CIO Office

Quantitative Investment Strategies

Trend Following Strategies: how they help in portfolio construction and provide market insights

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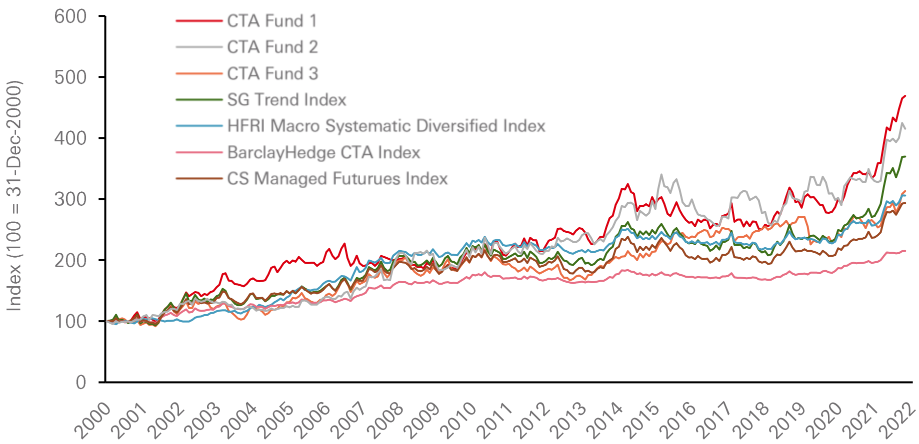
Summary

- Trend following strategies have been around for at least fifty years and have maintained a favourable profile of robust returns, positive skewness, near zero correlation, and convex payoffs with respect to equity markets over the years.
- These strategies performed particularly well in prolonged bear markets, such as 2000-2003, 2007-2008, and 2021-2022, which has motivated many investors to incorporate a strategic allocation to trend-following strategies in their broader portfolios.
- We present a version of a trend following strategy that closely tracks the performance of trend following hedge funds, typically labelled as Managed Futures or CTA funds.
- Investors can incorporate trend following into their investment process in different ways. First, by making an appropriately sized strategic allocation, as we do, to reduce portfolio drawdowns and improve expected returns. Second, by allocating to trend following tactically, at times when the portfolio manager may be expecting a chain of macro events triggering an emergence of directional trends. Third, by tracking the positioning of trend following strategies on a regular basis to grasp indications of market positioning and use them as an input in tactical asset allocation decisions, which we have found very useful.
- Trend-following strategies are typically suitable for investors who possess a higher level of experience and sophistication, along with a longer investment horizon. This is due to the fact that such strategies have a greater likelihood of delivering positive performance during periodic bear markets. Furthermore, it is worth noting that eligibility requirements and additional documentation may be necessary for engaging in this type of investment approach.

History of trend following strategies

The earliest trend following hedge funds were launched in the 1970s, and their roots can be found in technical analysis of price action. Simple rules-based approaches to identifying and trading trends evolved over time and became more sophisticated, but the underlying principles remained in the core of the various Commodity Trading Advisors (CTAs) and Managed Futures hedge funds. These terms are now synonymously used for trend following hedge funds, even though the trading universe in most cases extends beyond commodities, and includes a range of asset classes, such as rates, fixed income, FX, and equity indices.

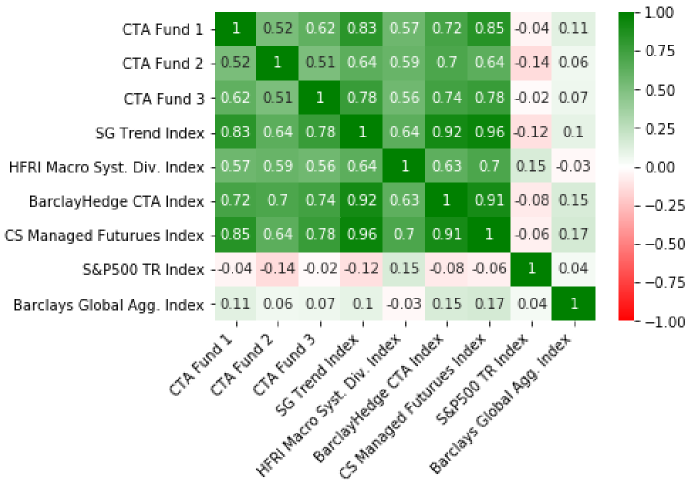
Figure 1 – Managed Futures funds target different levels of volatility and returns …



Source: Bloomberg, HSBC Global Private Banking as of 31 December 2022. Past performance is not a reliable indicator of future performance.

Figures 1 and 2 show three Managed Futures funds with the longest track record on Bloomberg, as well as a range of industry benchmarks. It should be immediately obvious that these funds are highly correlated to one another. Different funds employ their own proprietary signals and risk management approaches, and it is typical for some funds to target higher volatility and higher returns, such as Fund 2 in these exhibits. But regardless of their volatility targets and the nuances of each strategy, the overall correlation of returns remains high across the industry.

