Can CTA funds bolster returns and diversify institutional portfolios?

Abstract

This paper presents a short overview of the diversification characteristics of Commodity Trading Advisors (CTAs) when compared to traditional asset classes and other hedge fund strategies. The paper also addresses the misconception among many investors that CTAs are a homogenous asset class and that differentiation between CTA managers can have a significant impact on returns and draw downs. Finally, the appendix of this paper highlights some of the return drivers of CTA managers' performance during 2011.

Background

One of the key aspects on modern portfolio theory is that one obtains a more efficient portfolio by diversifying among asset classes having a negative to low correlation. The aim is to achieve a low correlation of performance attribution among the different asset classes. After the 2008 experience investors realized that their hedge fund portfolios were more correlated and less diversified than they had previously thought. In addition, ivestors were also gated, suspended and side-pocketed in the aftermath of the redemption flood in September and October of 2008. Many managers misjudged the liquidity of their asset and liabilities mix, and investors were also left with hard to value and illiquid assets. CTAs were one of the few strategies that delivered positive performance in 2008, and CTAs had a negative correlation to other asset classes. This attracted a great deal of attention from institutional investors that had previously viewed CTAs with suspicion.

The CTA market has gone from an obscure and small market in 1985 with market cap $1bn to around $250bn today [Trading against the trend followers, Financial Times, June, 2011]. Today CTAs are one of the largest and fastest growing alternative asset classes and now form part of many large institutions alternative investment portfolios. In addition CTA managers can also offer better portfolio liquidity parameters and daily market-to-market on traded instruments in comparison to other hedge fund strategies.

Institutions has in the past avoided CTAs as they had little transparency on the systematic models, and as a result found it challenging to evaluate the difference between managers. Investors also felt more comfortable with fundamental hedge fund strategies as they were more similar to their long-only investments. The industry has seen some large prominent institutions such as Texas Teachers Retirement Systems Pension Fund, New Jersey Retirement Public Employees Retirement Systems and Eastman Kodak Co Pension Fund allocate to CTAs in the last three years [Institutions up allocations to CTAs, The Hedge Fund Journal, October 6th, 2011]. As the correlation between asset classes has once again increased in the last couple of months together with volatility levels, so the case and interest for a CTA allocation from institutional investors has resurfaced.

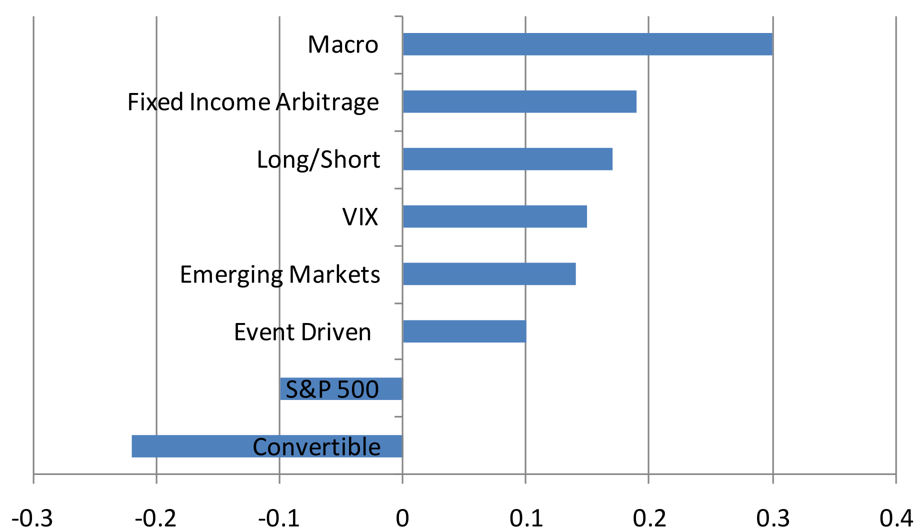
This paper will attempt to investigate whether or not there is a case for an allocation to CTAs in an institutional portfolio to increase diversification and improve risk adjusted performance. The paper will also attempt to break down a peer group which is considered by investors to be homogenous and show that CTA managers are a fairly heterogeneous peer group and that 'one size fits all', is not the case. There will also be a short breakdown of the main performance drivers for CTAs YTD in the appendix.

