Ai-Powered Investment Replication

Strategy Spotlight

A Long-Term Perspective on CTA Trend-Following Performance

Abstract:

- **CTA Managed Futures** have underperformed since **2023**, following strong gains in **2022**.
- Analysis leverages **Ai For Alpha's** replication models and a **Trendiness Indicator** based on **Sharpe ratios** across **26 futures markets**.
- **Gold**, **natural gas**, and US, European **equities** have been the few **positive contributors**; most losses came from **rates**, **bonds**, **currencies**, and **cyclical commodities**.
- Returns of CTA Managed Futures correlate with **trend strength** in **rates**, **commodities**, and **currencies**, but **not in equities.**
- Current **macro conditions** include **range-bound yields** and a **weakening dollar**.
- We emphasize the importance of **long-term profit cycles** and **risk-off positioning** for CTAs.

CTA Managed Futures strategies and indices, which delivered an outstanding 27% gain in 2022 as evidenced by the flagship SG CTA Trend Index, have since faced a notable downturn. In 2023, the index recorded a -4% performance, followed by a modest +2.7% in 2024. Year-to-date in 2025, results have been even more disappointing, with the index down over 11% as of 22 May 2025.

What explains this reversal in performance since 2023?
What are the prospects for CTA strategies in today's macroeconomic landscape?

Drivers of Negative Returns since 2023

Thanks to Ai For Alpha's CTA Hedge Fund Replication models, we can shed light on the performance drivers during this period of underperformance.

Across a universe of 26 tracked markets, only a few have delivered consistent positive returns since 2023. The key positive contributors by asset class include:

- **Gold**, delivering a strong annualized return of 2.2% on the back of a persistent bullish trend.
- **Natural Gas**, with a 1.6% annualized return, benefiting from a sustained downtrend.
- **Equities (US and European)**, which offered minor gains during recent rallies.

Beyond these isolated opportunities, losses have been widespread across most sectors, particularly in interest rates, bond markets, currency markets, and cyclically sensitive commodities such as oil and copper. Of the 26 markets analyzed, only six generated profits for trend-following strategies, with the remainder producing losses—some quite substantial, especially in commodities (e.g. Oil Brent), and fixed income (e.g., the 10-year US Treasury Bond).

This environment of fragmented and short-lived trends has presented a major challenge for systematic trend strategies, which thrive on persistent directional movements.

Constructing a Factor of Trendiness in Global Futures Markets

To better capture the market conditions favorable to trend-following strategies, we propose an objective indicator of market directionality—termed the **Trendiness Indicator**. The core idea is to measure the absolute Sharpe ratio of each market, which serves as a proxy for the strength and persistence of directional trends. By aggregating these Sharpe-based signals across a broad set of futures markets, we construct a comprehensive global Trendiness Index.

$$Trendiness_{market_i} = \left| \frac{\frac{P_{market_i}(t)}{P_{market_i}(t-250)} - 1}{std\_dev(Daily_{Return_{market_i}}) \times \sqrt{250}} \right|$$

$$Global\ Trendiness = \frac{\sum_{market\ i} Trendiness_{market_i}}{Nb\ Markets}$$

As illustrated in Figure 1, the performance cycle of the SG CTA Trend Index exhibits a strong relationship with this Trendiness Index. Notably, **the Trendiness Index shows a 73% correlation with the SG CTA Trend Index's rolling 250-day returns**, highlighting a remarkable alignment between overall trend strength and CTA profitability, as further detailed in Figure 2.

Figure 1: Trendiness Indicator and SG CTA Trend Returns over last 250 days (source: Ai For Alpha).

