RPM EDUCATIONAL
7.

Misconceptions of CTAs

RPM investments
DIFFERENT MOVES.

Misconception: ***"A view or opinion that is incorrect because it is based on faulty thinking or understanding"***

MISCONCEPTIONS OF CTAs

Being active in the CTA universe means that one constantly must explain or even defend the strategy. In this piece, we will try to address some common misconceptions about CTAs. Some misconceptions are just simplified versions of facts and some are downright wrong. As we have discussed in previous *RPM Educationals*, CTA returns are not always immediately intuitive. An investor in regular equity funds can access any news site (or daily paper) and read loads of analysis on how equities have performed and why to understand their portfolio returns. For CTAs, such analysis is difficult to find and you need to know current positioning to translate market moves into fund returns. This feature in combination with the positive skew in the return profile makes it an even harder investment to hold over time. Obviously, practitioners need to manage expectations.

By addressing some common misconceptions about CTA returns we hope to at least avoid some of the cognitive dissonance that is the result of these misconceptions meeting reality. Let us start with a fictive quote that sums it all up:

"CTAs used to be a long volatility, uncorrelated hedge to equities by being able to go short equity markets. This high-risk strategy has now stopped working."

–Unknown investment professional

Ok, we have some work to do. Let's start with the long volatility…

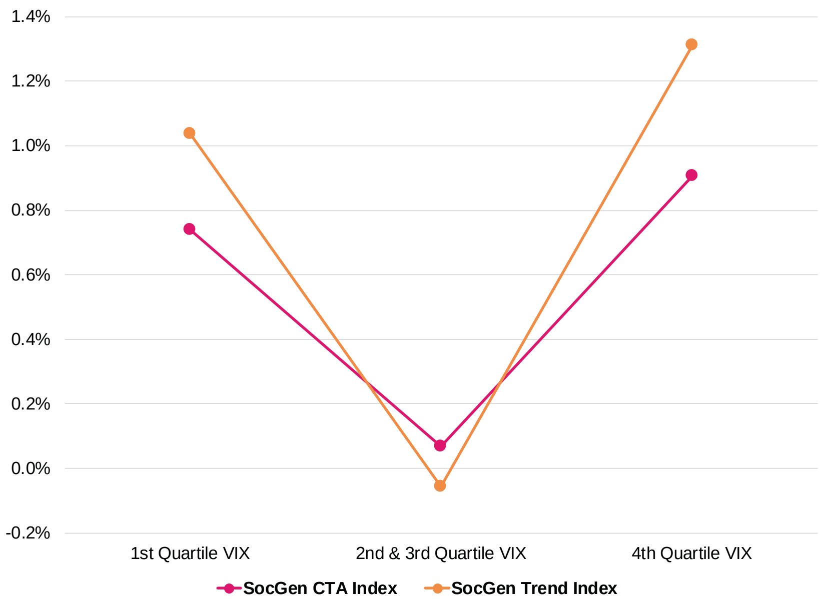
MISCONCEPTION 1. CTAs are a long volatility strategy

Type of fallacy: Simplification

Arguments: It is true that long periods of low volatility, as we experienced last year, are not very conducive to CTA returns. In prolonged crisis scenarios CTAs profit AND volatility is usually high. Does this imply that CTAs are long volatility? The graph below plots average monthly CTA returns conditioned on VIX quartiles for the broad Soc Gen CTA Index (including Trend Following, Short Term, and Systematic Macro CTAs) and the Soc Gen Trend Index (including only Trend Following)[1].