The Dow Jones Credit Suisse Core Managed Futures Hedge Fund Index will be used as a proxy for the CTA market. The index dates back to January 2006 and contains 57 observations (excluding October 2011 as the monthly estimate was not confirmed at the time this paper was written). It also constitutes following hedge funds and managers: Aspect Diversified, Brummer & Partners Lynx, Man AHL Trend, Transtrend and Winton Futures. In order to ensure that the data is consistent, the Dow Jones Credit Suisse sub-strategy index will be used for correlation analysis. The Chicago Board Options Exchange Market Volatility (VIX) will also be used as a proxy for market volatility.

Correlation and Volatility

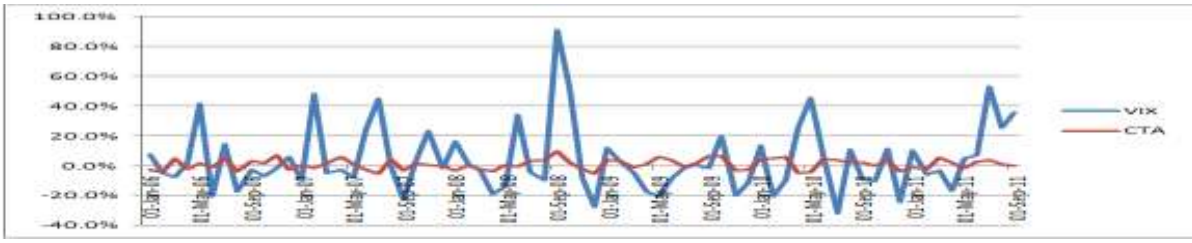
While hedge fund strategies aim to provide diversification, they generally have a positive correlation to traditional asset classes and a negative correlation to volatility. Most hedge fund strategies rely on equity market premiums to extract value that is not the primary return driver for CTA. CTA normally doesn't have a persistent directional bias and trade a large set of markets giving them a broader diversification and a better chance on delivering uncorrelated returns. The CTA returns are also favourable under severe market stress as they have a lower liquidity risk than general hedge fund strategies and do not suffer from liquidity squeezes. [CTA Strategies for Returns-Enhancing Diversification, David Kuo Chuen Lee, Francis Koh and Kok Fai Phoon]. In addition, CTA investments have also managed to be positively correlated to rising equity markets.

1.1 Correlation matrix



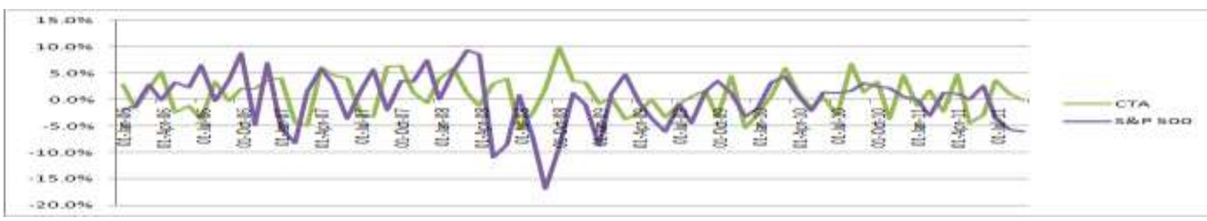
The CTA has a negative correlation with both the convertible index and the S&P 500 whilst showing a positive correlation with VIX. The relatively high correlation to macro index is a function of the systematic component of the macro managers in the index.

1.2 CTA VS VIX



The best performing month for the CSFB CTA Index was 9.9% in September 2008 when the volatility rose from 20.65 to 39.39 on a month-to-month basis whilst the S&P 500 dropped by 16.94% (See graph 1.3). A more recent and interesting performance was during the volatility spike in July of this year when the VIX rose from 16.52 to 25.25 and the CSFB CTA Index was up 3.61% whilst S&P 500 lost2.15%.