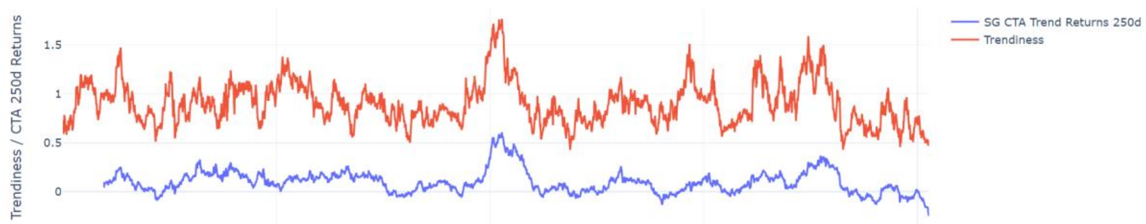
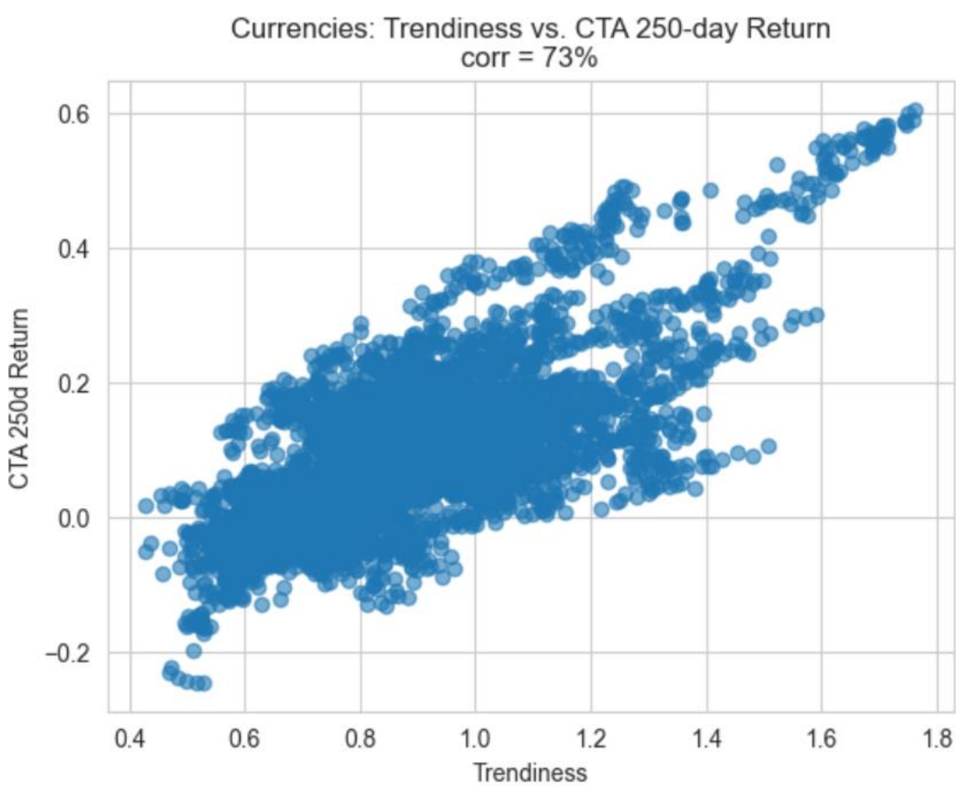


Figure 2: 250-day rolling Returns of SG CTA Trend Index vs. Global Trendiness Indicator (source: Ai For Alpha)



Evaluating the Correlation Between CTA Trend-Following Returns and Market Sector Trendiness

With this indicator in hand, we can assess the correlation between CTA Trend-Following Index returns and the degree of trendiness across major futures market sectors—namely Equities, Bonds and Interest Rates, Currencies, and Commodities.

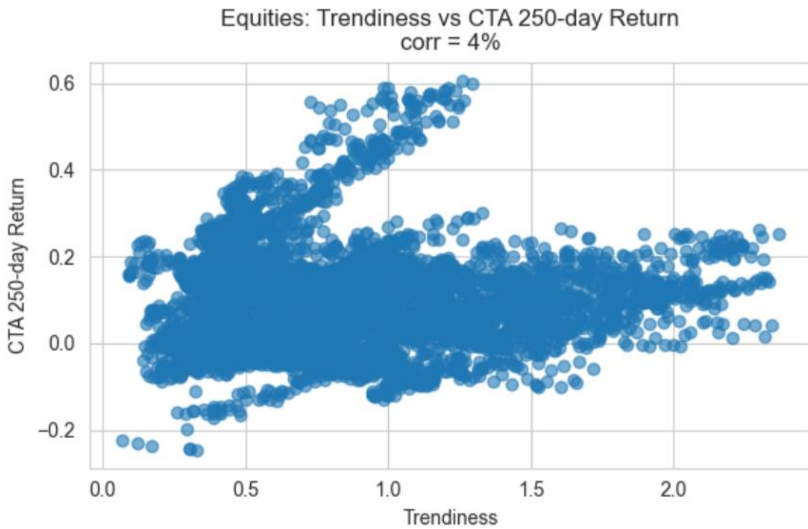
This analysis offers insights not only into the sectors where CTAs tend to allocate capital, but also into how their profitability is shaped by the presence or absence of sustained macroeconomic trends across these different market segments.

