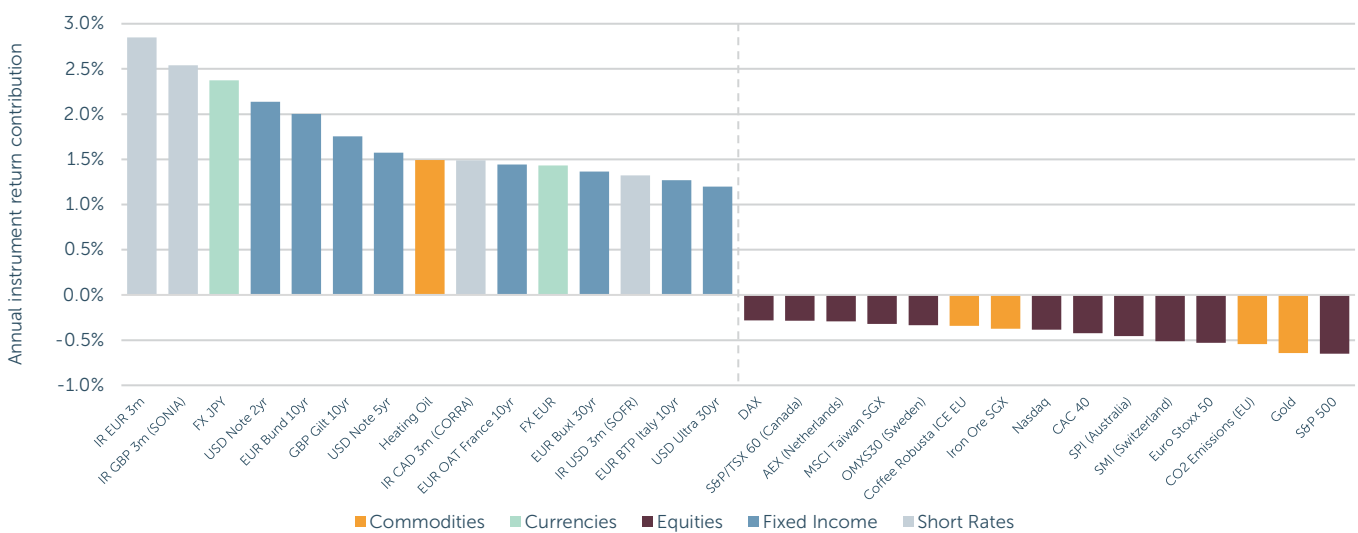
**In 2022, trend opportunities were primarily fuelled by a single cross-asset risk factor, whereas in 2023, they were influenced by a wide range of idiosyncratic market risk factors.**

Looking more closely at the instrument level, Figure 2 shows that in 2022, 12 out of the 15 top contributing instruments were government bond and short-term interest rate futures. The remaining three instruments, consistent with the asset class attribution in Figure 1, were G7 currency pairs (JPY and EUR currency) and in the energy sector (Heating Oil).

Intuitively, it is easy to relate each of these 15 instruments to one common risk factor: inflation. Higher oil prices, rising USD interest rates and a stronger US dollar against most other currencies are all linked to inflation. The persistent and unexpected rise in inflation did reverberate across all asset classes: bonds, short-term interest rates, equities, commodities and currencies.

In contrast, the same return attribution appears much less homogeneous for 2023. The most profitable trends, both up and down, occurred in a handful of soft commodities such as cocoa, sugar, French wheat, and rapeseed, in European and US natural gas futures or in an industrial metal such as iron ore, and were all driven by a very heterogeneous set of market-specific factors. Alongside this eclectic mix, two currencies stood out: the Japanese yen and the Mexican peso, where the drivers of the underlying trends could not have been more different. While the Japanese yen steadily weakened against the US dollar, the Mexican peso steadily strengthened against the US dollar over the same period, but for completely different reasons.

**Figure 2: Most and least profitable trending markets of 2022**



<sup>2</sup> Please refer to our Quarterly Insights from April 2023, "When Trends end in a Rush", in which we provide an in-depth review of the events of March 2023 and their impact on trend-following returns.