1.3 CTA VS. S&P 500



CSFB CTA index was up 63% of the months that S&P 500 was down and for negative months the drawdown was approximately half the S&P 500. The CSFB CTA index also managed to capture 58% of the positive months of the S&P 500 and was up around 2/3 of the S&P 500.

<u>CTAs Long Gamma</u>

CTA managers will make money as markets rise and fall and progressively more as volatility increases. A classical trend following model is technically long gamma[1]. The traditional trend following model pay-out profile can be described as a long synthetic option straddle[2] [Strategy Research on Managed Futures, Driver Funds, October 2010].

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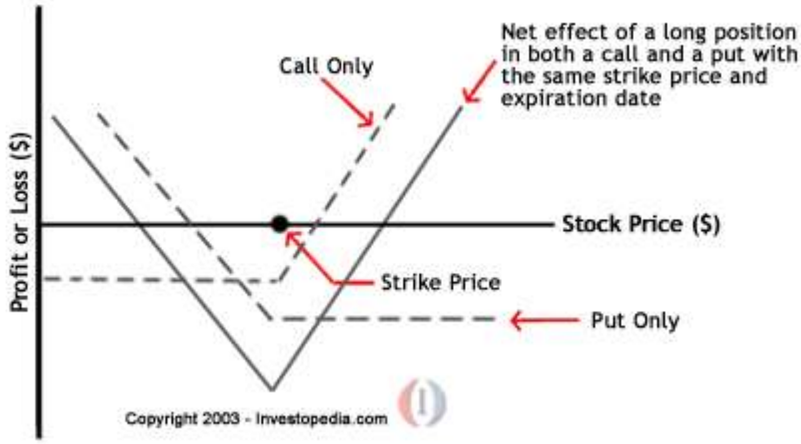
[1] If you are long a call or a put your gamma will be positive. So when you are long gamma your positions will become longer (increase in delta) as underlying asset prices increase and shorten (decrease in delta) as the underlying asset prices decrease.

[2] A position in a call and put option with the same strike price and expiration date. The owner of straddle will make money if the underlying price moves a long way from the strike

Long Straddle



As the markets move up longer positions increase cumulatively (i.e. delta increases) and as markets move down positions are scaled down from long to flat before finally becoming short positions. The short positions show a cumulative increase (i.e. delta decreases) as the market falls and as the market moves up the short positions will be covered and will go from short to flat before finally becoming long. As shown in the apex of the diagram if there is neither a strong positive nor negative trend in either direction a limit loss will take place. The structure and apex of the synthetic straddle depends on the manager's different time frames, positions sizing and implementation of risk limits.

CTAs- a heterogeneous peer group

As the interest in CTA has increased most investors have realized that it is not a homogenous peer group and that trend is not the only factor driving returns for CTA managers. In the past investors have focused on identifying managers with a long track record, excellent historical return and negative correlation to major indices.

CTA managers differ significantly when it comes to their strategy, time frames, risk management and research quality [Times Frames, Research Quality and Strategy: The Differentiating Factors for CTAs, September, 2009].
CTA managers can be classified into four main sub-strategies.

- Systematic trend followers
- Systematic non-trend followers
- Discretionary
- Hybrids

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price. A long straddle will make money if the market is highly volatile in either direction which the market moving. The straddle will lose if they hit the underlying strike price.

The CTA market has been dominated by systematic trend followers and common practice has been to build computerized models which identify different trends across a wide variety of markets and times frames. Systematic models as a rule identify trends and take positions without any human intervention. The systematic non-trend followers identify different parameters such as counter-trends, relative value opportunities between different instruments and other leading economic indicators which are not price related. Managers using a discretionary investment approach normally have a higher correlation towards discretionary macro managers as trends are identified by a human and not through a systematic process. The trends identified by a human tend to have more of a relative value bias than a systematic process. The hybrids are a combination of both a systematic and a discretionary process. Many CTA managers have small discretionary silos as a complement to their systematic process.