Figure 2 – … but are highly correlated to one another



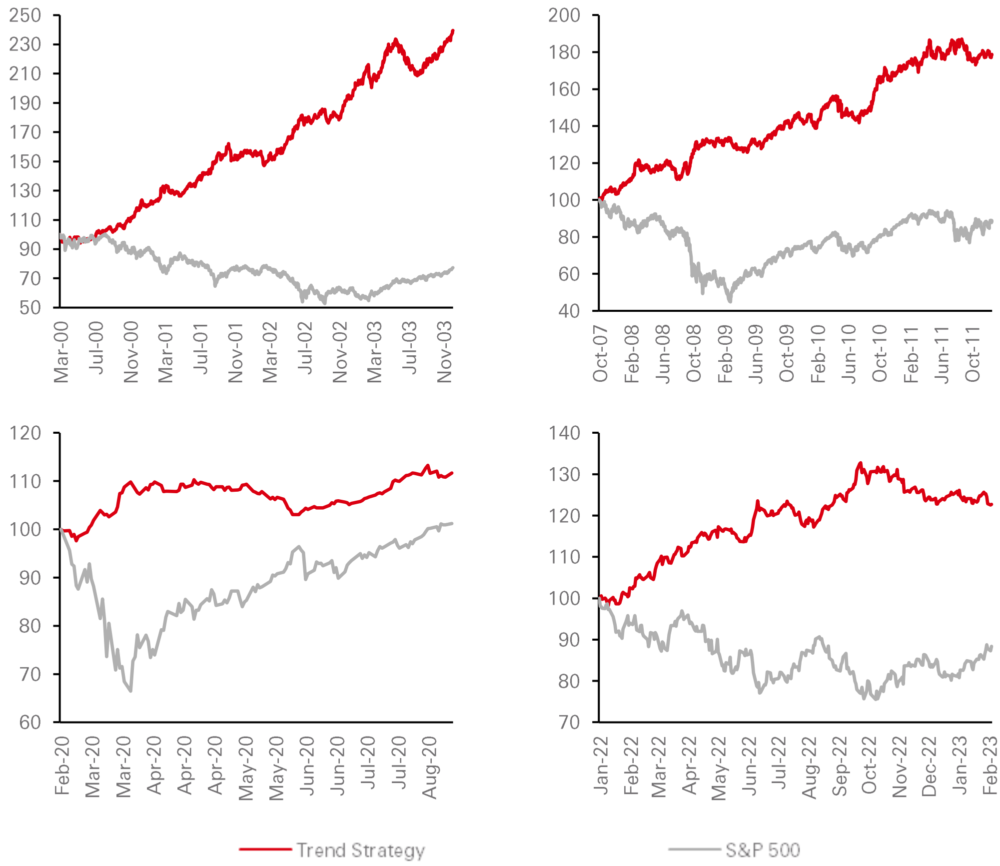
Source: Bloomberg, HSBC Global Private Banking as of 31 December 2022. Past performance is not a reliable indicator of future performance.

The investment case for trend strategies

As can be inferred from Figures 1 and 2, the most compelling reason to invest in trend strategies is their positive long-term historical return coupled with very low correlation to equity and bond markets which represent core holdings of most individual and institutional investors.

Due to being diversified across a range of markets, the strategy can lag equity investments during strong bull markets. This is especially the case during the periods when equities seem to be “the only game in town”, such as the periods from 2010-2013 and 2016-2018. That said, investors who have kept their allocations during these frustrating times also got to see periods of strong performance of trend strategies, such as 2000-2003, 2007-2008, 2014, and 2021-2022. Trend had particularly strong positive performance in some of the most painful bear markets for equities, as seen in Figure 3.

Figure 3 – Trend Strategies outperformed the equity market during period of market turmoil

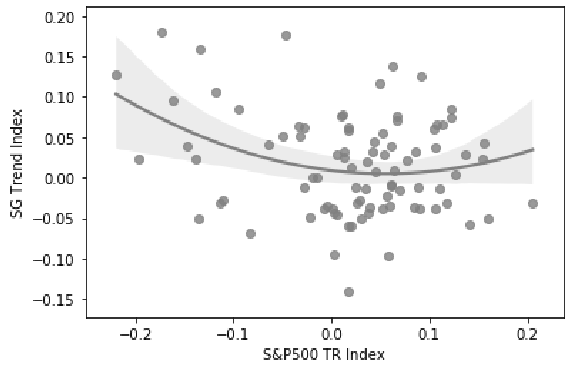


Source: Refinitiv, HSBC Global Private Banking as of March 2023.
Each chart shows performance of the Trend Strategy and S&P500 indexed to 100 at the beginning of the period analysed.
Trend Strategy performances are gross of performance and management fees. Past performance is not a reliable indicator of future performance.

Systematic trend strategies have a convex payoff with respect to equity indices, as shown in Figure 4. For medium-long term trend followers, this convexity is particularly evident on quarterly and lower frequencies. Trend strategies also have a positive skewness, in stark contrast with the negative skewness seen in the equity markets, as shown in Figure 5.

