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ALTERNATIVE BETA MATTERS

Quarterly Report

All Data as of 31 March 2016

Introduction

Welcome to CFM's "Alternative Beta Matters" Quarterly Report for Q1 2016.

Within this report we recap major developments of the quarter for Equities, Fixed Income / Credit, FX and Commodities, as well as Alternatives. All discussion is agnostic to particular approaches or techniques, and where alternative benchmark strategy results are presented, the exact methodology used is given.

We have also included one white paper and an extended academic abstract from a paper published during the quarter. Our hope is that these publications, which convey our views on topics related to Alternative Beta that have arisen in our many discussions with clients, can be used as a reference for our readers, and can stimulate conversations on these topical issues.

CTAS IN A REGIME OF RISING RATES

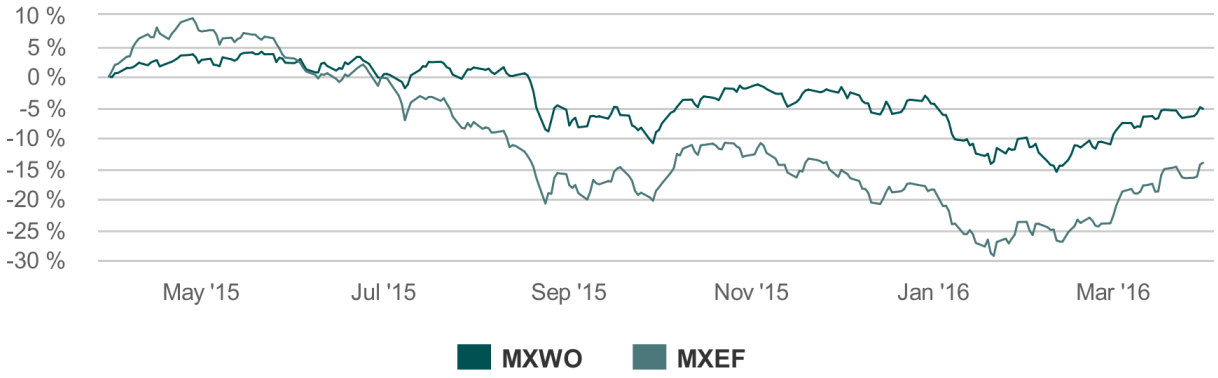
This white paper discusses how the current developed market climate, with interest rates at historical lows, could potentially affect the CTA industry, or in particular, a trend following approach. Using historical data and considerations of likely outcomes we argue that a rising rate environment is unlikely to affect the future performance of trend following.

DO INVESTORS TRADE TOO MUCH – A LABORATORY EXPERIMENT

This academic paper describes an experimental study of the idea that individual market participants trade too much. Our experimental subjects were confronted with a controlled financial market with the possibility of real financial gain, where trading is clearly costly and detrimental to an investor's wealth. Despite the fact that this environment favours a buy and hold strategy, we observe instead that investors do indeed actively trade and speculate, to such an extent that average profits fall to close to zero.

Equity indices

Stocks had a tough start to 2016 with early January seeing a tumbling CSI 300 in China sending shock waves to other world equity markets. The first quarter brought a slight rebound for emerging markets, however, relative to developed markets, as US shores began to look somewhat less attractive with the Fed's dovish tone in the second half of the quarter. The MSCI World index, made up of 23 developed country equity indices, returned -0.9%, while the MSCI EM index, with 23 emerging countries, returned 5.4%.



The return of the MSCI World and MSCI Emerging Market indices for the past year

The tough start to the year was also, in part, down to a continued decline in the price of Crude oil in January. The correlation of equity indices with Crude oil continued on an upwards trajectory through Q1, a trend which began at the start of 2015. Also increasing was the world recoupling measure, the correlation between emerging and developed equities. This correlation, despite emerging markets reversing the 2015 trend and beating developing markets, shows an equally unabated trend upwards, also starting at the beginning of 2015. As the quarter progressed, crude reversed course, as did many commodities, bringing some relief to commodity sensitive emerging markets.

Our generic trender[1], applied to equity indices, produced flat performance in Q1. The turn in equities mid-quarter made trend following a tough trade in the sector, initially benefiting from equity shorts and then not turning mid-quarter to benefit from the uplift. A quicker trend, of course, would have picked this up. The RSI[2] scores through Q1 show the lowest point for the Nikkei, exactly half way through the quarter and the highest point for the S&P 500 on the last day, consistent with the S&P 500's impressive end of quarter rebound. The best performer for the trend was the Nikkei 225 and the worst was the S&P 500, being caught out by the violent turnaround in the second half of the quarter.

Equity index future liquidity was good at the beginning of the quarter and flattened out in March. The measure of liquidity we employ weights average daily volumes with the volatility in the market and this benefited from a pick-up in volatility in January. Implied volatilities by the end of the quarter were generally less than at the start while the maximum in implied volatility occurred halfway through, at about the mid-February point. This was particularly striking in Japan with the VNKY[3] reaching levels higher than those of August 2015.