FIGURE 1 - VIX AND CTA RETURNS

Average monthly CTA returns conditioned on VIX quartiles. Monthly data, Jan00 - May18. Source: BarclayHedge, Bloomberg, RPM



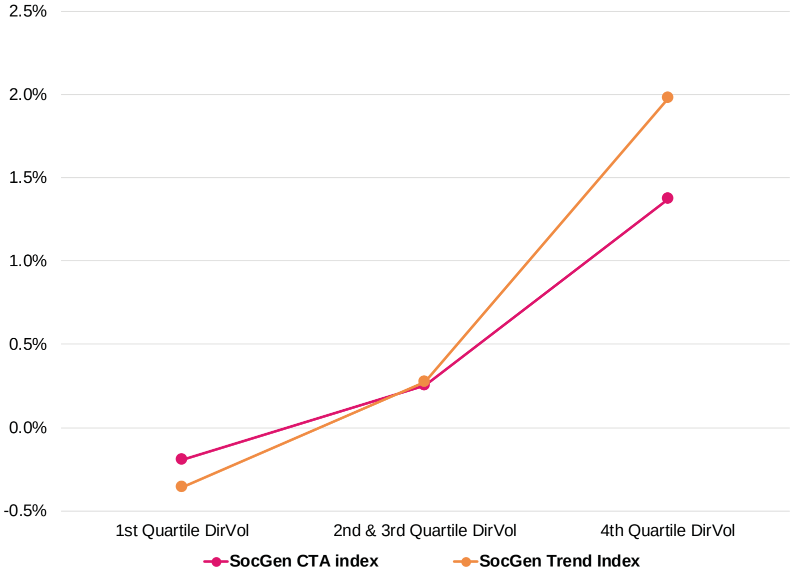
1. For more information on the CTA indices from Société Générale, please see https://cib.societegenerale.com/en/prime-services-indices/

The v-shape is clear. VIX observations in the 1st quartile are usually related to periods of stable growth and observations in the 4th quartile are related to periods of change or even crisis. CTAs do profit from trends in stable growth scenarios but trends in crisis are even better. The pattern is even more pronounced for trend followers.

A more suitable measure is to look at so called *directional volatility,* measuring the proportion of moves that are in the direction of the current trend. We do the same plot as above replacing VIX with directional volatility calculated from the 70 dominant futures markets across all sectors. The relationship is quite clear. CTAs do not profit from volatility per se; they profit from directional volatility!

FIGURE 2 - DIRECTIONAL VOLATILITY AND CTA RETURNS

CTA returns conditioned on directional volatility as measured from 70 dominant futures markets. Monthly data, Jan00 - May18. Source: BarclayHedge, Bloomberg, RPM



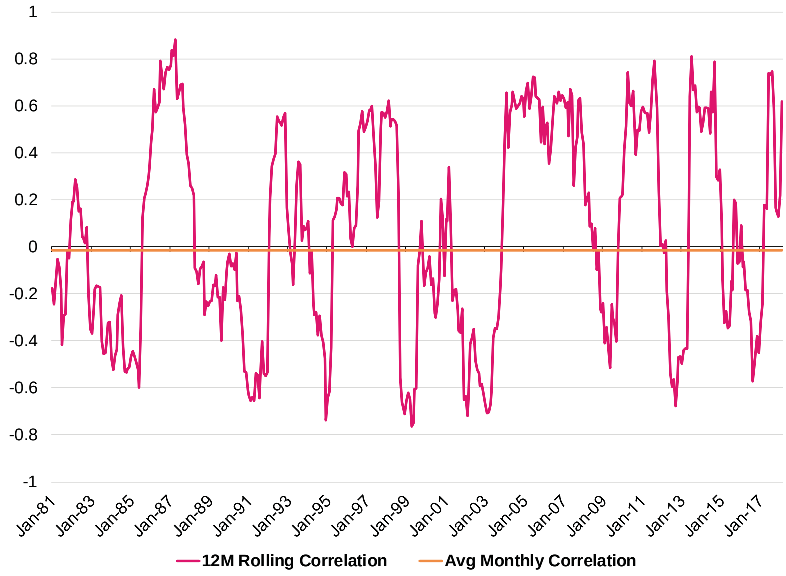
MISCONCEPTION 2. CTA returns have low correlation to equities

Type of fallacy: Simplification

Arguments: CTA returns have roughly zero correlation to equities, depending how you define it. Naïvely this implies that CTA returns are random in relation to equity returns. If we look at a rolling correlation window we see a different picture. The correlation is anything but stable and low. It varies between +0.8 to -0.8 measured as 12-month rolling correlation. This is in part a reflection of the equity position but more importantly an indication that CTAs can profit from broader trends, both in equity bull and bear scenarios.