Our findings reveal several key insights regarding CTA profitability:

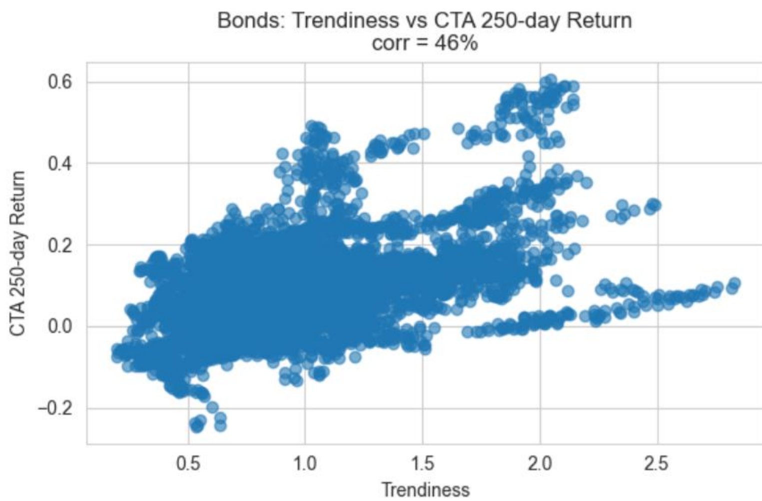
- **CTA returns show very limited correlation with trendiness in equities**. This is likely not due to a lack of allocation to equity markets, but rather to the absence of coherent global macro trends when equities exhibit momentum patterns. This finding supports the idea that equities tend to perform best when the underlying macroeconomic environment is stable across other sectors, such as interest rates, commodities, and currencies.
- Conversely, **CTA returns are strongly correlated with trendiness in other sectors—particularly, in increasing order, interest rates and bonds, commodities, and currencies.**

These observations suggest that sustained macro trends in interest rates, a broader set of commodities beyond gold, and currency markets are essential for enabling a favorable profit environment for CTA strategies.

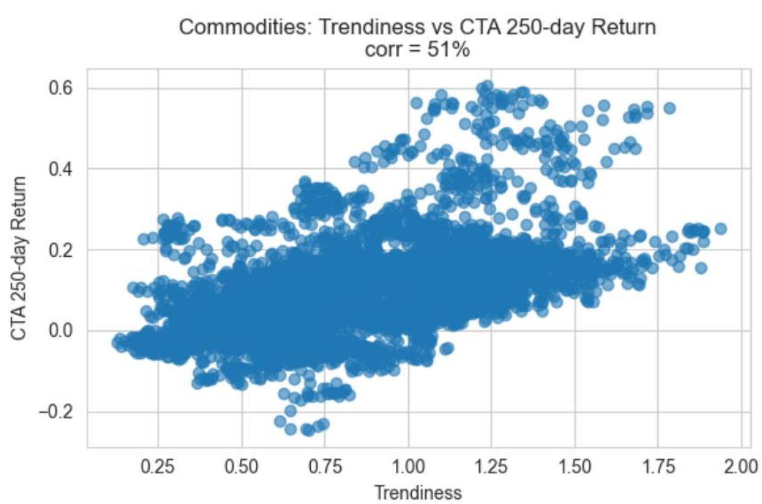
Figure 3: Correlation between CTA Trend Following Returns and Trendiness by Market Sector (source: Ai For Alpha)