Due to their high Sharpe ratios (around 1.0), low drawdowns (20%), low correlation (around 0.0) and positive skewness, there are investors who make substantial allocations to trend following strategies. But for a more standard approach, such as ours, where stocks and bonds are the main core holdings, adding an allocation to trend strategies may be one of the most convenient ways of boosting the overall long-term return whilst reducing the downside risk.

Figure 4 – Convexity of CTA returns relative to S&P 500



Source: Bloomberg, HSBC Global Private Banking. Quarterly returns from 2001 to 2022. Past performance is not a reliable indicator of future performance.

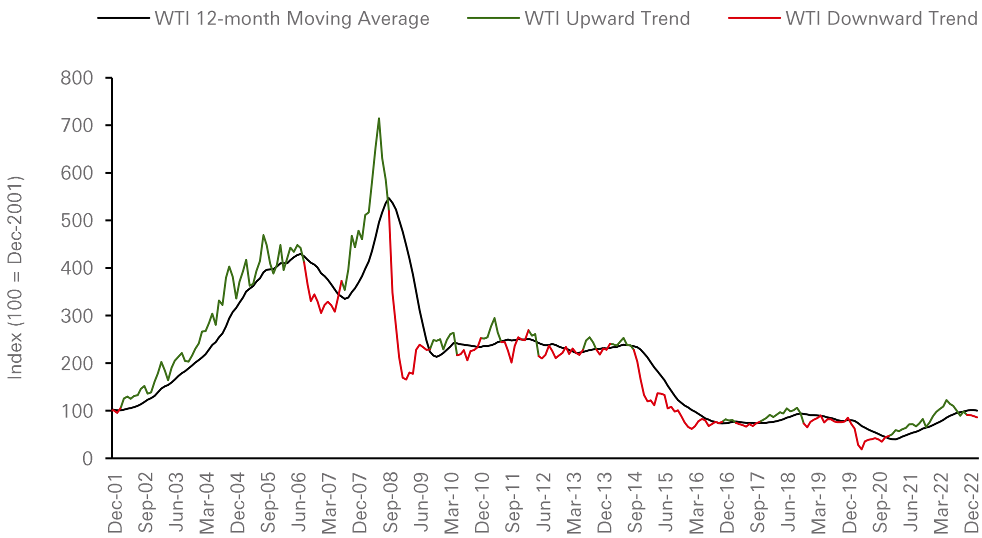
Figure 5 – Distribution of S&P 500 Total Return (grey) Index vs SG Trend Index (red)

Source: Bloomberg, HSBC Global Private Banking. Yearly returns from 2001 to 2022. Past performance is not a reliable indicator of future performance.

Our trend following strategy

The trend strategy methodology we have put together is highly correlated with the performance of various trend-following programs and funds. Medium to long term trends can be detected in a wider range of markets. Of course, markets could also be moving sideways for some time, but as illustrated in Figure 6, if trends eventually emerge, trend following has the potential to reap rewards.

Figure 6 – Comparison between WTI Futures and its 12-month moving average



Source: Bloomberg, HSBC Global Private Banking. Based on ratio back-adjusted prices. Monthly data, as of Feb 2023. Past performance is not a reliable indicator of future performance.

For those who have access to this market, futures contracts are an efficient way to build exposure to a wide range of trending markets. Futures allow for either long or short exposure with no cash changing hands, apart from posting the initial margin. While this in theory allows for substantial leverage, the key to success is conservative risk management, typically targeting 10% annualised volatility. Such conservative risk management means that only a fraction of the total capital needs to be posted for margining purposes, and a large portion remains in cash, which can be invested in treasury bills to earn additional return. With interest rates on the rise in 2022 and 2023, cash has again become a relevant source of return for trend following strategies.

Diversification is another crucial element of the strategy. Futures contracts are available across a range of asset classes, such as bonds, commodities, FX, and equity indices. It is difficult to foresee where big trends might emerge, so including as many asset classes and instruments as practically feasible has been a productive approach. To keep our strategy simple, liquid, and well diversified, we focus on the most liquid futures across all key asset classes, shown in Table 1 below. Good reasons to exclude certain contracts from the tradeable universe are:

1) Limited liquidity (for example, Rubber is far less liquid than Gold and Copper)
2) Non-trending behaviour (For example, VIX future is mean reverting)
3) High correlation (for example, adding equity sector index futures would have limited value add)

Table 1 – Selected markets based on liquidity

Equity	Fixed Income	FX	Commodities		
S&P 500	US 2 year	**Developed Markets**	**Energy**	**Precious Metals**	**Softs**
Nasdaq	US 5 year	EUR	WTI	Gold	Corn
DJIA	US 7 year	AUD	Natural Gas	Silver	Soybeans
Russell 2000	US 10 year	GBP	Brent	Palladium	Wheat
MSCI EM	US 15 year	JPY	Heating Oil	Platinum	Sugar
Hang Seng	UK 2 year	CAD	Gasoline	**Industrial Metals**	Coffee
NIKKEI	UK 5 year	NZD		HG Copper	Cotton
FTSE 100	UK 10 year	NOK		Aluminium	Cocoa
SMI	DE 2 year	SEK		Copper	Soybean Meal
DAX	DE 5 year	CHF		Zinc	Orange Juice
CAC	DE 10 year	ILS		Lead	Lean Hogs
IBEX	DE 30 year	**Emerging Markets**		Nickel	Rough Rice
FTSE MIB	IT 10 year	ZAR			Oats
Rates	IT 2 year	MXN			Lumber
SOFR 3 month	FR 10 year	BRL			
EURIBOR 3 month	Canada 10 year	KRW			
	AU 10 year	INR			
	JGB 10 year	THB			
		PLN			
		TRY			