[1] The trender used here is defined as the sign (either +1 or -1) of the difference of a 50 day exponentially weighted moving average (EWMA) and a 100 day EWMA
[2] Defined according to https://en.wikipedia.org/wiki/Relative_strength_index using 100 day exponentially weighted moving averages
[3] The VNKY is the equivalent of the VIX implied volatility index for the Nikkei 225

If we consider a fundamental valuation of various world equity indices in the form of the CAPE[4] of each we find the US to be expensive, Europe reasonably priced and Japan to be cheap, at least relative to historical averages. Considering forward looking earnings per share, we find that in the US, EPSs[5] hit a peak in Q4 2014 and have since slid by about 10%. The USD (measured by many different metrics) bottomed in Q2 2014 and has since rallied by more than 20% against its peers; a large part of the decline in EPS is attributable to the USD's strength. For the Eurostoxx 50 index, one sees a peak in EPS corresponding to Q3 2015 and a subsequent decline of about 20%. EPSs for the Topix index in Japan peaked in Q4 2011 and have since more than doubled on the back of the Bank of Japan's massive quantitative easing program that saw the Yen weaken against other currencies.

Stocks and factors

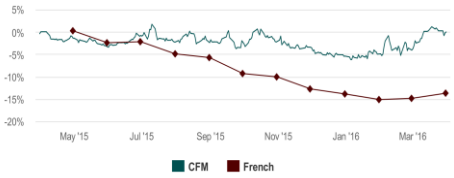
This has been a volatile quarter for certain stock factors and has created quite a buzz in the broker literature. In particular, the UMD[6] (Up Minus Down) momentum factor has had a rollercoaster ride in the US and in Europe. The strength of the reversals in these markets led to a sell-off in momentum and a corresponding pick-up in UMD factor volatility. Market rallies, preceded by market declines, on average, lead to declines in the risk-on premium of the UMD factor and mid-Q1 was no exception. As expected, in such a scenario, the negative performance came predominantly from the short side of the book. The anti-correlation in the HML (High Minus Low) value factor was ever present at these periods but the corresponding rally was not strong enough to offset the negative performance of UMD. In Japan, a mid-month decline in UMD was offset by a rise in HML, but the scale of the UMD sell-off was small in comparison with the US and Europe. The increase in the realised volatility of the UMD factor was between 50-100% from the beginning of Q1 to the highest point in each zone. The SMB (Small Minus Big) size factor was slightly positive on the quarter.

[4] CAPE is the Cyclically Adjusted Price to Earnings ratio as defined by Schiller http://www.econ.yale.edu/~shiller/data.htm. Only US data comes from this site. For the other indices Global Financial Data is used http://www.globalfinancialdata.com

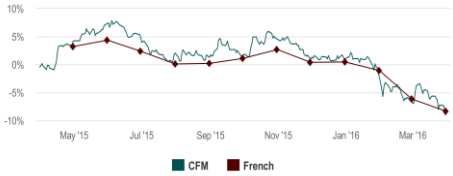
[5] EPS is the Earnings Per Share. We use Bloomberg as the source of EPS data.

[6] We use a CFM version of the Fama French implementation for momentum (UMD), value (HML) and size (SMB) and have tested the convergence with the data from Kenneth French's website. We note that in Q1 other implementations, notably from brokers, are broadly in line with our conclusions for momentum and value. In the next quarterly we will also include a discussion of the Quality factor.