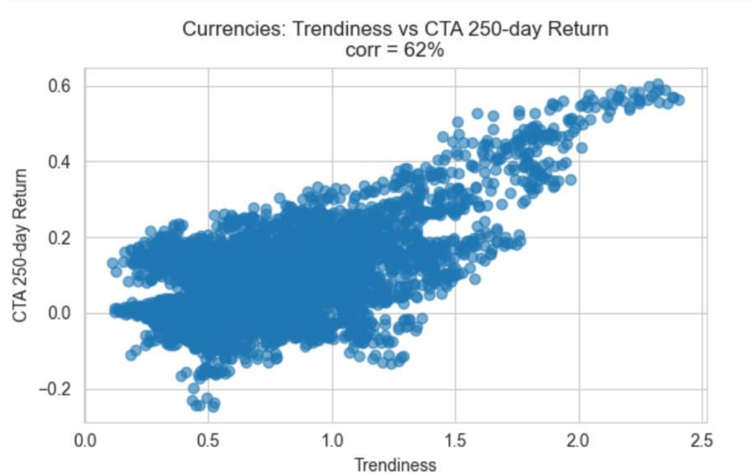
Equities: Trendiness vs CTA 250-day Return
corr = 4%
CTA 250-day Return
Trendiness



Bonds: Trendiness vs CTA 250-day Return
corr = 46%
CTA 250-day Return
Trendiness



Commodities: Trendiness vs CTA 250-day Return
corr = 51%
CTA 250-day Return
Trendiness



Which macro conditions would support CTA Trend-Following Performance?

Among the asset classes that typically contribute to CTA performance—namely Bonds, Commodities, and Currencies—**most are currently trading within unusually narrow ranges.** This is reflected in historically low Trendiness scores, as shown in Figure 4.

More specifically, US 10-year yields remain confined to a broad range between 3.6% and 5%, exhibiting limited directional movement. In 2023, the record inversion of the US yield curve (reaching -1%) significantly hindered long bond positions, as the resulting negative rolling carry proved detrimental. A gradual normalization of the curve could create more balanced opportunities, potentially allowing for profitable positions on both the long and short sides.

Recent concurrent trends, notably a weakening US dollar and strengthening gold prices, may signal improving trend alignment. If this alignment continues and coincides with a potential decline in US interest rates amid a softening macroeconomic environment, it could gradually restore more favorable conditions for trend-following strategies. That said, such a scenario remains subject to ongoing macroeconomic developments and should be monitored with caution.

Figure 4: Historical Trendiness and Rolling 250-day returns achieved by CTA Trend Following Strategies by key Market Sector (source: Ai For Alpha)