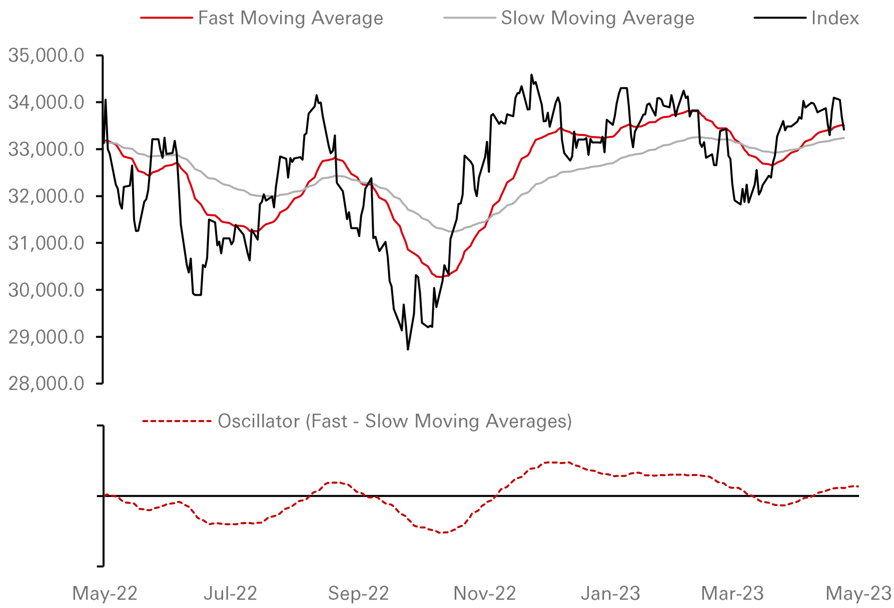
Trend signal

There are many ways to define a momentum signal. Moving average crossovers and breakouts are some of the traditionally used approaches. Academic research tends to focus on autocorrelations and past returns with various lookback periods.

Signals can be simply on/off signals, which can be directly translated into long and short positions. However, such signals do not tell us anything about the strength of the momentum. As a result, actual trading positions will be of the same size for two different assets, even if one has a very strong momentum whilst the other one has only barely changed its sign. Our preference is for a smooth, continuous signal that can range from strong negative momentum to strong positive momentum. Such signals can be translated to a range of position sizes across different assets, reflecting relative momentum between them.

The signal we use is an oscillator, calculated as the difference between two moving averages, also known as MACD line (Moving Average Convergence Divergence). When the fast moving-average is above (below) the slow one, the price should be in an upward (downward) trend. A simplified example is shown in Figure 7 below.

Figure 7 – Simplified example of our trend following oscillator



Source: Refinitiv, HSBC Global Private Banking. Daily data, as of May 2023. Past performance is not a reliable indicator of future performance.

Portfolio construction

To put together our trend following strategy, we scale each position by the volatility forecast of the underlying asset in order to allocate more (less) capital to less (more) volatile contracts. The notional exposure for each contract is proportional to the ratio between the signal strength and the univariate volatility forecast. Finally, we scale all positions to target 10% annualised volatility for the entire portfolio.

The back test of our strategy is highly correlated with the SG Trend index and other indices used in the industry, as shown in Figures 8 and 9 below, which gives us confidence that indeed our strategy is representative of a typical strategy used in the industry – our main objective of this exercise.

Figure 8 – Our Trend Strategy vs SG Trend Index

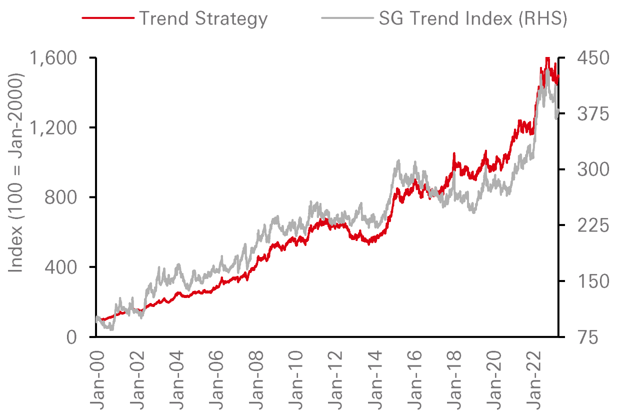
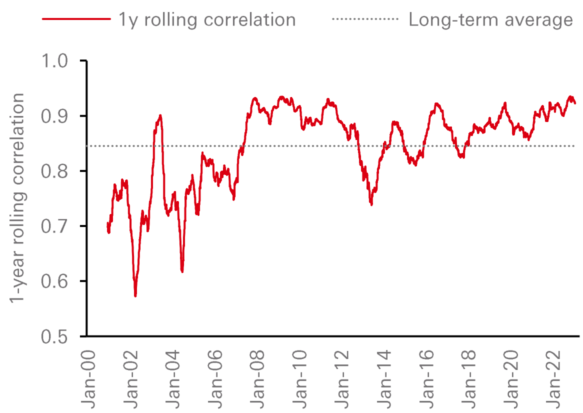