FIGURE 3 - CTA CORRELATION TO EQUITIES

Correlation between MSCI World TR and Barclay CTA Index. Monthly data Jan81-Mar18.
Source: Bloomberg, RPM



This conditional correlation feature is important in portfolio construction when optimising on portfolio measures that are path dependent like maximum drawdown, sterling ratios etc.

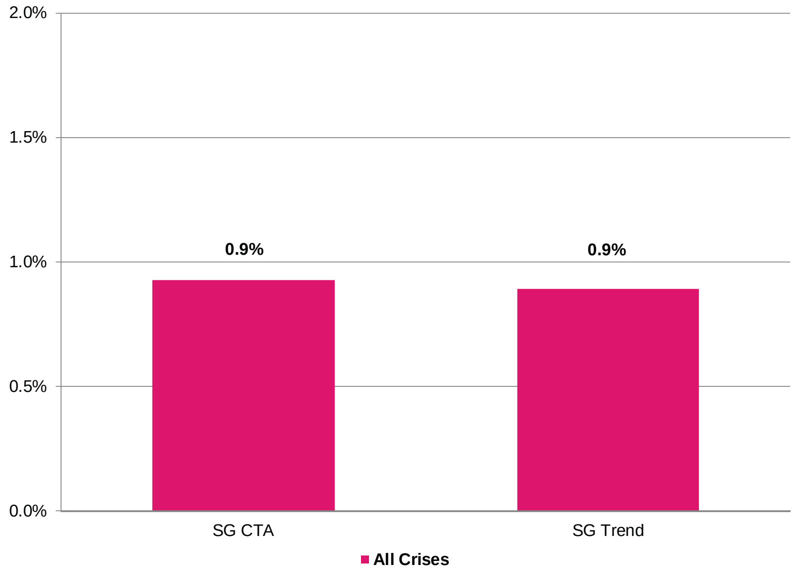
MISCONCEPTION 3. CTAs are a perfect hedge to equities

Type of fallacy: Simplification

Arguments: CTAs are a good, if not the best, complementary investment to equities. Any historical simulation on basically any risk adjusted performance measure shows this. One reason for this is the "Crisis Alpha" component, i.e. the solid performance from CTAs during major equity downturns. But why were CTAs negative during events like early February 2018? The key factor to consider is crisis duration. The illustration below shows the average monthly CTA returns[2] during months when equity markets are in crisis[3]. We compare the broader CTA index to the trend following constituents in isolation. We see that on average, they deliver the same monthly returns during crisis.

FIGURE 4 - MONTHLY CTA RETURNS DURING EQUITY CRISES

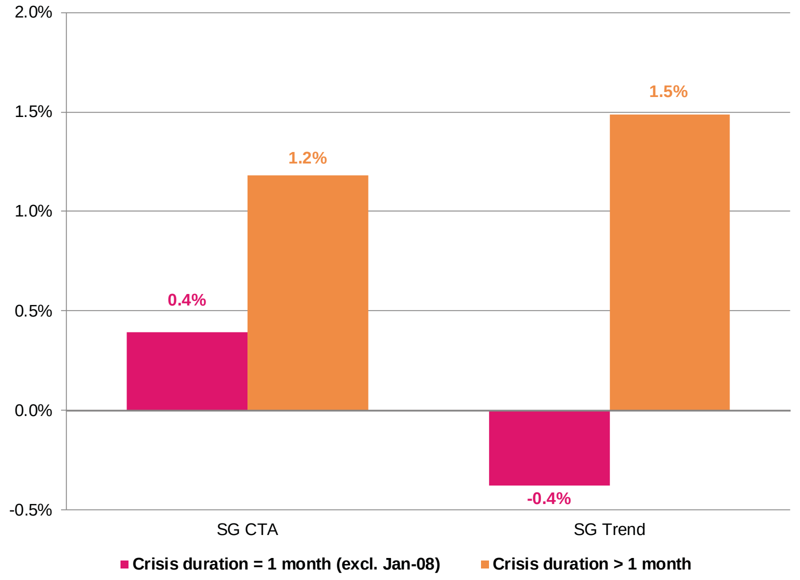
Average monthly CTA returns during equity crises for the Soc Gen CTA Index and the Soc Gen Trend Index. Monthly data, Jan08-Mar18.
Source: BarclayHedge, RPM