Figure 2: Most and least profitable trending markets of 2023

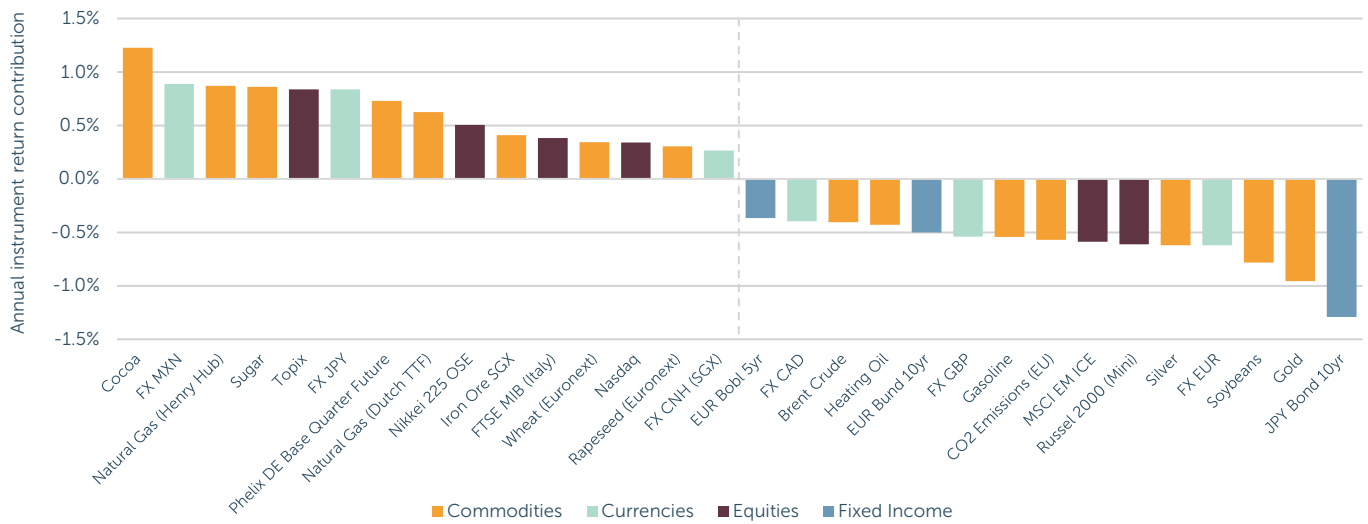


Figure 2: Annual gross excess return contribution of the 15 best and 15 worst performing individual instruments to the performance of a hypothetical generic trend-following strategy for two different calendar years: 2022 and 2023. Gross performance results do not reflect the deduction of investment advisory fees and other expenses, which would reduce an investor’s actual return. HYPOTHETICAL RETURNS. PLEASE SEE IMPORTANT DISCLAIMERS ON PAGE 2. Data as per 31.12.2023. Source: Quantica Capital.

In short, if trend opportunities were to be consistently harvested in 2023, it would not be because of a few global macroeconomic risk factors reverberating across multiple markets and asset classes, as was the case in 2022. The most profitable trends in 2023 occurred in a wide set of individual markets, each subject to its own idiosyncratic price and risk dynamics.

### Quantifying the number of independent risk factors driving trend-following performance

So far, we have provided a “qualitative” description of the very different trend-following opportunity sets in 2022 and 2023. In a next step we quantify the number of independent risk factors that are driving the trend-following performance in an objective way.

Rather than attributing the overall strategy performance to the individual instruments, we seek to decompose the performance to a well-defined set of independent statistical risk factors, so that their individual contributions add up to the overall performance of the strategy. Such a decomposition can be effectively achieved through the statistical method of Principal Component Analysis (PCA). PCA identifies a list of independent (i.e. uncorrelated) statistical risk factors, called *principal components*, that are linear combinations (i.e. portfolios) of the underlying instruments. The first principal component then corresponds to the portfolio that accounts for the largest fraction of the strategy’s total return variance<sup>3</sup>. PCA allows to map the investment universe into a set of uncorrelated and independent performance drivers or risk factors, and to transform the instrument performance attribution into a performance attribution on the risk factors.