Figure 9 – Trend Strategy 1-year rolling correlation with SG Trend Index



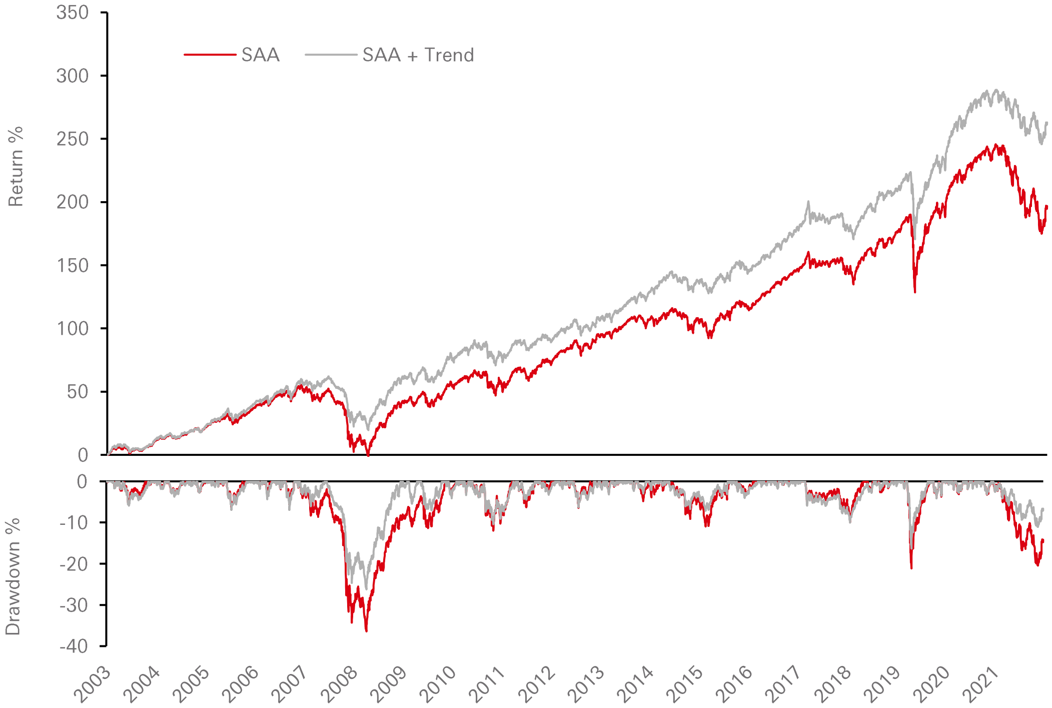
Source: Bloomberg, HSBC Global Private Banking. Daily returns from Jan 2000 to May 2023.
Trend Strategy performances are gross of performance and management fees. Past performance is not a reliable indicator of future performance.

Incorporating trend following into your investment process

Investors can incorporate systematic trend following into their portfolios in at least three ways:

First, investors can make an appropriately sized strategic allocation to a trend following strategy to reduce portfolio drawdowns and improve expected returns. As readers will know, we have been doing this for several years in our standard SAA process. Figure 10 shows the impact of adding our Trend Following strategy to our diversified Strategic Asset Allocation (SAA) of stocks and bonds. The optimal allocation to trend-following strategies and its volatility target will depend on investor's overall risk profile, investment objectives, preferences, and constraints.

Figure 10 – Comparison of SAA and a combination of SAA and Trend Following Strategy



Source: Bloomberg, HSBC Global Private Banking. Daily returns from Jan 2000 to May 2023.
The portfolio is constructed allocating 80% in GPB SAA excluding alternatives and 20% in the Trend Following Strategy. Past performance is not a reliable indicator of future performance.

Second, one can allocate to trend following strategies tactically, at times when the portfolio manager may be expecting a chain of macro events triggering an emergence of directional trends in rates, FX, commodity, or stock prices. Faster-moving trend strategies are more appropriate for shorter-term risk events such as February 2018 and February 2020, and medium and longer-term trend strategies are more appropriate for prolonged and slow-burning bear markets. Allocating to the trend strategy tactically is doable in practice due to the growing number of liquid instruments and daily dealing strategies available in the market.