CTA managers trade different time frames, and for simplicity these have been divided into four different times frames:

- Long term (longer than 6 months)
- Medium (0-6 months)
- Short term (intra-day/few weeks)
- Multiple time frames

Times frames vary widely between different managers from daily, monthly to yearly. Some managers specialize in certain time frames while others trade across several different time frames. Short time frames are noticeably more sensitive to volatility and asset prices. Exit and entry points are also tighter and trading costs are higher as the portfolio is turned over more frequently. The long term trends have wider entry and exit points, and given the trends are longer the trading costs are lower. The long term correlation between long term and short term time frames has historically been very low at 0.03 [A Comparison of Two Hedge Fund Strategies CTA and Global Macro, AIMA Journal, 2004, R.Warsager and R,Duncan]. There has also been a debate among practitioners regarding whether trends in general have become shorter and if different time frames should be applied to different instruments and markets.

Risk management can also be a differentiating factor between CTA managers' performance and draw downs. Entering/exiting and scaling in/out of positions vary from manager to manager as well as how there model identifies the strength of the trend and the inherent risk of the different instruments such as: volatility, correlation, liquidity, covariance's and so on as well as overall risk of the portfolio. The implementation of stop/loss limits and profits targets are related to scaling positions. Some CTA managers have sector limits whilst others have security limits and some manage risk at the portfolio level. Setting sector limits is difficult as different instruments inside a sector behave differently i.e. commodities, oil, gold, copper, and corn. These instruments also have different trade patterns and setting equal limits could lead being stopped out too early or too late and missing a trend or magnifying losses. If individual limits are implemented and volatility suddenly rises you might be stopped out too early and miss the lion's share of the trend. To manage risk at the portfolio level managers normally set a volatility target for the overall portfolio which they manage through a variation of VAR models with different time horizons and probability distributions. The manager will also investigate the correlation between different instruments and other statistical parameters of the overall portfolio such as; skew, kurtosis, auto-correlation and so on. Most managers use a combination of all three risk management levels mentioned above and there is no right or wrong approach. The most important thing is to understand the limits implemented and how these will affect the performance of the manager.

There has also always been a debate regarding systematic funds and more specifically whether or not the managers should have the ability to step in and shut systems down and overwrite limits manually should markets behave irrationally. Investors who are in the pro intervention camp argue that model are set algorithms, and that markets always change and at certain points in time switching off/closing a model may avoid a large draw down. Investors who don't favour management intervention argue that the strategy should eliminate human intervention and avoid irrational decisions based on human emotions[Investment Strategies of Hedge Funds, Filippo Stefanini, 2010 Edition].

CTA managers have always relied on strong technological and quantitative research. In order to continue improving, research has in essence become a "space race" between CTA managers to enhance performance and diversify portfolio risk. To find new markets, instruments, more dynamic time frames, other non-price related factors, better risk management tools and so on, can be a decisive factor for the CTA managers' future performance and risk management. Many of the large and successful CTA managers have a strong embedded research culture and are constantly evolving and refining their methods and investment process.

Conclusion

CTA managers tend to offer lower correlation to traditional asset classes and hedge fund strategies, as well as having a long gamma component which is attractive if the market volatility is high.

Looking at the historic track record of CTA managers unveils that their performance is up 63% of the time that the S&P 500 is down, and down approximately half of the S&P 500 down months. CTA managers have also managed to capture around 58% of the up markets of the S&P 500 and up around two thirds of these S&P 500 returns. Historically CTA managers seem to have performed well when there has been an unexpected rise in volatility while equity markets fall.

In the aftermath of this summer many investors are discussing whether or not to implement a tail risk strategy. Even if a CTA is no substitute for a tail hedge it bears some similar characteristics. Whilst a tail hedge is intent on protecting the tails of the portfolio in a disaster scenario, a CTA is not. Both strategies have a positive correlation to volatility and a negative correlation to equity markets. Since CTAs are long gamma they give one the ability to catch some of the performance if the market's rally. The tail hedges will only perform if the market falls (crashes) otherwise you lose your premium. The CTA could supplement a tail hedge as you will reduce market correlation and increase the gamma of your overall portfolio. Taking down the correlation and increasing gamma should decrease the overall tail risk of your portfolio and the cost of putting a tail risk strategy together as you would need less of this protection. At the same time the CTA can offer part of the equity upside as well.