<sup>3</sup> By construction, the return contributions from all principal component portfolios add up to the strategy’s total return.



**Quantifying the effective number of independent risk factors required to replicate the returns:**

The effective number of independent statistical risk factors is computed as follows: if  $\tilde{p}_i$  is the return contribution of *the principal component portfolio i*, then  $p_i := \frac{|\tilde{p}_i|}{\sum_j |\tilde{p}_j|}$  is defined to be its normalized absolute return contribution. The *effective number* of contributing risk factors is then defined as the exponential of the Shannon entropy of those:

$$e^{-\sum_i p_i \log p_i}$$

The concept of Shannon entropy and the effective number is widely used across multiple scientific disciplines as a measure of dispersion.

The main properties of the effective number are:

- It is equal to 1 if and only if the set of risk factors is fully concentrated, with a 100% contribution from a unique risk factor.
- It is equal to N if and only if the set of risk factors is fully diversified, with a 1/N contribution from each of the N risk factors.

This in turn enables us to define and calculate the *effective number* of independent risk factors in an objective way as the exponential of the Shannon entropy of the principal component portfolio’s normalized absolute return contributions. For an investment universe with N assets, this effective number of risk factors will always range between 1 and N and can be interpreted as the number of independent statistical risk factors needed to explain the original performance attribution.

Because global financial and commodity markets are interconnected, the number of “relevant” independent risk factors is smaller than the number of instruments that make up its investment universe. As a rule of thumb, the more uncorrelated the markets in the investment universe are, the greater the effective number of independent risk factors which will explain its trend-following performance.

Figure 3 shows the return decomposition by PCA of our generic trend-following strategy for 2022 and 2023.

Strikingly, and supporting our qualitative assessment, the 2022 performance of the generic trend-following strategy appears to be largely driven by almost one single statistical risk factor! Accordingly, the effective number of independent risk factors to replicate the returns of the trend-following CTA industry in 2022 is only 8, less than 10% of the size of the investment universe! By contrast, it takes a staggering larger number of independent statistical risk factors, 33, or more than 30% of the size of the generic investment universe to explain the returns of the trend-following industry in 2023.

Based on this purely statistical risk factor return decomposition, the above results strongly support our initial qualitative assessment of the strikingly different market environment and opportunity sets for a trend-following CTA in 2023 and 2022.

Figure 3: Annual trend-following performance attribution by individual instruments

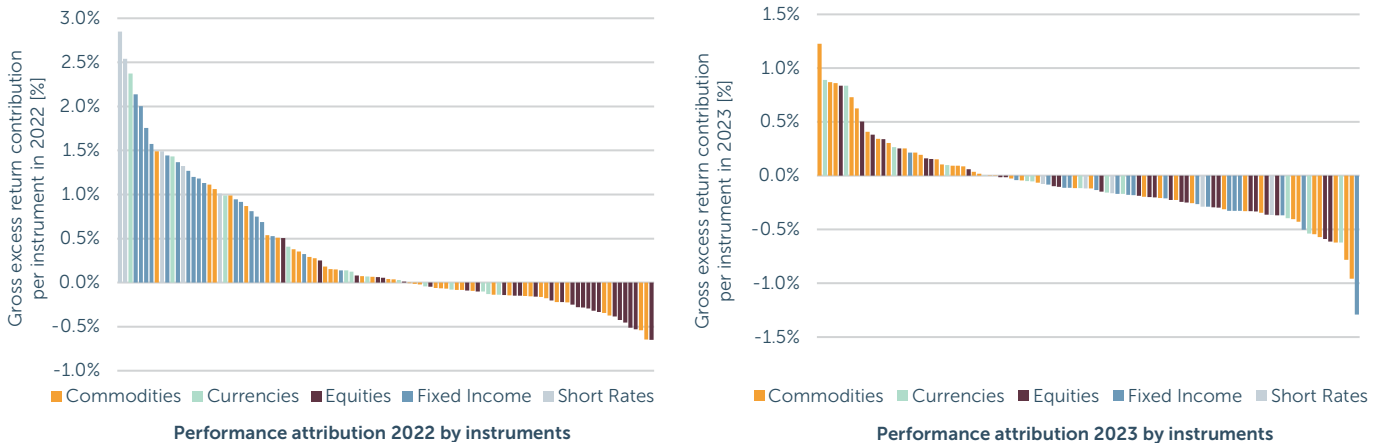


Figure 3: Annual trend-following performance attribution by independent risk factors