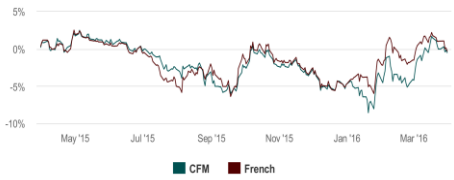
HML Europe



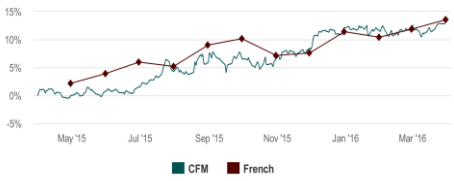
HML Japan



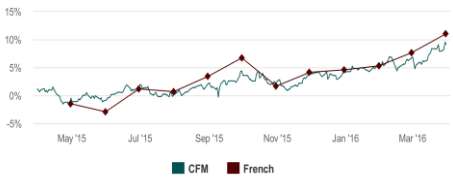
HML US



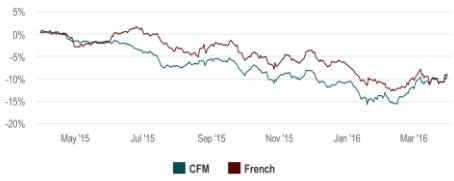
SMB Europe



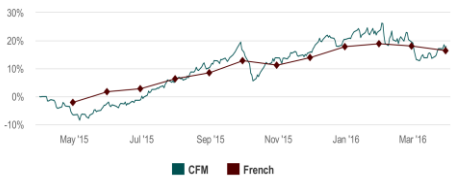
SMB Japan



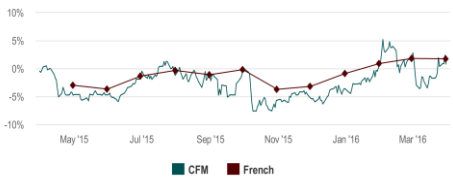
SMB US



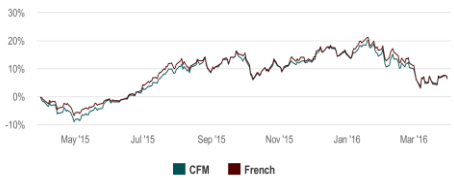
UMD Europe



UMD Japan



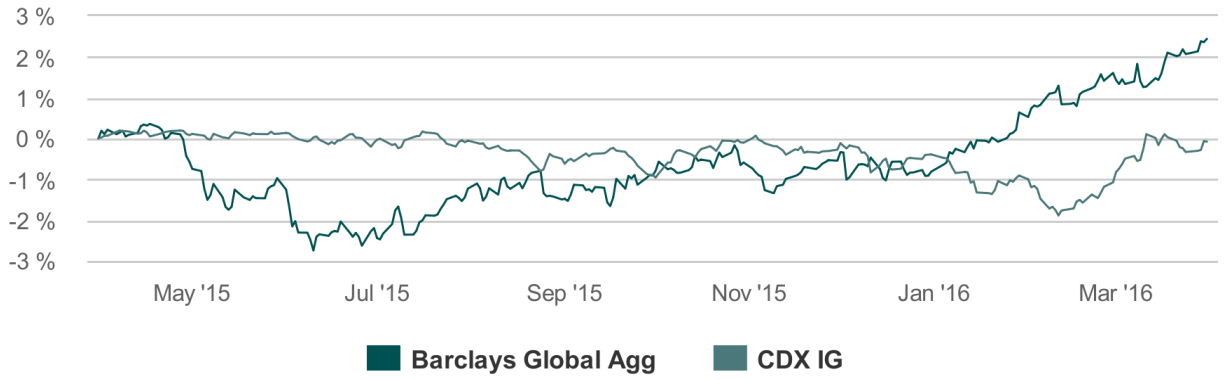
UMD US



The Fama-French factors for the last year in the three geographical zones of Europe, Japan and the US. High Minus Low (HML) corresponds to a market neutral (MN) portfolio long the high book to price stocks and short the low book to price stocks. Small Minus Big (SMB) corresponds to a MN portfolio long the small market cap stocks and short the large market cap stocks. Up Minus Down (UMD) corresponds to a MN portfolio long the historical winners and short the historical losers. In each case, the red line is downloaded from Kennenth French's website, while the blue line is the reproduction of the Fama-French methodology.

Fixed Income and Credit

The quarter has been a good one for bond holders with the Barclays Global Aggregate Total Return Hedge index returning 3.3%. The Bank of Japan (BoJ) has been busy extending its extreme loose policy further with a surprise announcement in January of joining the ECB in introducing negative interest rates. The upwards momentum on the JGB, precipitated by the BoJ's policies, has been impressive through Q1. US and German paper were helped at the beginning of the quarter by an atmosphere of flight to quality providing support for haven instruments. The ECB continued to assume a dovish stance and in March cut the deposit rate even further into negative territory and increased monthly asset purchases. At the end of the quarter the German Bund was yielding close to zero. On the other side of the Atlantic, Janet Yellen provided support for US paper with dovish rhetoric at the end of March in stating that the Fed needed to proceed cautiously in raising rates.



The return of the Barclays Hedged Global Aggregate Bond and the CDX Investment Grade indices for the last year

For bonds, the generic trender performed well in Q1, enjoying the ride up in many developed markets. None of the lowest RSI scores were far from 50 while the highest score was the JGB, hitting 77 on the 10th February, which was also reflected in the fact that the JGB was the star performer for the trend in the bond sector. Short term interest rates, meanwhile, did not enjoy the same trend performance, the trender delivering slightly negative performance at the front of the curve. The highest RSI score was, unsurprisingly, the EuroYen, hitting 70 on the 2nd February. The Australian 90 day bank bill was the lowest RSI scorer with 33 on the 15th March, as strong economic data was seen as reducing the chances of further interest rate cuts in the country.

Liquidity conditions were good for interest rate contracts in Q1 with volatility weighted daily volumes increasing by 30% from the end of 2015 (even excluding the Christmas holiday lull). The implied volatility in the 10 year note followed that of equity indices in having a high point half way through the quarter.

Credit markets followed the equity premium in tightening from beginning to mid-quarter and freeing up as we head into Q2. A stabilizing Crude price contributed to relieving pressure on energy firms struggling to manage their debt liabilities, along with dovish central banks helping to keep debt costs low, perhaps unexpectedly including the Fed at the end of Q1. Financials also suffered through Q1, certain European banks in particular saw the price of their debt insurance increase, a situation improved by the loose policies of the ECB.

Commodities

Q1 has seen a mixed bag of performance for commodities with the energy heavy GSCI rising 3.6%. The Crude vs Equity correlation continued to increase through Q1 and the general performance pattern for crude was similar to developed market equity indices. Early January saw a sell-off as Iran joined crude exporters in pushing supply higher and crude volatility rose to new highs in February on the back of the lack of consensus between oil producing nations in reducing supply. The US Natural Gas markets fell to new lows at the back end of Q1 as warmer weather quashed demand. The stand out performer in commodities was gold, rallying 13.9% through the quarter. The precious metal seems to have recovered its haven status, rallying when markets were tanking and staying high in the second half of the quarter as the Fed sends cautiously dovish messages.