Third, tracking the positioning of trend following strategies on a regular basis can be indicative of market positioning and used for tactical asset allocation. One use case is to consider incorporating momentum signals/positions into a broader portfolio when conviction is particularly high. As an example, an investment committee may want to regularly consider the top 3 long and short trend positions, evaluate the fundamental backdrop, and consider trading them on a discretionary basis. Furthermore, given the high correlation of returns between our Trend model and industry benchmarks, one could consider contrarian positions against the largest CTA positions, when there is a strong expectation of a regime change that could trigger position covering across the CTA programs. We have found this approach very useful in our investment process.

Below is an example of our monthly position and performance tracking reports, showing the results related to May 2023.

The features detailed in the table are as follows:

- Futures: Instruments grouped by asset class
- Signal: momentum signal that spans from extreme positive view (+1) to extreme negative view (-1). All the FX Futures are against USD, so a positive (negative) signal should be interpreted as a strengthening (weakening) of the Currency versus the USD.
- Volatility Forecast: annualized daily volatility forecast
- Delta Positioning from a specific date: how much the position in a specific asset has changed through the period analyzed

The tables below show that in May 2023, our systematic trend strategy was positioned for a risk-on environment, with an increasing positive exposure towards Equities. Within Fixed Income, the trend was still pointing to increasing rates in the subsequent weeks. The strategy continued to hold an overall short exposure across the Government Bond curve of the different countries considered.

On the FX side, the strategy was gradually reducing the positions for a weaker USD versus the main developed currencies, in particular, EUR, where the signal turned negative, GBP and CHF. Within Commodities, the overall stance remained negative across most contracts.

Futures	Signal	Volatility Forecast	Δ Positioning from 28-Apr-23	Return contribution from 28-Apr-23
Rates	-1 0 +1			**0.08%**
SOFR 3 month		*1.1%*	▼▼	*0.03%*
EURIBOR 3 month		*1.0%*	▼▼	*0.05%*
Fixed Income				**1.31%**
US 2 year		*3.4%*	▼	*0.15%*
US 5 year		*6.4%*	-	*0.06%*
US 7 year		*7.9%*	▼	*0.04%*
US 10 year		*9.2%*	▼	*0.04%*
US 15 year		*12.0%*	-	*0.06%*
UK 2 year		*3.0%*	-	*0.47%*
UK 5 year		*5.5%*	-	*0.38%*
UK 10 year		*16.0%*	-	*0.17%*
DE 2 year		*7.5%*	▼▼	*-0.12%*
DE 5 year		*6.2%*	▲	*-0.01%*
DE 10 year		*12.6%*	-	*0.01%*
DE 30 year		*22.4%*	-	*0.02%*
IT 10 year		*10.0%*	▲	*-0.03%*
IT 2 year		*2.8%*	▲	*-0.04%*
FR 10 year		*9.9%*	▲▲	*-0.02%*
Canada 10 year		*10.6%*	▼	*0.12%*
AU 10 year		*10.5%*	-	*0.05%*
JGB 10 year		*2.9%*	▲▲	*-0.01%*
Equity				**-0.73%**
S&P 500		*13.9%*	▲	*-0.01%*
Nasdaq		*18.9%*	▲▲	*0.22%*
DJIA		*12.2%*	▼▼	*-0.04%*
Russell 2000		*19.2%*	▲	*0.00%*
MSCI EM		*15.2%*	-	*0.06%*
Hang Seng		*21.4%*	-	*0.18%*
NIKKEI		*13.5%*	▲▲	*0.19%*
FTSE 100		*15.2%*	-	*-0.26%*
SMI		*14.6%*	-	*-0.22%*
DAX		*16.7%*	-	*-0.20%*
CAC		*17.2%*	-	*-0.29%*
IBEX		*17.4%*	-	*-0.17%*
FTSE MIB		*19.9%*	-	*-0.20%*

Futures	Signal	Volatility Forecast	Δ Positioning from 28-Apr-23	Return contribution from 28-Apr-23
Commodities	-1 0 +1			**1.49%**
Energy				**0.15%**
WTI		*36.2%*	-	*0.06%*
Natural Gas		*72.1%*	-	*0.09%*
Brent		*34.1%*	-	*0.05%*
Heating Oil		*33.4%*	-	*0.05%*
Gasoline		*33.6%*	▲	*-0.09%*
Precious Metals				**-0.28%**
Gold		*14.2%*	▼	*-0.09%*
Silver		*25.0%*	-	*-0.14%*
Palladium		*41.8%*	-	*0.08%*
Platinum		*27.8%*	-	*-0.13%*
Industrial Metals				**0.81%**
HG Copper		*22.8%*	▼	*0.06%*
Aluminium		*21.3%*	-	*0.07%*
Copper		*20.8%*	▼	*0.07%*
Zinc		*26.2%*	-	*0.52%*
Lead		*19.2%*	-	*0.05%*
Nickel		*35.8%*	-	*0.03%*
Softs				**0.81%**
Corn		*22.2%*	-	*-0.05%*
Soybeans		*18.9%*	▼	*0.22%*
Wheat		*31.4%*	▲▲	*0.17%*
Sugar		*25.2%*	-	*-0.12%*
Coffee		*30.7%*	-	*-0.01%*
Cotton		*30.2%*	▲▲	*-0.06%*
Cocoa		*16.4%*	-	*0.08%*
Soybean Meal		*20.0%*	▼	*0.18%*
Orange Juice		*37.5%*	-	*0.18%*
Lean Hogs		*34.2%*	▲▲	*0.34%*
Rough Rice		*17.0%*	-	*0.09%*
Oats		*29.7%*	▲▲	*-0.23%*
Lumber		*33.6%*	-	*0.03%*