More interesting, if we split the data into short crisis periods (1 month) and compare them to longer crisis periods we see distinct differences.

FIGURE 5 - CRISIS DURATION AND CRISIS ALPHA

Average monthly CTA returns during crises conditioned on the duration of the crises.
Monthly data, Jan08-Mar18.
Source: BarclayHedge, RPM



2. CTA returns are defined as the monthly returns from the SocGen CTA Index. See Footnote 1 for more information. For equity returns we have used the MSCI World TR Index.

3. Crisis periods defined according to a contextual definition meaning a fundamentally identified period around a month, or months, in which the MSCI World Equity index was negative -4% or more,

The graph shows that for the broader CTA index the monthly returns are on average smaller during shorter crises. The pattern is even more distinct for trend following strategies where monthly returns are on average negative for shorter periods. The trend strategies are usually what investors have in mind when thinking about CTAs. The reasons for this relatively poor performance during the initial stages of a crisis are that most crisis periods are initiated by a broad trend reversal, which means that markets that have been trending in one direction, suddenly turn the other way. Trend followers are naturally positioned in line with the prevailing trends and will inevitably suffer when the trends reverse. If the trend reversal turns into new trends, the managers will adjust positions and start profiting in this new environment. This was covered in more detail in our previous *RPM Educational #4*.

To summarize; CTAs are a good complement to equities in the long run, but one should not expect positive performance from CTAs during all short-lived equity corrections.

MISCONCEPTION 4. The most important feature of CTAs is to be able to short equities

Type of fallacy: Outright wrong

Arguments: CTAs trade primarily in the futures markets and are certainly able to go short the equity market, or any of the markets traded. However, in the onset of an equity driven crisis, CTAs are usually LONG equities. The result is initial equity losses that cancel out, or even dominate, positive returns from other sectors. Historically, seen over the full crises periods, equity contributions to CTA returns are on average rather small compared to the contributions from bonds, currencies and commodities. In the graph below you can see the sector contributions to CTA returns during 12 recent crisis periods.