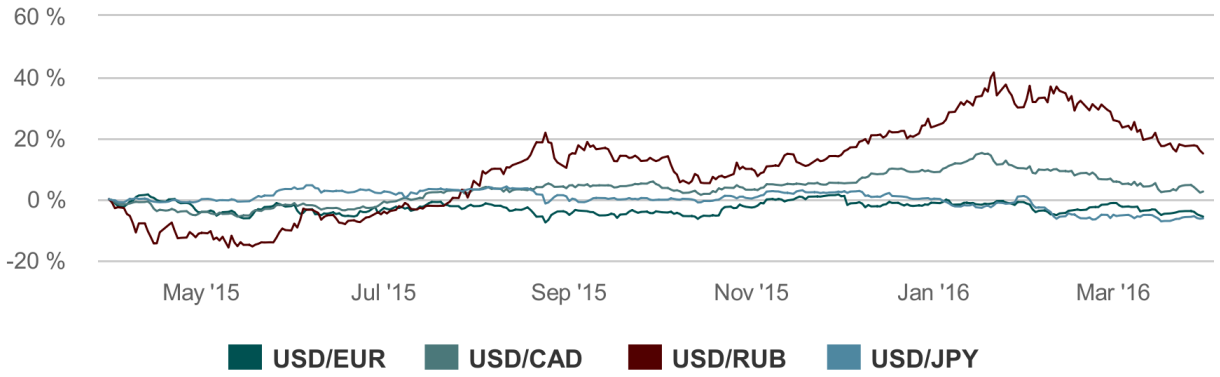
2015 return of the S&P GSCI

Trending on commodities proved difficult in Q1. Within the energy sub-sector, the generic trender was positive, benefiting from the sell-off, in particular for Natgas, which was the best performer. The worst performing trend was for sugar, which reversed course early in Q1 and reversed mid-quarter also. Gold was not far behind in terms of negative performance with a rally which was on the wrong side of the prior downwards trend. The lowest RSI score in Q1 was for Brent, which bottomed at 32 on the 21st January while Gold was the highest with a score of 65 on the 12th February.

Open interest for Crude showed an increase in Q1 while the Commitments of Traders (CoT) data showed a net long for non-commercials which grew through to quarter end. Open interest for US Natgas, meanwhile, fell by 10% mid quarter before rising again through to the end of Q1, with the CoT data showing a persistent net short for non-commercials, which fell through to quarter end. Gold open interest increased by 20% through Q1 while non-commercial short sugar positioning increased mid-quarter, only to revert back to levels seen at the start of Q1, with non-commercials maintaining an overall long position. Risk weighted liquidity in the commodity sector has grown in the quarter being helped along by a spike in crude implied volatility mid-Q1. Gold implied volatility also took off, coinciding with the lift-off seen in the yellow metal in the middle of the quarter.

FX

The FX markets have had an interesting start to the year, in particular for EM currencies. January saw a rally in the dollar, continuing the theme of 2016, which was short lived. With the Fed taking a dovish turn, oil rising and China's economy perking up, EM currencies have had a good start to 2016. The Brazilian Real and the Russian Rouble led the way against a globally weakening dollar. As for developed markets, the ECB has continued with its aggressive easing policy in moving further in the direction of negative rates and also increasing the size of monthly asset purchases. Unfortunately, things did not go as planned following Mario Draghi's comments in the post rate setting press conference that he did not anticipate that further cuts would be necessary, preferring to focus on other measures to further enforce monetary policy. The market saw these comments as being more significant than the change to policy and the Euro rose for the rest of the quarter, although the rise was less than for other currencies quoted against the dollar. The Bank of Japan (BoJ) surprised the market at the end of January with its own move into negative rates. The Yen initially fell but later regained against the dollar, benefitting from its traditional haven status in the market's stressed state. The Japanese currency finishes the quarter at troublingly high levels despite the policies of the BoJ. The Yen's trajectory, along with those of other rising currencies, was helped along by a dovish Fed with Janet Yellen warning of the dangers of being hasty in tightening monetary policy. The British Pound was a net loser in Q1 with the announcement of a referendum to decide on the UK's continued membership of the EU. Q2 will see the outcome of that vote and the effect on Sterling implied volatility and on the level of the currency will be interesting to observe. The Australian dollar was a good performer late in the quarter as good economic news led the market to conclude that the central bank would hold off on rate cuts. The Canadian dollar also climbed as the Canadian economy benefited from an uptick in the price of Crude.



The return of one US dollar measured in euros, roubles, Japanese yen and the Canadian dollar for the past year

The FX sector provided the worst performance for the generic trender in Q1. The best performing currency was the British pound which continued to fall against the dollar, the trend thus profiting from short positions. Elsewhere however, the reversal in currency markets was not navigated well by the trend. The worst performers were the New Zealand dollar and the Brazilian Real, both of which reversed direction strongly in Q1. The lowest RSI score came on the 20th January for the Canadian dollar, following the initial rise in the US dollar early January. The highest RSI score came on the 12th February for the Japanese Yen, following the Yen's initial collapse after the BoJ's move into negative rates and subsequent rise in the Japanese currency on the back of market stress pushing the Yen back to finish the quarter higher than it started on January 1st.