Futures	Signal	Volatility Forecast	Δ Positioning from 28-Apr-23	Return contribution from 28-Apr-23
FX	-1 0 +1			**0.69%**
Developed Markets				***0.31%***
EUR		*6.9%*	▼▼	*-0.13%*
AUD		*10.4%*	-	*0.06%*
GBP		*7.9%*	-	*-0.09%*
JPY		*10.3%*	▼	*0.15%*
CAD		*6.6%*	-	*-0.01%*
NZD		*12.5%*	▲▲	*-0.05%*
NOK		*12.2%*	-	*0.24%*
SEK		*10.5%*	▼▼	*0.05%*
CHF		*7.7%*	▼▼	*-0.10%*
ILS		*8.6%*	-	*0.20%*
Emerging Markets				***0.38%***
ZAR		*14.3%*	-	*0.36%*
MXN		*10.2%*	▲	*0.17%*
BRL		*13.2%*	-	*-0.07%*
KRW		*8.9%*	▲	*-0.07%*
INR		*2.9%*	▼▼	*-0.09%*
THB		*7.8%*	-	*0.00%*
PLN		*10.1%*	-	*-0.14%*
TRY		*26.2%*	▼▼	*0.23%*

Risk Disclosures

Risks of investment in fixed income
There are several key issues that one should consider before making an investment into fixed income. The risk specific to this type of investment may include, but are not limited to:

Credit risk
Investor is subject to the credit risk of the issuer. Investor is also subject to the credit risk of the government and/or the appointed trustee for debts that are guaranteed by the government.

Risks associated with high yield fixed income instruments
High yield fixed income instruments are typically rated below investment grade or are unrated and as such are often subject to a higher risk of issuer default. The net asset value of a high-yield bond fund may decline or be negatively affected if there is a default of any of the high yield bonds that it invests in or if interest rates change. The special features and risks of high-yield bond funds may also include the following:

- Capital growth risk - some high-yield bond funds may have fees and/ or dividends paid out of capital. As a result, the capital that the fund has available for investment in the future and capital growth may be reduced; and
- Dividend distributions - some high-yield bond funds may not distribute dividends, but instead reinvest the dividends into the fund or alternatively, the investment manager may have discretion on whether or not to make any distribution out of income and/ or capital of the fund. Also, a high distribution yield does not imply a positive or high return on the total investment.
- Vulnerability to economic cycles - during economic downturns such instruments may typically fall more in value than investment grade bonds as (i) investors become more risk averse and (ii) default risk rises.

Risks associated with subordinated debentures, perpetual debentures, and contingent convertible or bail-in debentures
- Subordinated debentures - subordinated debentures will bear higher risks than holders of senior debentures of the issuer due to a lower priority of claim in the event of the issuer's liquidation.
- Perpetual debentures - perpetual debentures often are callable, do not have maturity dates and are subordinated. Investors may incur reinvestment and subordination risks. Investors may lose all their invested principal in certain circumstances. Interest payments may be variable, deferred or cancelled. Investors may face uncertainties over when and how much they can receive such payments.
- Contingent convertible or bail-in debentures - Contingent convertible and bail-in debentures are hybrid debt-equity instruments that may be written off or converted to common stock on the occurrence of a trigger event. Contingent convertible debentures refer to debentures that contain a clause requiring them to be written off or converted to common stock on the occurrence of a trigger event. These debentures generally absorb losses while the issuer remains a going concern (i.e. in advance of the point of non-viability). "Bail-in" generally refers to (a) contractual mechanisms (i.e. contractual bail-in) under which debentures contain a clause requiring them to be written off or converted to common stock on the occurrence of a trigger event, or (b) statutory mechanisms (i.e. statutory bail-in) whereby a national resolution authority writes down or converts debentures under specified conditions to common stock. Bail-in debentures generally absorb losses at the point of non-viability. These features can introduce notable risks to investors who may lose all their invested principal.

Contingent convertible securities (CoCos) or bail-in debentures are highly complex, high risk hybrid capital instruments with unusual loss-absorbency features written into their contractual terms. Investors should note that their capital is at risk and they may lose some or all of their capital.

Changes in legislation and/or regulation
Changes in legislation and/or regulation could affect the performance, prices and mark-to-market valuation on the investment.

Nationalisation risk
The uncertainty as to the coupons and principal will be paid on schedule and/or that the risk on the ranking of the bond seniority would be compromised following nationalization.

Reinvestment risk
A decline in interest rate would affect investors as coupons received and any return of principal may be reinvested at a lower rate. Changes in interest rate, volatility, credit spread, rating agencies actions, liquidity and market conditions may have a negative effect on the prices, mark-to-market valuations and your overall investment.