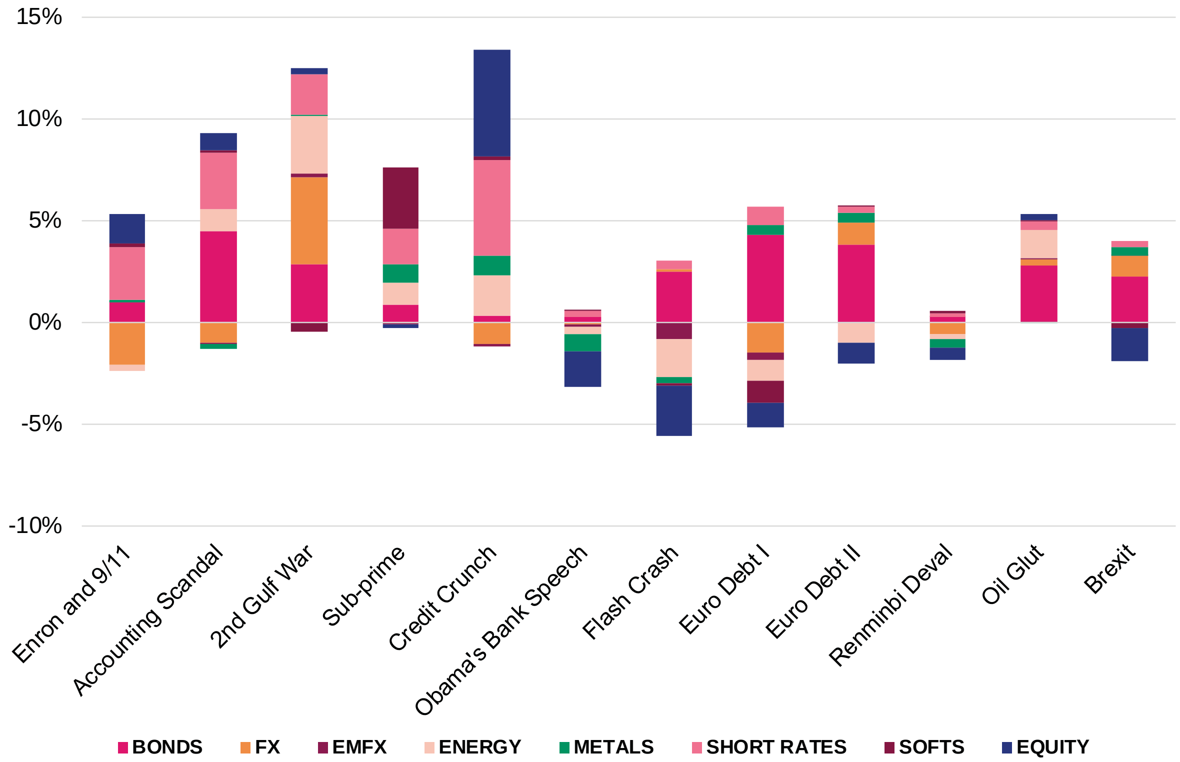


FIGURE 6 - SECTOR CONTRIBUTION DURING CRISIS

Profits and losses from different market sectors during equity crises for the RPM USD Composite[4].

Source: RPM

4. The RPM USD Composite covers the live asset-weighted performance of all RPMs Separately Managed Accounts (i.e. all RPMs CTA allocions).