Choosing the right manager from a peer group depends on the overall portfolio and what an investor wishes to achieve from a CTA allocation. Two different classical trends following managers can be very different both when it comes to time-frames, risk management as well as future research and development. Large firms tend to have more stringent risk management and stronger more sophisticated research teams who could potentially find new instruments and markets, whilst also developing new models and refining existing models to enhance performance and diversify risk.

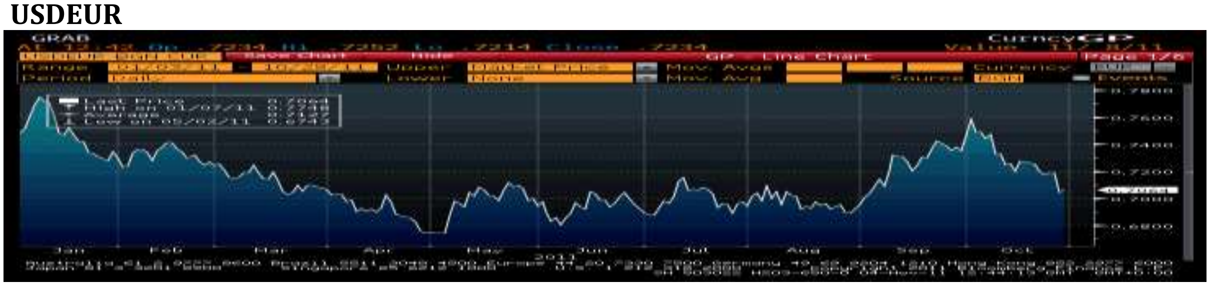
The diversification features of being negatively correlated to major index and positively correlated to volatility whilst also managing to capture some of the up side of equity market is very appealing. Finding the right CTA manager depends on your overall portfolio goals and 'one size fits all' is not really the case when it comes to the CTA universe as many investors thought in the past. To find the right manager you will need to decide which strategy you wish to implement as well as which time frames suit the portfolio in mind. One must also assess whether one feels comfortable with risk management and if the future R&D of the firm as to whether the CTA manager will prevail as a winner in future.

Appendix

YTD summary

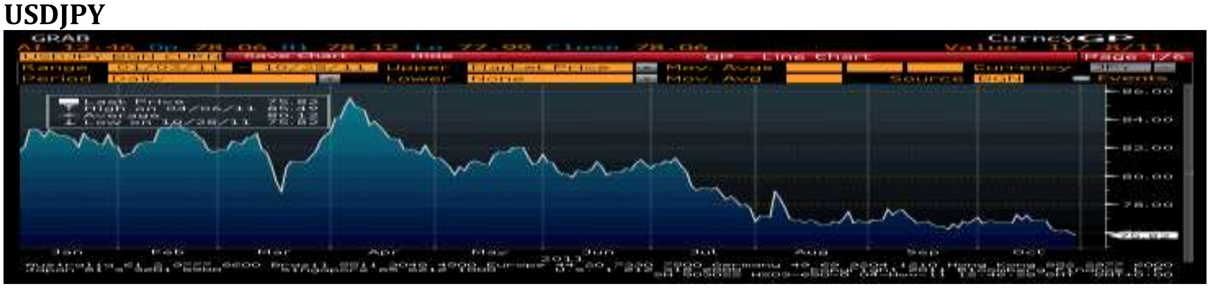
There have been some trends in both the currency market and the commodity and fixed income market this year. The strongest and most consistent trend has been in the fixed income market. In an attempt to obtain a general picture of the market I have selected the following currency pairs: USDEUR , USDJPY, USDGBP and USDCHF and following commodities gold and WTI and the following 10-years government bonds USA, Germany and the United Kingdom.

USDEUR



The USD weakened in the beginning of the year and started to rebound end of April beginning. There was a clear downward trend for the first couple of months of the year. The trend bottomed out at the end of April and the beginning of May. The trend after has clear strength of the USD but has been a more choppy road. The USD started to weaken from 1st of October again trading at a high of 0.7590. The USDEUR has been trading between a low of 0.6743 and a high of 0.7748 with an average band of 0.7127

USDJPY



The road between USDJPY was quite choppy for the first couple of months of the year. The USDJPY peaked at 85.49 on 04/06/2011 and after that experienced strong negative trends while the USD fell to its lowest point of 75.82 on 10/28/2011 and has on average traded at around 80.12.