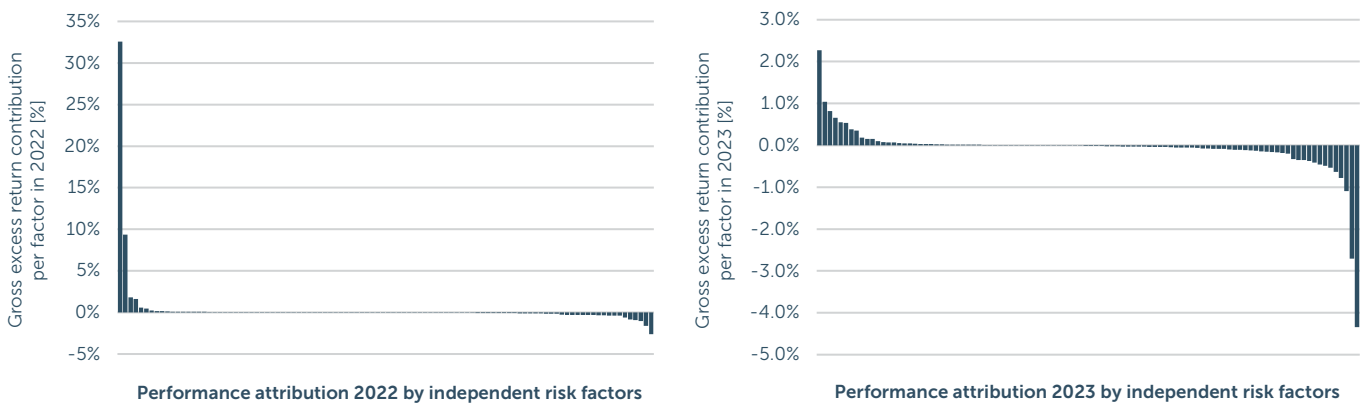


Figure 3: Annual gross excess return attribution by individual instruments (upper chart) and by independent risk factors (lower chart) for a generic trend-following strategy implemented on an investment universe of 103 instruments, for two different calendar years: 2022 and 2023. Statistical risk factors are estimated by performing a principal component analysis (PCA) on the trend-following instrument returns, which are then used to compute an attribution of the strategy’s simulated total annual gross excess returns to these statistical risk factors. The return contributions of all risk factors sum up to the strategy’s simulated total gross excess returns. Gross performance results do not reflect the deduction of investment advisory fees and other expenses, which would reduce an investor’s actual return. HYPOTHETICAL RETURNS. PLEASE SEE IMPORTANT DISCLAIMERS ON PAGE 2. Data as per 31.12.2023. Source: Quantica Capital.

### The inverse linear relationship between trend-following performance and the number of independent market risk factors

Using the principal component based return attribution method and the effective number of independent risk factors, we can put the findings for the last two years in a historical context.

How extreme were the years 2022 and 2023 in comparison with the years dating back to 2000? And can we establish a relationship between the

number of independent risk factors that drive trends in a given year and the realized return of the trend-following CTA industry?

To answer these questions, we run the same principal component-based attribution on the returns of our generic trend-following strategy and calculate, for each calendar year since 2000, the effective number of independent risk factors required to explain the strategy’s performance. The results are shown in Figure 4.