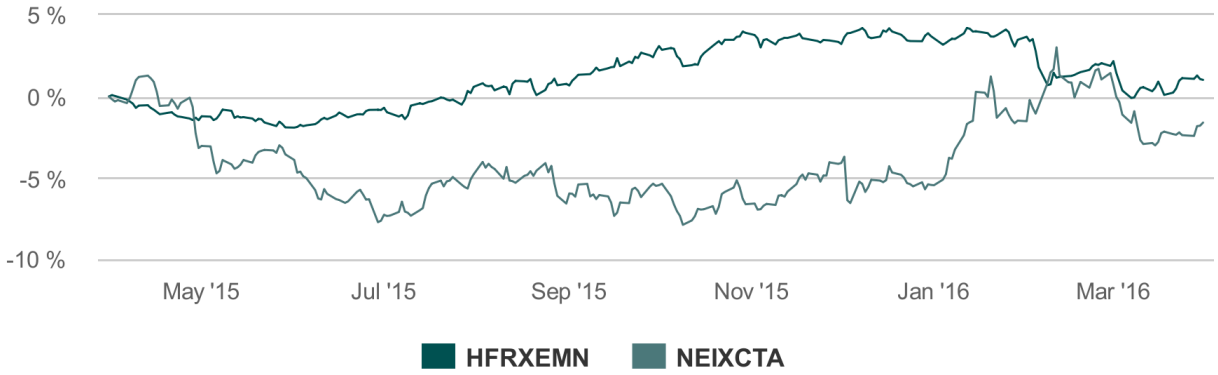
The CoT data showed a strong move for non-commercials from a net short position to a net long in the Yen, reflecting the change in market sentiment through the quarter. This pattern of longs being reduced, was more or less reflected across the board for currencies quoted against the dollar, with the exception of the British pound where non-commercials have remained net short and increased their positioning slightly heading towards the end of Q1.

Volatility weighted liquidity in the FX market increased steadily through the quarter. Implied volatilities reflected the overall volatility in the market, generally rising mid-quarter and falling off at quarter-end. The implied volatility for the British Pound remains high, however, a situation which will presumably persist until there is some clarity regarding the UK's position within the EU.

Alternative Industry Performance

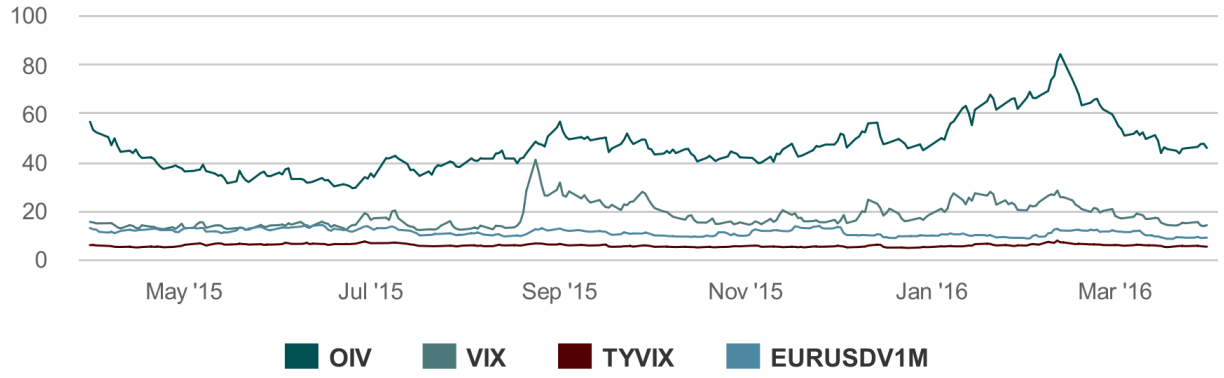
Q1 was good for the trend following community with a return of 4.1% for the Societe Generale CTA index[7]. March spoilt an otherwise spectacular start to the year for the industry. Average correlations between contracts in the CTA universe has increased through the quarter, although these correlations are still low compared to the peak in 2015 and, in any case, performance does not seem to have been adversely affected by the increase.

Equity Market Neutral funds have not performed well with the HFRX EMN index returning -3.5% through Q1 with the damage being done in February and March with moves very closely resembling the momentum sell-off described earlier. The quarter's best performing HFRX index was Distressed Restructuring while the worst was Merger Arbitrage.

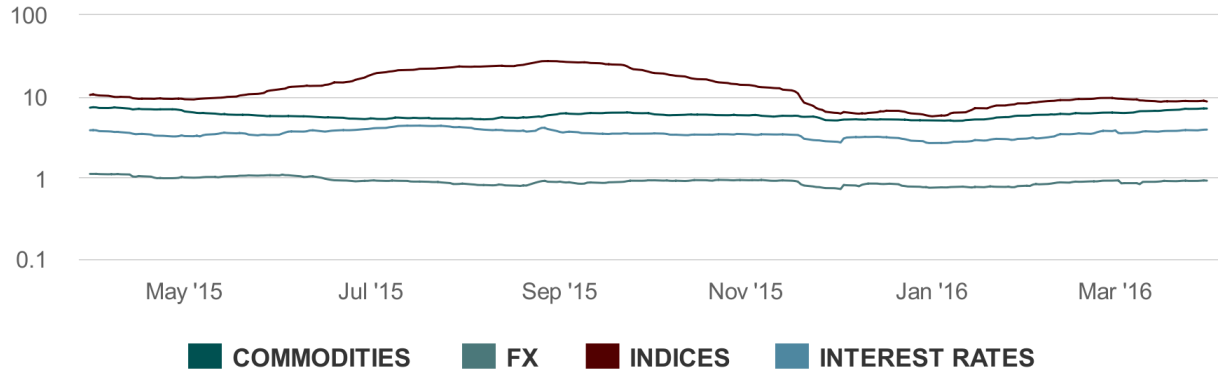


Total returns for equity market neutral (EMN) and CTA hedge fund indices over the past year. The EMN index is that calculated by HFR, while the CTA index is calculated by the Société Générale[7]