Risk disclosure on Dim Sum Bonds
Although sovereign bonds may be guaranteed by the China Central Government, investors should note that unless otherwise specified, other renminbi bonds will not be guaranteed by the China Central Government.
Renminbi bonds are settled in renminbi, changes in exchange rates may have an adverse effect on the value of that investment. You may not get back the same amount of Hong Kong Dollars upon maturity of the bond.
There may not be active secondary market available even if a renminbi bond is listed. Therefore, you need to face a certain degree of liquidity risk.
Renminbi is subject to foreign exchange control. Renminbi is not freely convertible in Hong Kong. Should the China Central Government tighten the control, the liquidity of renminbi or even renminbi bonds in Hong Kong will be affected and you may be exposed to higher liquidity risks. Investors should be prepared that you may need to hold a renminbi bond until maturity.

Alternative Investments

Hedge Fund - Please note Hedge Funds often engage in leveraging and other speculative investment practices that may increase the risk of investment loss. They can also be highly illiquid, are not required to provide periodic pricing or valuation information to investors, and may involve complex tax structures and delays in distributing important information. Alternative investments are often not subject to the same regulatory requirements as, say, mutual funds, and often charge high fees that may potentially offset trading profits when they occur.

Private Equity - Please note Private Equity is generally illiquid, involving long term investments that do not display the liquid or transparency characteristics often found in other investments (e.g. Listed securities). It can take time for money to be invested (cash drag) and for investments to produce returns after initial losses.

Risks of investment in Futures

Please note that investing in futures instruments across various asset classes may carry different sources of risks. Equity futures involve price volatility and potential gain or losses. Fixed Income futures are exposed to interest rate changes and credit risks. Commodities' futures face risk from supply-demand dynamics. FX futures are influenced by currency fluctuations, impacting potential losses or gains. Furthermore, investments in futures often engage in leveraging and other speculative investment practices that may increase the risk of investment loss.

Risk disclosure on Emerging Markets

Investment in emerging markets may involve certain, additional risks which may not be typically associated with investing in more established economies and/or securities markets. Such risks include (a) the risk of nationalization or expropriation of assets; (b) economic and political uncertainty; (c) less liquidity in so far of securities markets; (d) fluctuations in currency exchange rate; (c) higher rates of inflation; (f) less oversight by a regulator of local securities market; (g) longer settlement periods in so far as securities transactions and (h) less stringent laws in so far the duties of company officers and protection of Investors.

Risk disclosure on FX Margin

The price fluctuation of FX could be substantial under certain market conditions and/or occurrence of certain events, news or developments and this could pose significant risk to the Customer. Leveraged FX trading carry a high degree of risk and the Customer may suffer losses exceeding their initial margin funds. Market conditions may make it impossible to square/close-out FX contracts/options. Customers could face substantial margin calls and therefore liquidity problems if the relevant price of the currency goes against them.

The leverage of a product can work against you and losses can exceed those of a direct investment. If the market value of a portfolio falls by a certain amount, this could result in a situation where the value of collateral no longer covers all outstanding loan amounts. This means that investors might have to respond promptly to margin calls. If a portfolio's return is lower than its financing cost then leverage would reduce a portfolio's overall performance and even generate a negative return

Currency risk – where product relates to other currencies

When an investment is denominated in a currency other than your local or reporting currency, changes in exchange rates may have a negative effect on your investment.

Chinese Yuan ("CNY") risks

There is a liquidity risk associated with CNY products, especially if such investments do not have an active secondary market and their prices have large bid/offer spreads.

CNY is currently not freely convertible and conversion of CNY through banks in Hong Kong and Singapore is subject to certain restrictions. CNY products are denominated and settled in CNY deliverable in Hong Kong and Singapore, which represents a market which is different from that of CNY deliverable in Mainland China.

There is a possibility of not receiving the full amount in CNY upon settlement, if the Bank is not able to obtain sufficient amount of CNY in a timely manner due to the exchange controls and restrictions applicable to the currency.

Illiquid markets/products

In the case of investments for which there is no recognised market, it may be difficult for investors to sell their investments or to obtain reliable information about their value or the extent of the risk to which they are exposed.

Environmental, Social and Governance ("ESG") Customer Disclosure

In broad terms "sustainable investments" include investment approaches or instruments which consider environmental, social, governance and/or other sustainability factors to varying degrees. Certain instruments we classify as sustainable may be in the process of changing to deliver improved sustainability outcomes.

There is no guarantee that sustainable investments will produce returns similar to those which don't consider these factors. Sustainable investments may diverge from traditional market benchmarks.

In addition, there is no standard definition of, or measurement criteria for, sustainable investments or the impact of sustainable investments. Sustainable investment and sustainability impact measurement criteria are (a) highly subjective and (b) may vary significantly across and within sectors.

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Sustainable investing is an evolving area and new regulatory frameworks are being developed which will affect how sustainable investments can be categorised or labelled. An investment which is considered to fulfil sustainable criteria today may not meet those criteria at some point in the future.

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