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# CTAS IN A REGIME OF RISING RATES

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## Executive summary

The advent of the Federal Reserve's recent interest rate "lift-off" and the future unwinding of other developed market central banks' ultra-loose monetary policies prompts the question as to whether this new regime presents a problem for interest rate trend following. In this short note we examine the performance of the trend applied to interest rate futures and also to the other asset classes employed by CTAs - namely equities, commodities and FX, in periods of rising and falling rates and also in regimes of upward and downward sloping yield curves.

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## Introduction

A lot has been made of the fact that the past three decades have seen a near steady decline in interest rates globally, and of how this has generated significant wealth. Bill Gross, in his reflective paper, *A Man in the Mirror*, mused on whether he and certain other "legendary traders" (Peter Lynch, Ray Dalio, Warren Buffett) could have replicated their accomplishments in a different regime, specifically one of rising rates.

The outlook for Managed Futures programs, particularly trend following CTAs, has also been questioned as rates, now globally near all-time lows, are expected to reverse course over the coming years. Holders of this view advocate reducing or even eliminating exposure to CTAs, claiming that there are structural reasons to expect that CTAs will not (or even cannot) make money in the expected "new regime". The logic appears simple:

- ▶ The flexibility of trend-following resides in its ability to profit from both sustained rises and declines in asset prices, and hence should be able to profit from rising rates just as they have from falling rates. However, a significant component of the gain from the falling rates trend has been the carry<sup>1</sup> or the futures roll (see appendix for further details), the boost that comes from the upward sloping yield curve. In a regime of rising rates, all else being equal (particularly the slope of the curve), the negative carry on a short bond position will exceed the gain from the trend, resulting in negative total returns.
- ▶ A cursory look at aggregate CTA performance attribution over the past three decades confirms that positive performance has come from the combination of fixed income trend with the positive futures roll, or carry.
- ▶ Interest rates have fallen through time, due to both the success of policy makers in reducing inflation (and inflation expectations), and the steady expansion of the money supply. More recently, rates have been further suppressed (artificially, perhaps) across all maturities in the developed markets by the emergency measures generally referred to as "Quantitative Easing" - the purchase of longer term government obligations by central banks, intended to provide liquidity to these markets and to maintain low borrowing costs in order to stimulate the economy. As the economy revives, it is broadly expected that this excess liquidity will be withdrawn from the market.

The further assumption is that, as liquidity is removed, borrowing costs, i.e., interest rates, will rise. In the most dire scenarios, inflation (and inflation expectations) will also rise dramatically due to the residual excess money supply, and rates will rise sharply and violently as a result.

- ▶ Ergo, if fixed income trend following is not going to work for a rising rates environment, it is unlikely to work for the foreseeable future; the prospect for CTAs is, hence, poor, and one would best put capital to work elsewhere.

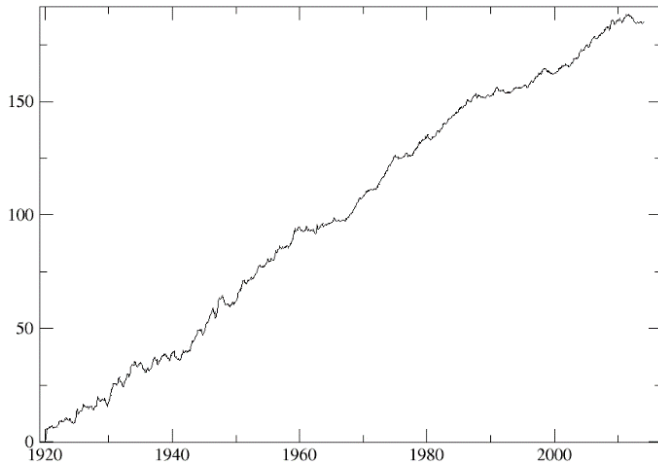
However attractive this logic appears, we see it slipping discreetly from simple to simplistic. There are several reasons why we view it as flawed.