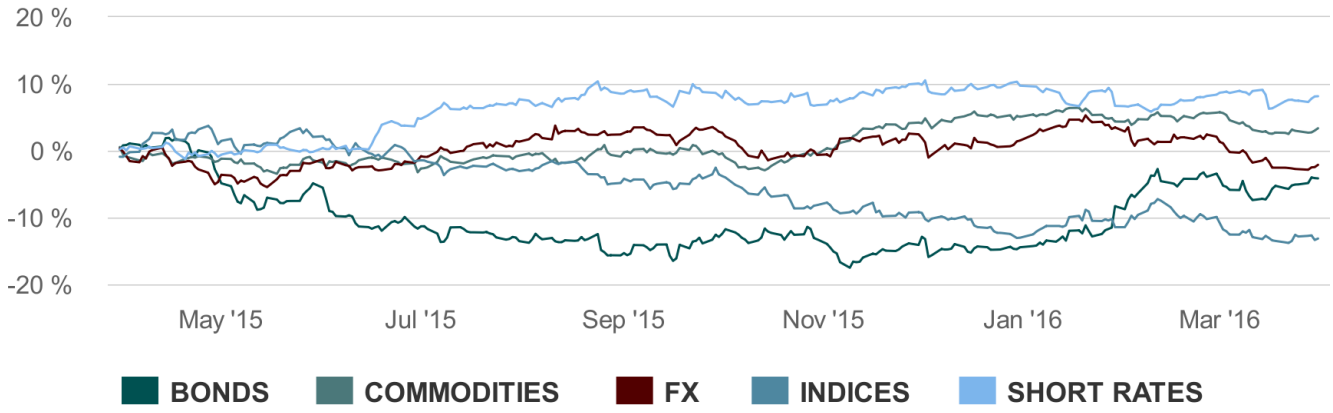
[7] https://cib.societegenerale.com/en/sg-prime-services-indices/



The principle implied volatility indices across the four asset classes over the past year. For the EUR/USD exchange rate we use the Bloomberg defined EURUSDV1M ticker; the TYVIX and VIX indices are both calculated and published by the CBOE while the OIV



The log of the dollar risk weighted average daily volume across futures on the four asset classes over the past year. We estimate effective FX volumes to be a factor of 5-10 more than this due to the extra liquidity available through the spot markets.



The total return of the trender defined in the text over the past year.

CTAs in a Regime of Rising Rates

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 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:

1. 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 or the futures roll, 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 will exceed the gain from the trend, resulting in negative total returns.
2. A cursory look at aggregate CTA performance attribution over the past three decades confirms that positive performance has indeed come from the combination of fixed income trend with the positive futures roll, or carry.
3. 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.
4. 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 without the interest rate sector showing a stable, robust return stream from the period when rates have fallen over the past 25 years or so. 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 with) 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.

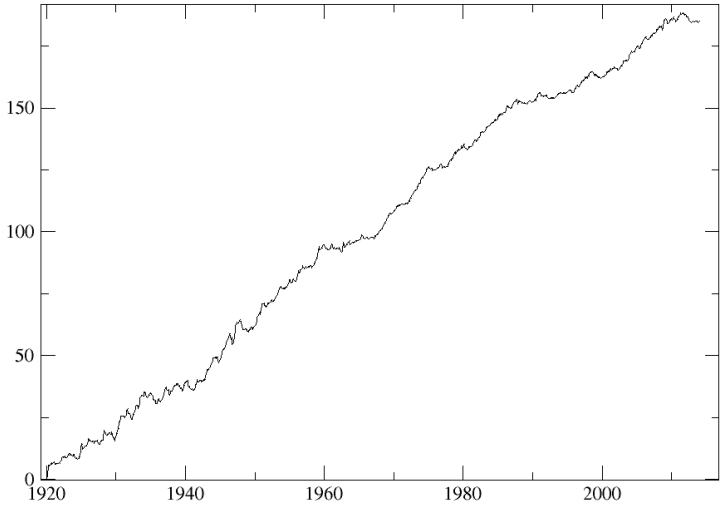


Figure 1: Trend on equity indices, commodities and currencies. Sharpe ratio: 0.75