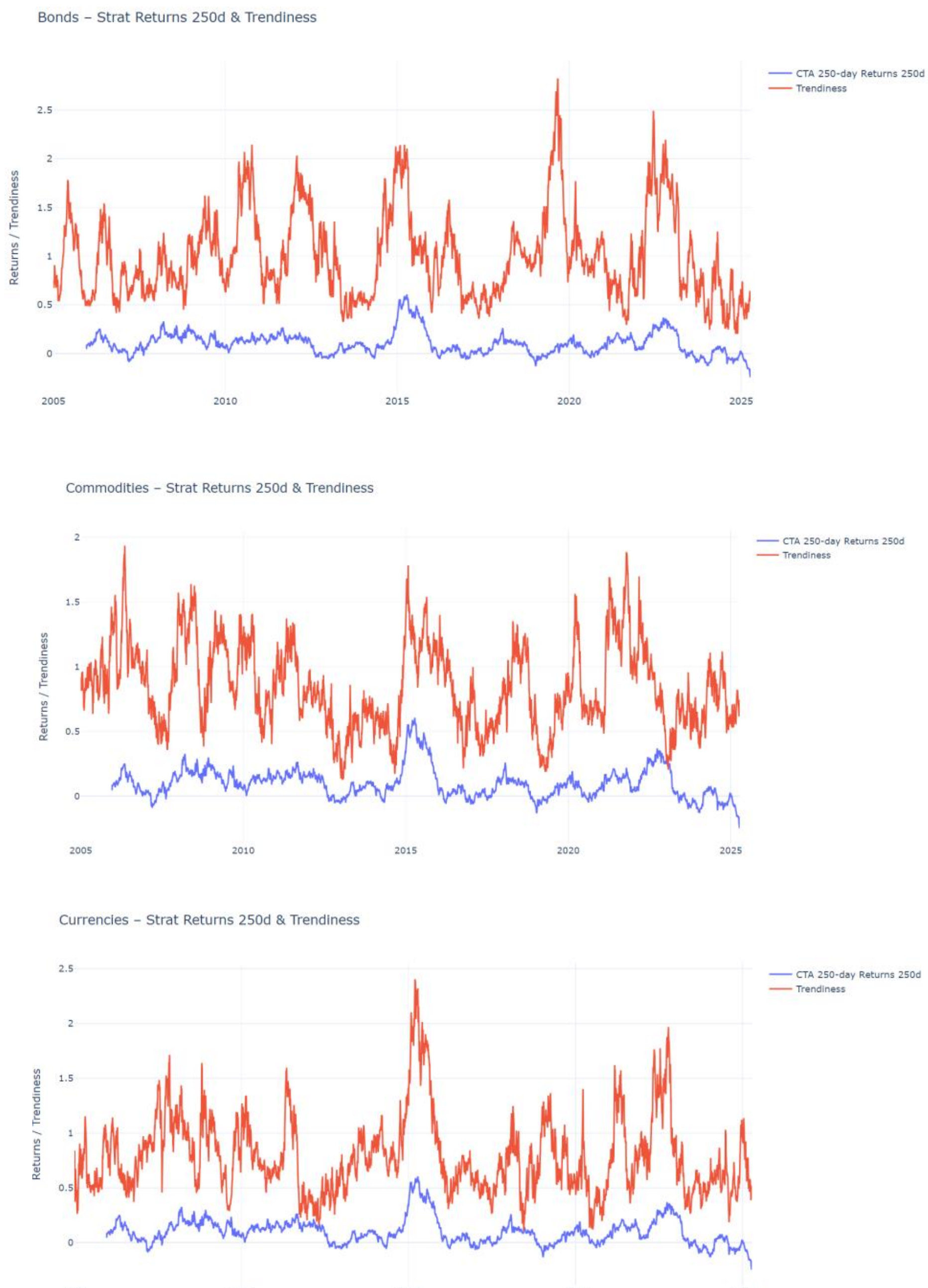
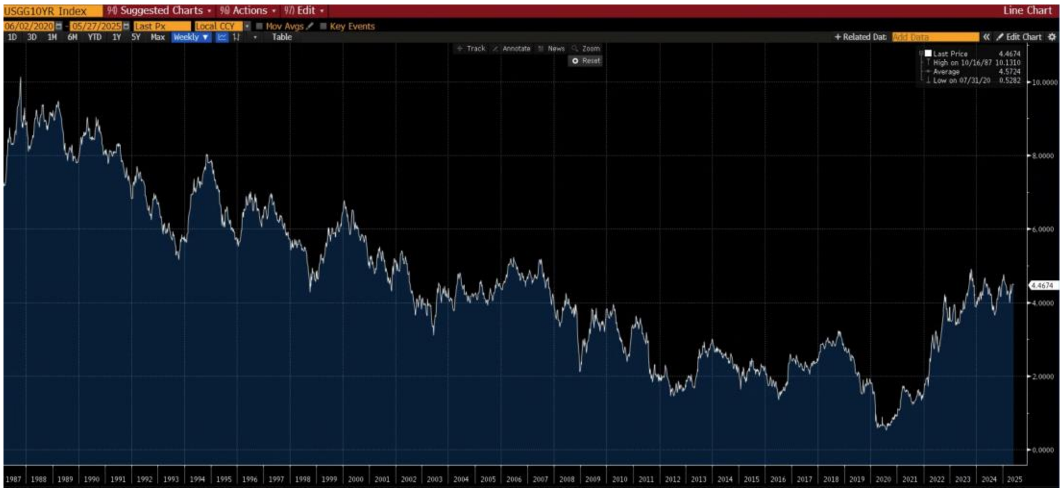
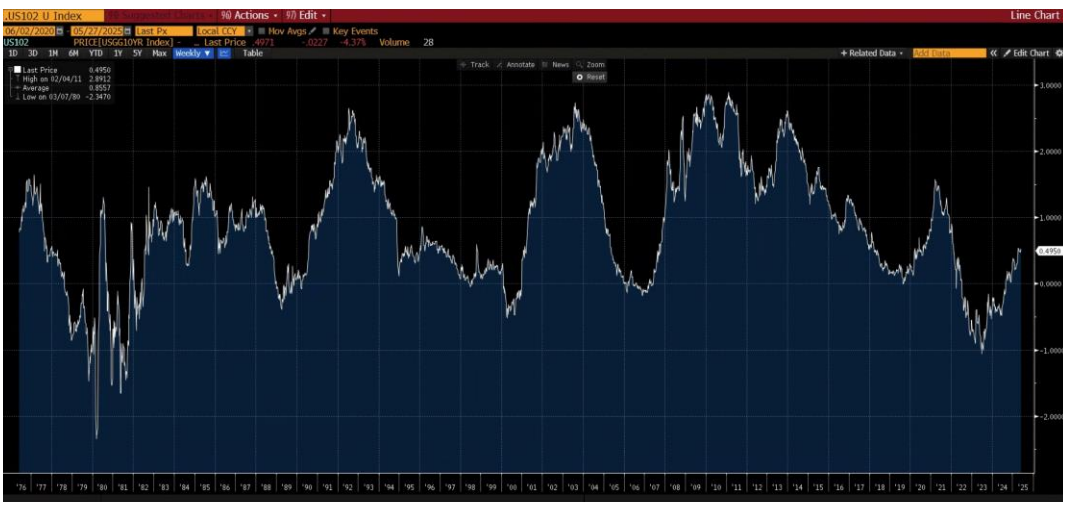