Figure 4: The inverse relationship between trend-following performance and the effective number of risk factors

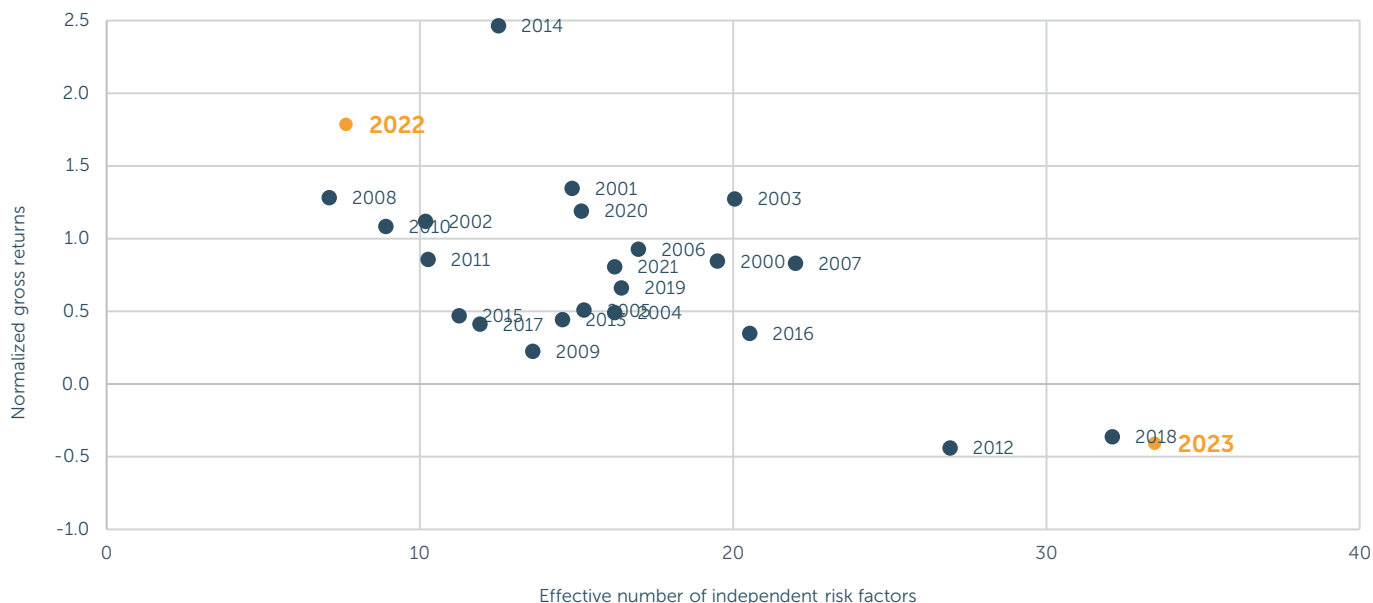


Figure 4: Normalized gross annual returns of a generic trend-following strategy as a function of the effective number of independent risk factors required to explain its annual performance. Normalized gross returns correspond to gross strategy returns normalized to unit average squared deviation from zero over the full period 2000 – 2023. The effective number of independent factors is computed as the exponential of the Shannon entropy of the absolute contributions of statistical principal component-based risk factors to the total gross returns of the strategy for each calendar year. HYPOTHETICAL RETURNS. PLEASE SEE IMPORTANT DISCLAIMERS ON PAGE 2. Source: Quantica Capital. Data as per end of December 2023.

Since 2000, there has never been a calendar year in which so many independent risk factors were required to explain the performance of a diversified trend-following strategy as in 2023. Conversely, there has only been one exceptional year in which fewer risk factors explained the performance than in 2022: It was the year of the great financial crisis in 2008, with only 7 relevant statistical risk factors, compared to 8 in 2022.

More generally, there appears to be an inverse linear relationship between the level of trend-following performance and the effective number of risk factors: the more concentrated the set of independent risk factors driving trend-following performance in a given year, the stronger the performance tends to be for that year! Years in which the average trend-following performance is explained by the largest number of independent risk factors – such as 2012, 2018 and 2023 – have also been the worst years for the trend-following industry. Years in which very few risk factors

explain most of the performance – such as 2008, 2022 and 2010 – have historically been among the best years in the industry.

This result may not be intuitive at first glance. Indeed, one might be tempted to think that great performance is the result of a well-diversified investment approach to capture many idiosyncratic trends. But history, as Figure 4 shows, does not support such hypothesis. However, we will show that the benefits of diversification become much more important in less attractive periods, when many idiosyncratic risks drive trend-following returns, and pay off in the long run.