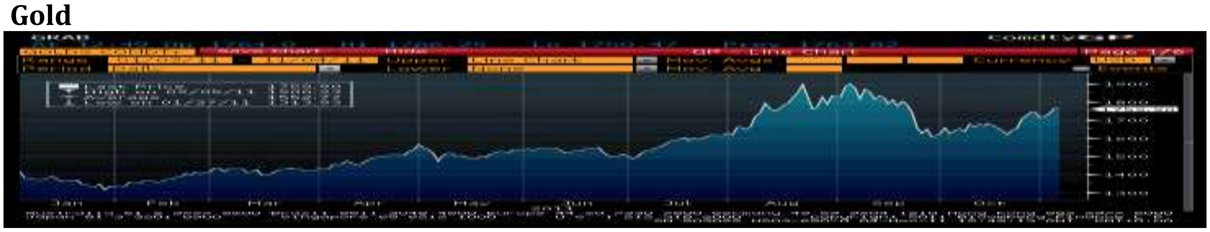
USDGBP

The USDGBP has been fairly volatile and USD weakened for the first couple of months of the year and hit bottom on 04/29/2011 at 0.5986 and after that the USD strengthened to 0.6514 on 09/22/2011. On average the USDGPB has been trading 0.6209 levels.

USDCHF

The CHF strengthened significantly versus USD up until August 09/09/2011 when the Swiss Central Bank intervened and started to sell CHF. After August the USD was strong against CHF. The USD has weakened slightly since the end of September and the beginning of October. The USD traded at its highest CHF of 0.9737 on 01/11/2011 and at its lowest on 08/09/2011 at 0.7209. The average trading range was 0.8796.

Gold

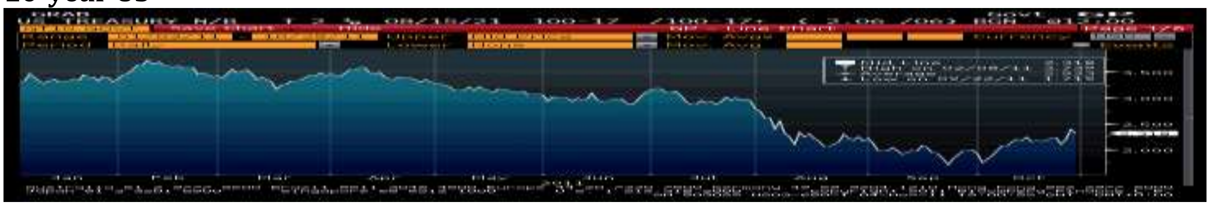


Gold had a strong upward trend during the year with a low of 1313.93 on 01/27/2011 whilst it peaked at 1900.23 on 09/05/2011. Following this gold fell back and rebounded again to 1,760- 1,780 levels. The average trading price was 1552.77.

WTI crude

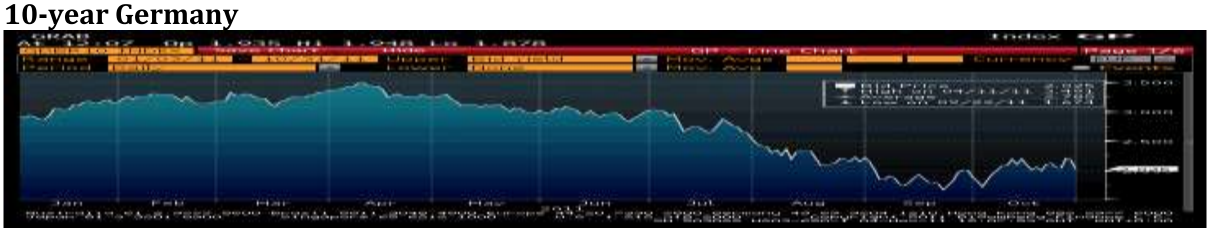
WTI there was upward trend at the beginning of the year whilst it peaked at 114.73 on 04/29/2011. The oil price bottomed out on 10/04/2011 at 75.87. The average trading price for the year was 97.09.