Figure 5: US 10-year yield and US 10Y-2Y Curve in the US (source: Bloomberg)

US 10-year yield



US 10-year vs. 2-year yield



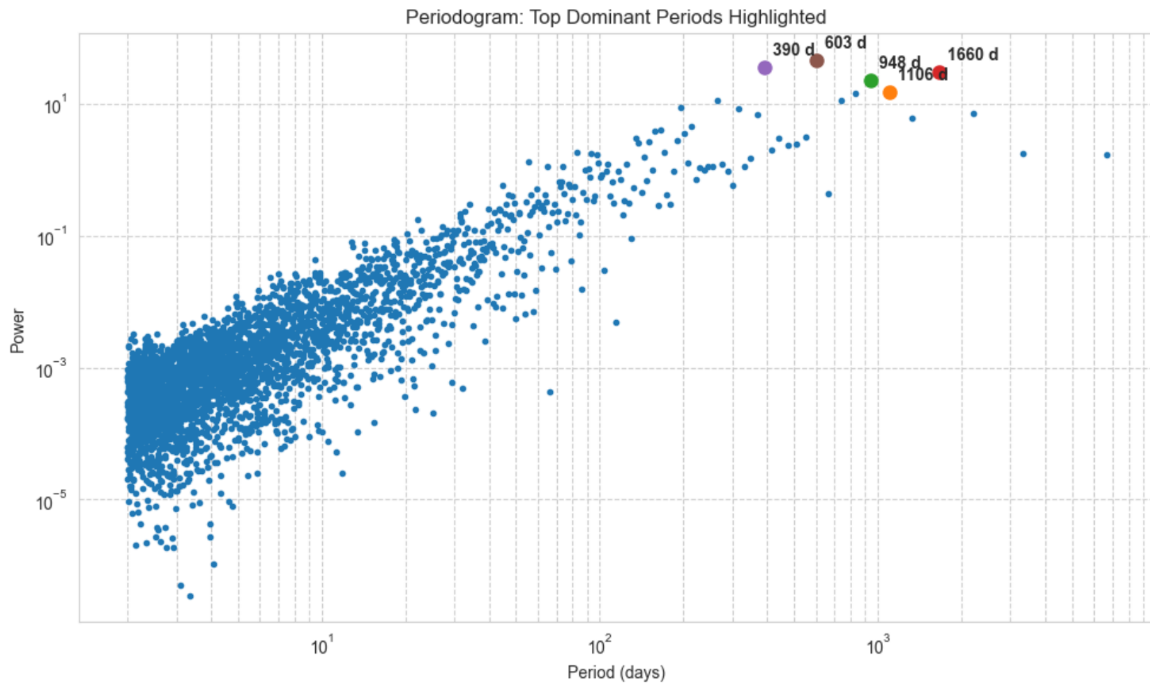
What to do next for CTA Managers and for Investors?