MISCONCEPTION 5. CTAs are a high-risk investment

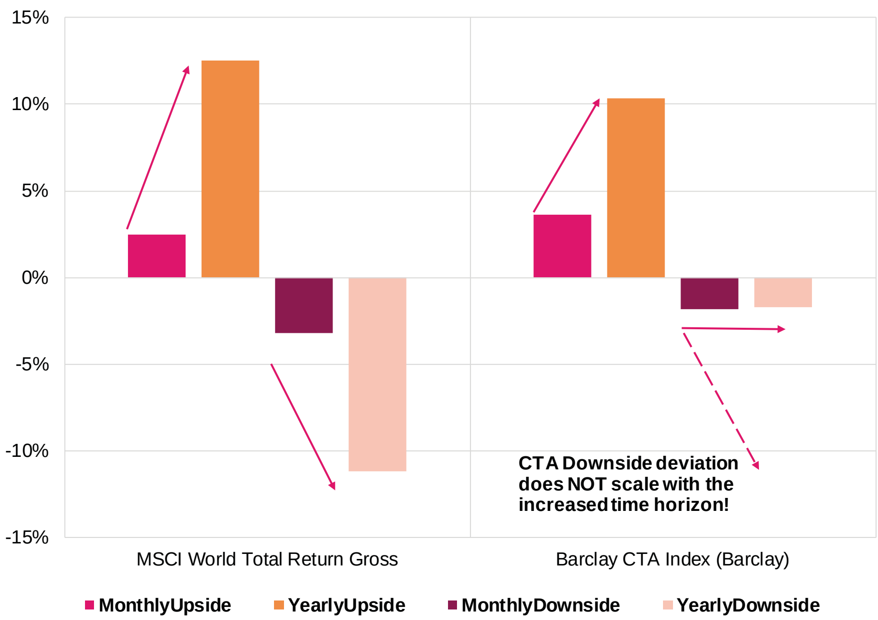
Type of fallacy: Simplification

Arguments: Risk is a very subjective term, having different meaning for different investors. A basic break-down of risk would be into price risk (or market risk), credit risk, and liquidity risk. As CTAs predominantly trade in major organised futures markets they are basically only exposed to price risk. Price risk is sometimes high and sometimes low but the outcome is always visible and present. Credit and liquidity risks are harder to measure and only manifest themselves sporadically and then typically in tandem. The effects are usually severe. This means that simple price risk adjusted measures like Sharpe ratio are not relevant for strategies that have a high portion of credit and liquidity risk. Such strategies show periods of high and stable Sharpe ratios until there is a credit/ liquidity event at which point the Sharpe ratios drop, suddenly and dramatically, it then recovers when the credit/ liquidity event moves out of the lookback window. For CTAs the Sharpe ratios are generally more stable, without these dramatic drops. On the other hand the Sharpe ratio can be perceived to be low in comparison with strategies profiting from taking credit and liquidity risks.

Another important feature is how returns scale with time. The graph below shows the upside- and downside-deviations for equities and CTAs[5]. We calculate the measure using monthly returns and then yearly returns. If the returns would follow a normally distributed random walk we would expect the yearly numbers to be larger than the monthly numbers by a factor of roughly the square root of 12.

FIGURE 7 - MONTHLY VS YEARLY UPSIDE AND DOWNSIDE DEVIATION

Standard deviation for positive and negative monthly and yearly returns respectively for equities and CTAs. Monthly data, Mar80 - Mar18. Source: RPM



In the graph this is the case for equities for both positive and negative returns and for CTAs for positive returns only. However, the downside deviation for CTAs does not scale with time at all and the yearly downside deviation is the same as the monthly. Intuitively, this means that the worst years are only as bad as the worst months for CTAs!

So, when you talk about the risk of CTAs you define what risk you are worried about and then consider the time horizon of your investment.

5. Upside and Downside deviations are standard deviations looking only at positive and negative returns, respectively.

MISCONCEPTION 6. The "CTA model" is broken

Type of fallacy: Outright wrong

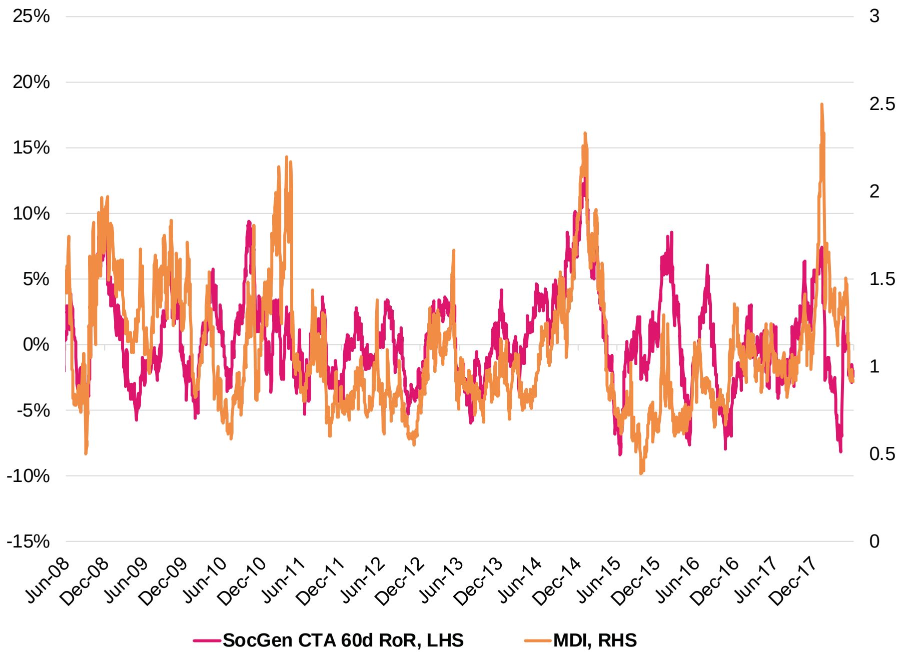
Arguments: CTA returns are positively skewed. This means that periods of weak returns are interrupted by short periods of strong returns, often when equities are suffering. Looking at statistics it is easy to see that a CTA investment would improve your overall portfolio characteristics, almost regardless of the composition and which risk adjusted measures you are looking at. The difficulty is holding on to that CTA position during those periods when everything else looks good. Once the crisis hits, you will not have the time and focus to make an investment, you will be too busy putting out fires elsewhere.