In summary, trend-following performance has been stronger when markets were driven by only a few systemic, cross-asset risk factors. And it has been weaker when a larger number of independent, idiosyncratic risk factors drove global market trends.

## The relationship between trend-following performance, the effective number of independent return drivers, and investment universe diversification

The effective number of independent factors required to replicate the performance of any trading strategy is related to the number of instruments selected in its investment universe. The larger the investment universe, and the lower the correlation between the different instruments in the universe, the greater the effective number of independent risk factors that the strategy is able to take advantage of.

In order to quantify the impact of investment universe diversification on trend-following performance as a function of the effective number of risk factors, we consider two additional investment universes. In addition to the still liquid but well-diversified representative investment universe of 103 futures markets, we apply the same generic trend-following model on two less diversified investment universes:

- 1) A *traditional* CTA universe: A more traditional liquid universe, composed of a subset of 50 of the most liquid futures contracts within the original 103 markets, and
- 2) A *concentrated* CTA universe: an even less diversified, highly concentrated universe composed of 13 of the most liquid and representative global futures markets. The 13 markets we consider in this model selection are provided in Table 1.

Table 1: A concentrated CTA universe

Equities	Fixed Income	Commodities	Currencies
S&P 500 MSCI EAFE MSCI EM	US US Ultra 30y US Long Bond 20y US Ultra Trsy 10y US Treasury 10y US Note 2y US 3m SOFR	WTI Crude Oil Gold	EUR/USD JPY/USD

Table 1: Instrument composition of a concentrated CTA investment universe composed of 13 of the most liquid and representative global futures markets. Source: Quantica Capital.

In short, we run exactly the same generic trend-following model applied on three different representative CTA universes with a decreasing level of universe diversification. Based on the simulated daily returns, empirical correlations over the full sample period of 24 years are 0.97 between the highly diversified and the traditional market specifications, and 0.85 between the highly diversified and the highly concentrated specification. Hence, our approach allows to evaluate three style-consistent trend-following return streams that are highly correlated. Despite the highly correlated returns, we show that the returns can be significantly different in the less favourable periods characterized by a wide range of independent risk factors.

To generate a larger sample size of data points, we use quarterly instead of annual returns. Figure 5 highlights the relationship between the effective number of risk factors and the corresponding trend-following performance in each calendar quarter since 2000 for each of the three investment universes.

Figure 5: Relationship between trend-following performance, universe diversification, and effective number of risk factors