## Fixed Income is not the sole driver of returns

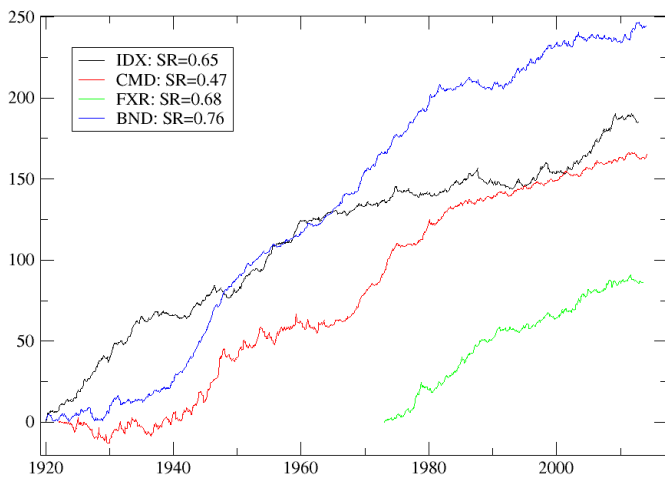
While fixed income returns have been good, they are one component amongst several in a robust CTA program. In **Figure 1** we show the performance of the trend<sup>2</sup> without the interest rate sector showing a stable, robust return stream over the past 25 years of falling developed market interest rates. We also observe in **Figure 2** that the trend from the interest rate sector alone is not an outlier, but consistent with the performance of the other sectors. Looking to the future, trends in other asset classes may well benefit from (or at least be moderately decorrelated from) the sustained rise in rates, and may continue to contribute significant and independent return streams. Evidence from our own trading history indicates a rather modest correlation amongst return streams across asset classes.

<sup>1</sup> The carry is defined as the gain received by a holder of an instrument or commodity in the absence of price moves. The carry is positive/negative if this gain is positive/negative for a long position in the instrument.

<sup>2</sup> The trend strategy employed throughout is a 5 month EMA of monthly price returns, as used in the paper "Two centuries of trend following", published in the *Journal of Investment Strategies*, 3, 41-61 (2014).



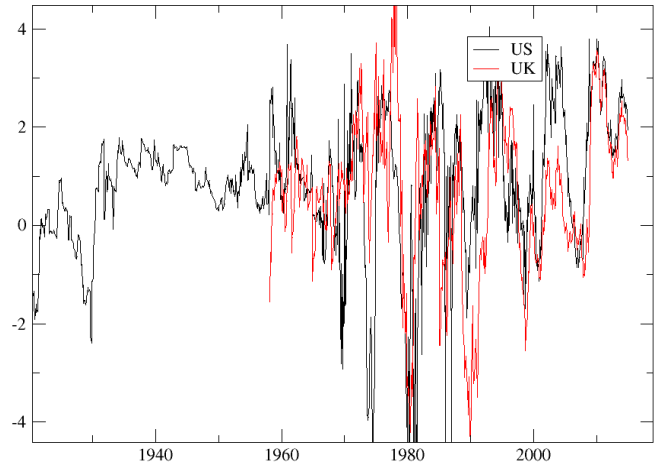
**Figure 1:** Trend on equity indices, commodities and currencies. Sharpe ratio: 0.75



**Figure 2:** Trend on the four principal asset classes

## The shape of the yield curve is not constant and can evolve

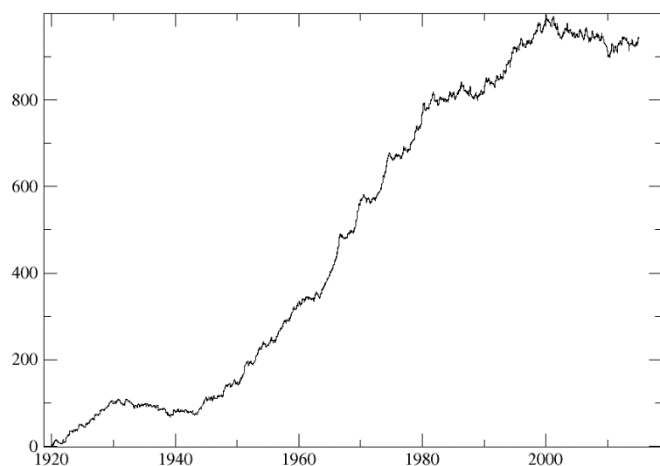
The supposed impossibility of gains from fixed income trend following in a rising rates regime assumes negative carry for a short position, resulting from an upward sloping (ie a "normal") yield curve. This is by no means a given however. A sharp rise in rates is often associated with a flattening or even an inversion of the yield curve. A flat yield curve has no rolling yield, negative or positive, and an inverted curve offers positive carry to a short position. In **Figure 3** we plot the evolution of the carry for US and UK government yields (the spread between the 10 year government bond yield and the 3 month financing rate) and see that, although the yield curves are most commonly upward sloping, this is not the case at all times.