In those in-between periods, one can often hear comments about the CTA-model being broken. The thing is, a car does not run without fuel. The same goes for CTAs. The model is not broken, it is just out of fuel. The fuel in this case is simply called trends.

We have developed a measure of trendiness (or Time series Momentum, TSMOM) named Market Divergence Index, MDI[6]. The graph below shows the MDI measure against CTA returns over a rolling 60-day window.

FIGURE 8 - PRICE TRENDS & CTA RETURNS

RPM MDI (RHS) and 60-day rolling CTA Returns (Soc Gen CTA Index, LHS). Daily data, May08 - Jun18.
Source: BarclayHedge, RPM



The explanatory power of the MDI regarding CTA returns is striking. The correlation between the daily moves in CTA returns and the MDI is close to 0.8. This is remarkable considering that the MDI is simply calculated across a static set of futures prices without any portfolio or risk management and the CTA returns are based on daily returns from roughly 20 different CTAs applying their individual models in actual markets.

Looking for instance at the period 2011 to 2014 one can see that the MDI was low in that whole period (i.e. few trends or no fuel) and CTA returns were poor. When trends re-emerged in the second half of 2014 or late 2017/ January 2018 CTA returns were correspondingly strong. So, to say that CTAs will not deliver strong returns again you would have to argue that trends would never occur again.

6. The MDI is basically an aggregated Absolute Sharpe Ratio over 70 major futures contract and over a range of look-back windows from 10 days up to 250.

FINAL WORDS

Given what we have just discussed, the fictive quote we started with must be corrected into:

"CTAs ~~used to be~~ are a long **directional**-volatility, **conditionally** ~~un~~correlated ~~hedge~~ **complement** to equities in a **prolonged crisis** by being able to ~~go short the equity~~ **profit from broad trends** in the markets. This ~~high-risk~~ strategy ~~has now stopped working~~ **will deliver again when these broad trends re-appear, driven by crisis or other major changes in the market place**."

Admittedly not as punchy as the first quote but...

"Explanations exist; they have existed for all time; there is always a well-known solution to every human problem — neat, plausible, and wrong."

– HL Mencken

We are more than happy to receive feedback, questions, comments and to engage in further discussions regarding CTAs in general. Please reach out to us on:

Mikael Stenbom, CEO
Phone: + 46 8 440 69 00
E-mail: mikael.stenbom@rpm.se

Anders Löwbeer, Head of Investor Relations
Phone: + 46 8 440 69 48
E-mail: anders.lowbeer@rpm.se

Per Ivarsson, Head of Investment Management
E-mail: Per.ivarsson@rpm.se

Alexander Mende, PhD, Senior Investment Analyst
E-mail: alexander.mende@rpm.se

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RPM risk & portfolio management

RPM Risk & Portfolio Management AB
PHONE +46 8 440 69 00 ADDRESS Linnégatan 6 2, SE-114 47 Stockholm, SWEDEN
E-MAIL info@rpm.se WEB www.rpm.se ; www.rpmfonder.se