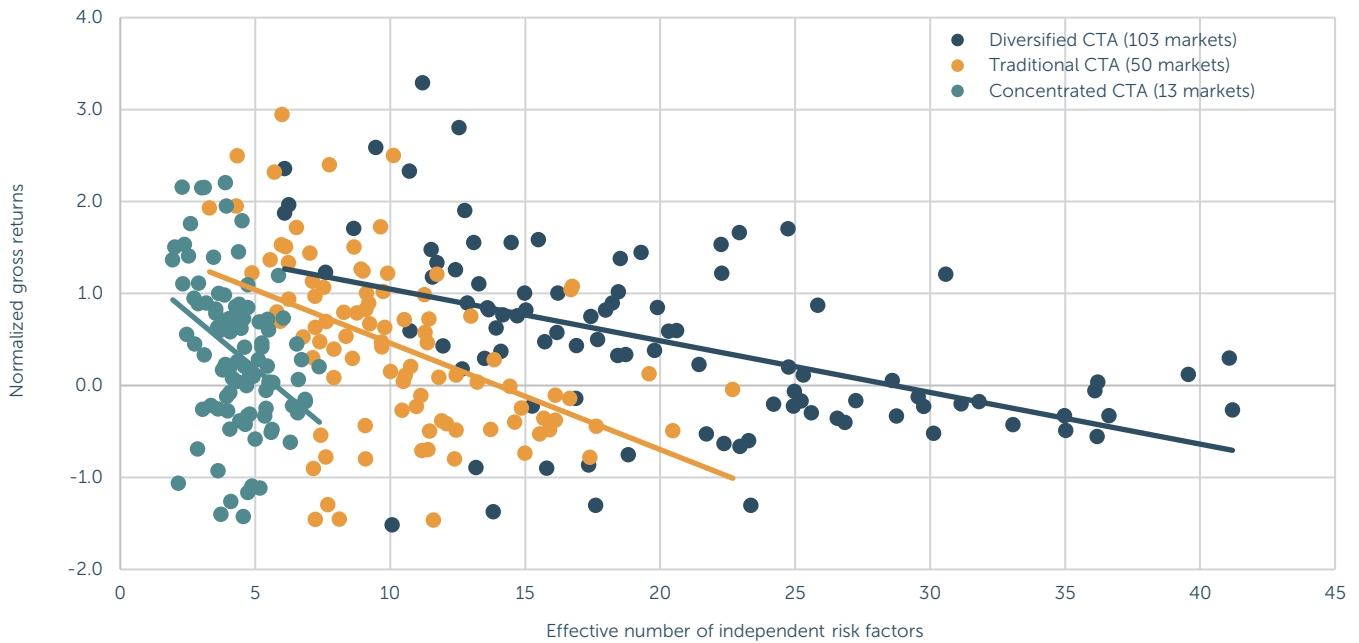


Figure 5: Normalized gross quarterly returns of a generic trend-following strategy as a function of the effective number of independent risk factors explaining its quarterly performance. The generic trend-following strategy is applied to 3 different investment universes. The Diversified CTA universe is composed of 103 liquid futures instruments. The Traditional CTA universe is composed of a subset of 50 ultra-liquid futures instruments. The Concentrated CTA universe is composed of the 13 most liquid and representative global markets. Normalized gross returns correspond to quarterly gross strategy returns normalized to unit average squared deviation from zero over the full period 2000 – 2023 across all three investment universes. The effective number of independent risk factors is computed as the exponential of the Shannon entropy of the absolute contributions of statistical principal component-based portfolios to the total gross returns of the strategy for each quarter. HYPOTHETICAL RETURNS. PLEASE SEE IMPORTANT DISCLAIMERS ON PAGE 2. Source: Quantica Capital. Data as per end of December 2023.

We draw three main conclusions from Figure 5:

- First and most importantly, the inverse linear relationship between trend-following performance and the effective number of independent performance drivers holds across all three investment universes.
- Secondly, the slope of the regression line becomes consistently smaller the larger the investment universe is. In other words, the marginal detriment for each additional independent factor gets bigger the more concentrated the trend-following universe is.
- And thirdly, the regression lines appear to converge to the same returns for small numbers of independent risk factors, indicating that universe diversification is less important in periods with very few independent risk factors.

To quantify the observed effect, we provide the *risk-adjusted* annualized returns for the three different style-consistent trend-following specifications over the five years with the least effective number of independent risk factors, as identified in Figure 4, and compare it to the full sample period. Those five most concentrated years were 2002, 2008, 2010, 2011 & 2022. Table 2 shows the average annualized risk-adjusted returns in terms of Sharpe ratios of the hypothetical, simulated gross excess returns of the generic trend-following model, assuming realistic transaction costs but without any other fees, income or other expenses.

Table 2: The impact of investment universe diversification on trend-following performance in different market environments

Generic Risk-adjusted Trend-Following Performance	Diversified CTA	Traditional CTA	Concentrated CTA
Concentrated Risk Factor Years 2002, 2008, 2010, 2011, 2022	1.96	2.02	1.81
All other years	1.01	0.81	0.61
Full Sample Period 2000-2023	1.15	1.00	0.81

Table 2: Hypothetical simulated average annualized risk-adjusted gross excess returns for a generic trend-following model applied to three different investment universes for different sample periods. The Diversified CTA universe is composed of 103 liquid futures instruments. The Traditional CTA universe is composed of a subset of 50 ultra-liquid futures instruments. The Concentrated CTA universe is composed of the 13 most liquid and representative global markets. Gross performance results do not reflect the deduction of investment advisory fees and other expenses, which would reduce an investor’s actual return. HYPOTHETICAL RETURNS. PLEASE SEE IMPORTANT DISCLAIMERS ON PAGE 2. Source: Quantica Capital. Data as per end of December 2023.