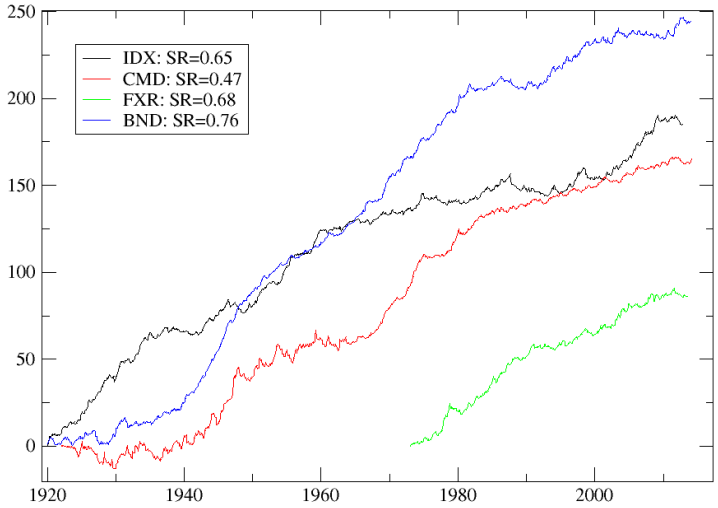


Figure 2: Trend on the 4 sectors

THE SHAPE OF THE YIELD CURVE IS NOT NECESSARILY ALWAYS THE SAME AND CAN EVOLVE

The supposed impossibility of gains from fixed income trend-following in a rising rates regime assumes negative carry, resulting from an upward sloping (i.e., a "normal") yield curve. This is not inevitable. The evolution of the shape of the curve is as important to the ability to generate trend returns as the general direction of rates. 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 roll 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 (the spread between the 3 month financing rate and the 10 year government bond yield) and see that, although the yield curves are majoritarily upward sloping, this is not the case across all rates and all points in time.

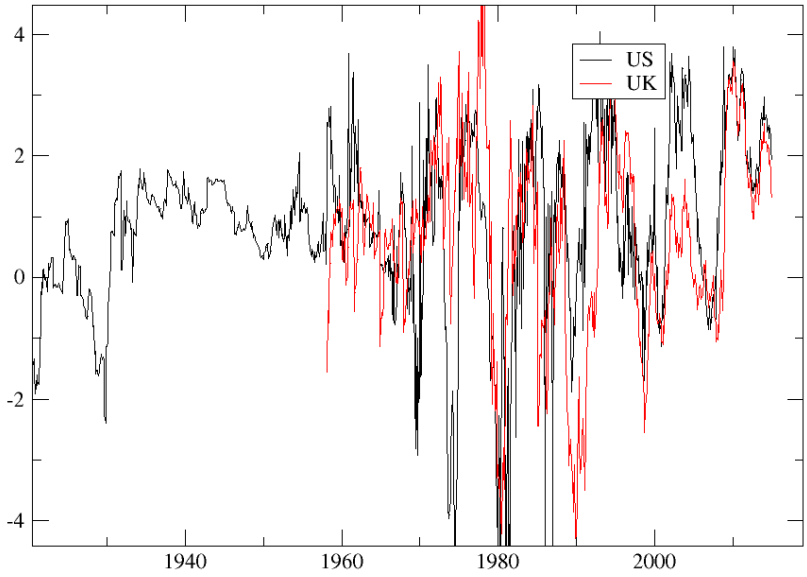


Figure 3: Rolling yield (10y minus financing rate)

TREND FOLLOWING CAN BE PROFITABLE, EVEN IF THE CARRY IS NEGATIVE

We have shown 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 we force the carry to be negative. Referring to the pricing of this synthetic instrument as seen in the appendix, in Figure 4 we force the second term of the return to always be negative. 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.

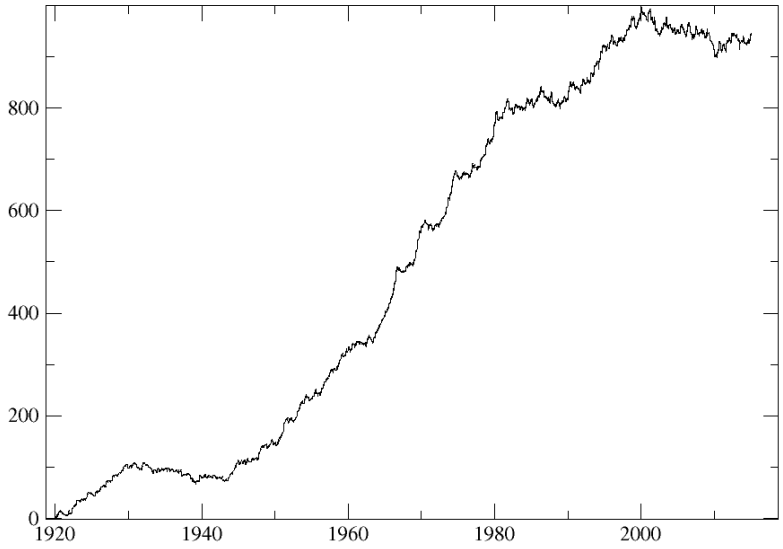


Figure 4: Trend on negative carry bonds. Sharpe ratio: 0.4

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 have plotted 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.