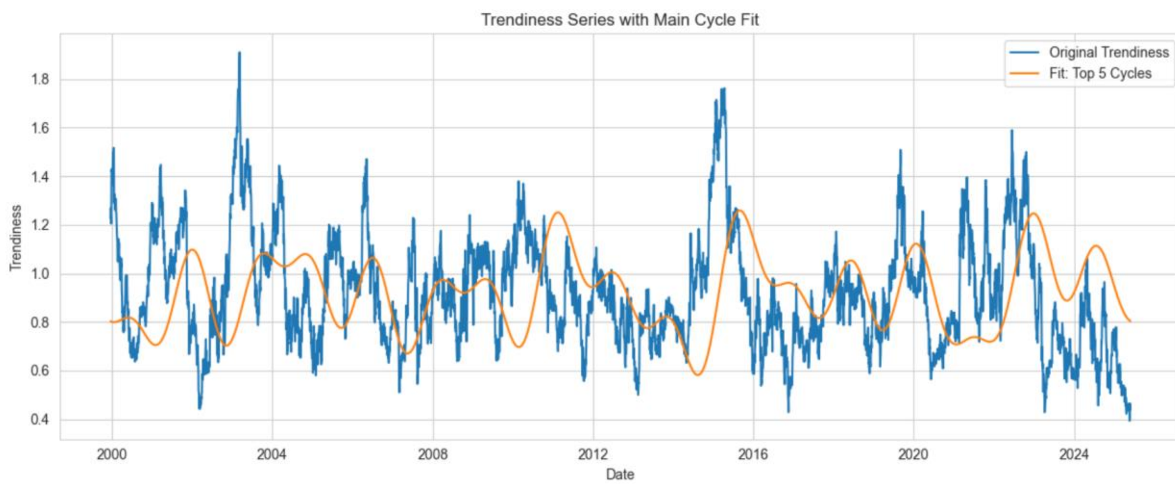
Patience is essential for managers and investors, since **trend-following strategies only generate profits when rare tail events occur**, that is, when extreme Sharpe ratios materialize over the medium term (6 months to 2 years) in either direction. Yet **a periodogram analysis of the Trendiness Indicator shows that low-frequency cycles of roughly 1.5 to 5 years dominate.** Accordingly, evaluating trend-following performance over horizons shorter than two years is unreliable. The muted returns since 2023 therefore stem directly from the exceptional gains of 2022, which ushered in range-bound conditions across rates, currencies and cyclical commodities, three sectors essential to CTAs' profit generation.

Meanwhile, as demonstrated in our previous research, **shifting CTA strategies toward a risk-off stance better aligns with investor preferences** and enables them to capture gains—or at least preserve performance, like in April 2025—during equity downturns, precisely when diversification is most valuable. Additionally, **incorporating risk management constraints** that cap extreme equity exposures within Managed Futures portfolios enhances both **performance stability** and **diversification benefits** for investors. Our conclusive analysis of the limited explanatory power of equity trendiness for CTA returns clearly indicates that CTAs are neither expected nor inclined to generate significant profits from rising equity markets.

Figure 6: Periodogram of Trendiness Indicator

Frequency (cycles/unit)	Power	Period = 1 / Frequency (units)	Interpretation
0.0017	45.35	≈ 603 days	Strong cycle every ~588 days
0.0026	36.07	≈ 390 days	Strong cycle every ~385 days
0.0006	30.27	≈ 1659 days	Very long cycle (~4.6 years)
0.0011	22.40	≈ 948 days	Long cycle (~2.5 years)
0.0009	14.81	≈ 1106 days	Long cycle (~3 years)


Periodogram: Top Dominant Periods Highlighted
390 d
603 d
948 d
1106 d
1660 d
Power
Period (days)


Trendiness Series with Main Cycle Fit
Original Trendiness
Fit: Top 5 Cycles
Trendiness
Date