The empirical results shown in Table 2 are remarkable. In the five years when trend-following performance was driven by only a few independent risk factors, average gross Sharpe ratios were in the region of 2, and not significantly different between the diversified, the traditional and the concentrated investment universe.

However, for years with a higher effective number of independent risk factors, risk-adjusted performance was significantly worse for the less diversified approach, with an almost uniform degradation of Sharpe ratios of magnitude 0.2 for each level of additional concentration.

And finally, the benefit of additional universe diversification over the long-term is strongly supported by the consistently higher risk-adjusted performance over the full sample period for the higher diversified investment universes. The results are even more impressive given the high average correlation of around 0.9 between the three different style-consistent generic trend-following return streams.

In a year like 2022, when trend opportunities are driven by just a few systemic cross-asset factors, the diversification of the investment universe is much less important. A concentrated investment universe that can build exposure to the four major

asset classes can be sufficient to capture the few broad cross-asset risk factors to generate attractive returns. This is likely a reason why some trend index replication strategies have done very well in 2022.

By contrast, the year 2023 is a perfect example with profitable trends primarily driven by many idiosyncratic, market-specific risk factors. In 2023, trend-following CTAs with larger investment universes were likely better equipped to capture some of these various trend opportunities. Conversely, some of the simpler trend-following replication solutions operating on a more concentrated investment universe had a more difficult year, partly because their limited ability to extract returns from that many different idiosyncratic market trends.

We conclude that the larger and the more diversified an investment universe is, the more likely it is that a trend-following approach can take advantage of opportunities that are driven by many idiosyncratic market factors. Because trend-following returns are in general weaker when market trends are driven by a large number of independent risk factors, the benefits of investment universe diversification will be strongest in adverse market environments for trend-following.

## Conclusion

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In this note, we have outlined the very different market dynamics in 2022 and 2023 for trend-following CTAs. We have shown how performance in 2022 can be explained by just 8 independent market risk factors. In contrast, 33 of such independent market risk factors were required to explain the returns in 2023 for the same generic trend-following strategy. In other words, the key driver of the exceptional performance of the trend-following industry in 2022 can be boiled down to a few very strong systemic cross-asset risk factors that reverberated through many instruments across all asset classes. In stark contrast, most trend opportunities in 2023 were driven by a much more idiosyncratic and specific set of market risk factors.

More generally, we found a historically inverse linear relationship between the performance of trend-following CTAs and the effective number of independent risk factors required to replicate that performance. Over the full sample period of the past 24 years, trend-following CTAs have performed best when trends were driven by a few systemic, cross-asset risk factors rather than many idiosyncratic risk factors.

In the absence of identifiable trends driven by cross-asset risk factors, the importance of investment universe diversification cannot be overstated.

A larger and more diversified investment universe increases the likelihood that a trend-following strategy can take advantage of the wide range of trend opportunities created by idiosyncratic market factors. The larger the investment universe, the greater the potential to identify and exploit a wider range of trends driven by different risk factors, leading to more robust investment strategy results.

In a market environment where trends are driven by only a few cross-asset risk factors, trend-following strategies that run on a concentrated investment universe, provided it covers the main asset classes, are likely to compete well in terms of performance with much larger and more diversified investment universes. In a market environment without strong trends driven by major cross-asset risk factors, the importance of diversification becomes paramount in order to maximize the opportunities to generate attractive returns.

A broad and diversified investment universe will not only maximize the ability to identify a greater number of idiosyncratic and independent market trends, but also help to navigate both favourable, and, more importantly, unfavourable market environments. Ultimately, this will likely lead to superior long-term results, primarily driven by the outperformance in the adverse market regimes for trend-following CTAs.

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## CONTACT US

Tel: +41 (44) 556 69 00  
info@quantica-capital.com  
www.quantica-capital.com

Licensed asset manager with FINMA  
Registered CTA and CPO with the CFTC

Quantica Capital AG  
Zurich Branch, Bärengasse 29  
CH-8001 Zurich  
Switzerland