**Figure 3:** Rolling yield (10yr government yield minus 3 month financing rate) in the US and UK

## Trend following can be profitable when the carry is negative

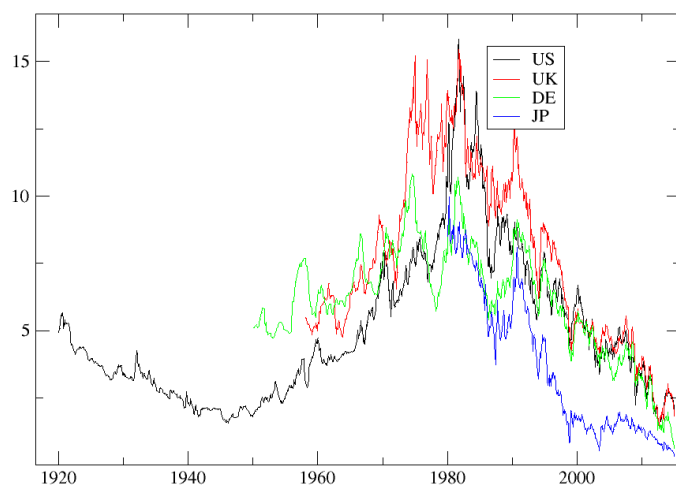
We demonstrated in **Figure 2** that trend following delivers robust performance through a long history and does not stop working in periods of lower levels of carry or even negative carry. We can take this argument one step further and try to apply a trend to a time series of synthetic bond futures where the sign of the carry is maintained at a permanently negative value. Referring to the pricing of this synthetic instrument (as described in the appendix), in **Figure 4** we force the carry term of the return to be the current value but with a minus sign (unless the current value is already negative in which case we keep it as is). We then apply the same trend following system to this time series and find that trend following still delivers positive performance even in this most extreme of situations of permanent negative carry.



**Figure 4:** The trend applied to negative carry bonds. We use the carry as previously defined (10y government yield minus 3 month financing rate) but always impose that it stay negative through history. The Sharpe ratio is 0.4

## We have seen rising rate regimes before

Using long histories of interest rates over multiple countries, one sees that extended periods of increasing rates have occurred in the past. In **Figure 5** we plot the evolution of 10 year yields over a number of different countries. Generally, across all these time-series, there is an underlying pattern that emerges - interest rates were seen to decrease from 1920-50, increase from 1950-90 and decrease from 1990-today. As seen in **Figure 2**, employing a trend following approach to all these data time-series reveals that even in periods of increasing rates, trend following continues to deliver positive performance.



**Figure 5:** 10 year government yields for several countries

## The impact of rising rates on realized volatility

The expectation is that a rising rate and potentially inflationary environment would lead to increased realized volatility in all other asset classes, as well as increased carry opportunities in the FX and commodities markets. Realized volatility has arguably been tempered by the extended suppression of interest rates. An environment of increased realized volatility can be beneficial to a trend following approach, both within the fixed income asset class and beyond it.

## Summary

We have demonstrated that trend following performance does not come predominantly from the interest rate sector and that other asset classes contribute to the overall long term performance of a trend following approach. The yield curve can be shallow and even downward sloping, and even if we reverse the shape to be permanently downward sloping over a long backtest, we are able to extract performance from a trend approach. The Sharpe ratio of trend following applied to bonds, therefore, seems to be robust to rising and falling rate regimes with both upward and downward sloping yield curves. A change to a rising rate or even an inflationary regime may also be accompanied by an uplift in volatility across all instruments, which can potentially provide a good environment for systematic trending. In summary, we do not give a lot of credence to the idea that an extended regime of rising rates spells the end for trend following.

## Appendix

The time-series used throughout this note represents synthetic bond futures. We use long histories of bond yields,  $y$ , and financing rates,  $r$  (usually the LIBOR rate or equivalent) and write the return of the bond as the following:  $\delta p = -D\delta y + (y-r)/N$  where  $D$  is the duration of the bond,  $N$  is the sampling frequency (12 if monthly, 255 if daily). The "roll-down" of the bond is neglected but it is correlated to the carry and does not change the picture much.

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