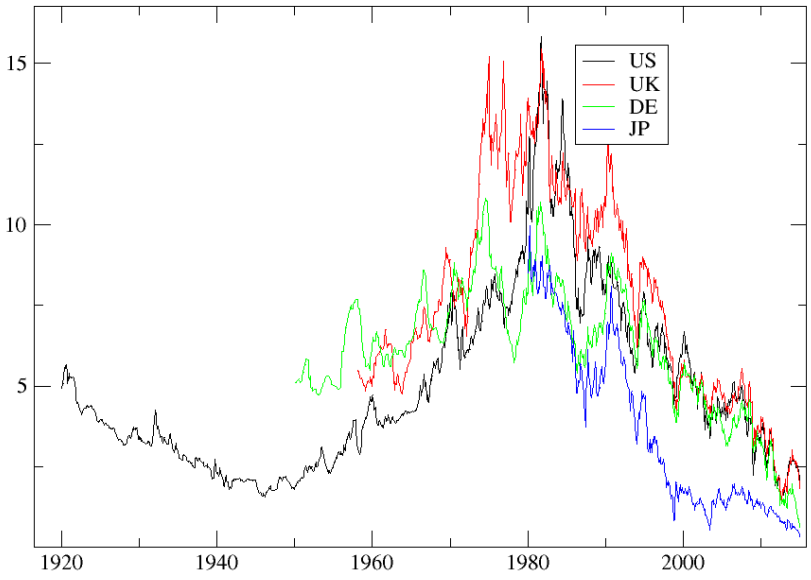


Figure 5: 10 year government yields

THE IMPACT OF RISING RATES ON REALIZED VOLATILITY

The expectation is that a rising rate, inflationary environment would lead to increased realized volatility in all other asset class, 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 would create opportunities for a diversified managed futures program – both outside of the fixed income asset class and outside of trend following strategies.

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. As has always been the case, there will be large variations amongst the performance of various managers, and so the investor's due diligence process needs to be geared to identifying managers who are skilled and creative, and who have built a robust infrastructure for managing both the research and the operational processes upon which future performance depends.

APPENDIX

The time-series presented in this note are 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.

Do investors trade too much? A laboratory experiment – an extended abstract

João da Gama Batista[8], Domenico Massaro[9], Jean-Philippe Bouchaud[10], Damien Challet[11], Cars Hommes[12]

Financial bubbles and crises are potent reminders of how far investors' behaviour may deviate from perfect rationality. Many behavioural biases of individual investors are now well documented, among others the propensity for trend following or extrapolative expectations, herding behavior, home bias, over and/or underreaction to news, etc.

A well established fact about individual trading behaviour which is in stark contrast with the predictions of rational models is the tendency of individual investors to trade too much. Many investors trade actively, speculatively, and to their detriment. Barber and Odean, among others, have shown that the average return of individual investors is well below the return of standard benchmarks and that the more active traders usually perform worse on average. In other words, these investors would do a lot better if they traded less.

We were interested in confirming the emergence of excess trading pattern in an experimentally controlled financial market, in a situation where trading is clearly detrimental for investors' wealth. As made very clear to our experimental subjects, the market environment clearly favours a buy-and-hold strategy: they would make an almost certain gain of over 600% if they all bought shares in the first period and just held them until the end of the experiment. What we observe instead is that our agents engage in excessive trading activity, to such an extent that their profits average to almost zero at the end of the experiment (instead of 600%!). When the experiment is immediately repeated with the same subjects, we see a significant improvement of the collective performance, which is however still substantially lower than the (optimal) buy-and-hold strategy. Despite the learning there is still excess trading activity which translates into detriment of collective welfare – since even the "virtuous" agents are adversely impacted by the trading activity of excessively "active" agents.

Moreover, although our subjects are physically separated and cannot communicate, we have seen that a significant amount of synchronisation takes place in the decision process, that can therefore only be mediated by the price trajectory itself. This resonates with what happens in real financial markets, where price changes themselves appear to be interpreted as news, leading to self-reflexivity and potentially unstable feedback loops. In fact, our experimental setting was such that panic and crashes were possible but this did not happen. Although we observed a significant level of synchronisation, no cascades or "fire sales" effects could be detected.

Consistently with the empirical evidence mentioned above, we find that risk loving attitudes lead to higher trading activity and this is detrimental to individual wealth. Subjects seem to have a desire to trade actively, motivated by a willingness to "beat the market", as revealed by the analysis of individual price expectations.

[8] Chaire de Finance Quantitative, Laboratoire de Mathématiques Appliquées aux Systèmes, École Centrale Paris
[9] Department of Economics and Finance, Università Cattolica del Sacro Cuore, Milano and CeNDEF, Amsterdam School of Economics, University of Amsterdam
[10] Capital Fund Management, Paris
[11] Chaire de Finance Quantitative, Laboratoire de Mathématiques Appliquées aux Systèmes, École Centrale Paris and Encelade Capital SA, Lausanne
[12] CeNDEF, Amsterdam School of Economics, University of Amsterdam and Tinbergen Institute

Other News

- We have recently published a paper on correlation cleaning in the April 2016 edition of Risk Magazine; the paper is available for download here.
- An ongoing research project to build a database of publically available equity factor data is in progress; this data will be used in subsequent Alternative Beta Matters reports.
- We are continuing to study the momentum anomaly in single stocks and will put forward our thoughts in an upcoming paper.
- We have a preliminary paper on market impact in options markets that demonstrates a square root dependence consistent with other markets. This work will soon appear in the Wilmott magazine.
- Our paper "Risk Premia: asymmetric tail risks and excess returns" is soon to appear in Quantitative Finance.
- Our paper "Deconstructing the low vol anomaly" will be published in the Journal of Portfolio Management.

Contacts

Paris
Capital Fund Management S.A.
23, rue de l'Université
75007 Paris, France
Tel: +33 1 49 49 59 49

London
Capital Fund Management LLP
Queens House 6F
64 St James's Street
London SW1A 1NF, United Kingdom

New York
CFM International Inc.
The Chrysler Building
405 Lexington Avenue - 55th Floor
New York, NY, 10174, USA

Tokyo
CFM Asia K.K.
9F Marunouchi Building
2-4-1, Marunouchi, Chiyoda-Ku
100-6309 Tokyo, Japan

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