10-year US



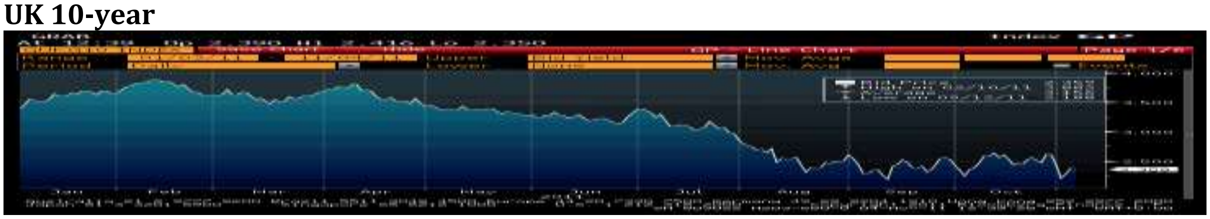
There has been a strong trend in US 10-year all year and the yield fell from a high of 3.729% on 02/08/2011 to a low of 1.719% at 09/22/201 before rebounding back to 2.114% by the end of October. The average yield this year was 2.923%.

10-year Germany



There was a strong trend in Germany 10-year all year and the yield fell from a high of 3.491% on 04/11/2011 to a low of 1.674% on 09/22/2011 before rebounding back to 2.025% by the end of October. The average yield this year was 2.785%.

UK 10-year



There was a strong trend in the UK 10-year all year and the yield fell from a high of 3.882% on 02/10/2011 to a low of 2.188% on 09/12/2011 before rebounding back to 2.437% by the end of October. The average yield this year was 2.785%. The average yield this year was 3.156%.

The strongest trend in the year definitely came from the fixed income sector where yield compressed significantly during the year. There was a short reversal in yield during October as the stock market rallied and the European rescue plan was confirmed, however, yield began to tighten again towards the end of the month. On the currency front all of the major currencies were strong against the USD in the first couple of months of the year and after that the USD rebounded against all the major currencies with the exception of JPY until up until the end of September and beginning of October when the USD again started to depreciate. Gold was strong at the beginning of the year as safe heaven assets and oil had choppy rides and peaked in the second month of military intervention in Libya.

Performance Analysis Month per month

The Down Jones Credit Suisse Core Managed Future index was down -0.11% YTD as per the end of September. For the first six months of the year the index was down for four months of these six months. Both July and August were positive months, whilst September was slightly down/nearly flat. The initial indication for the end of October was that the index would show a significant draw down. To understand the performance I have made an attempt to break down the main drivers for the CTA industry this year. This analysis attempts to capture the broad themes in the market however it may not represent all single managers.

January (-1.18)

The main two themes driving the market in January were civil unrest in North Africa and concerns about rising in inflation. The Chinese Central Bank raised the reserve requirement and the head of the ECB Jan-Claude Trichet hinted at a potential interest rate hike. Both gold and silver sold of investors take profit and energy prices soared amid concerns that the Arab spring would spread to more countries in North Africa and the Middle East. Soft commodities also moved up during the month. Modest trends in commodities.

February (+1.73%)

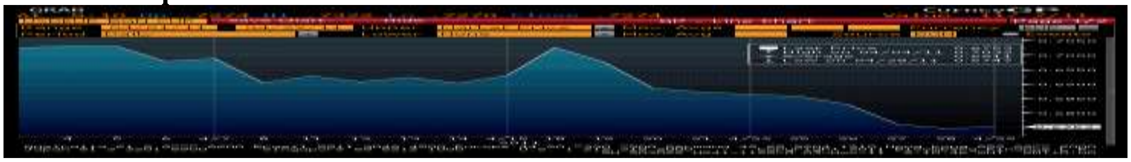
The main drivers for the month were the geopolitical crises in North Africa which led to an increase in oil prices and other related energy products. Industrial metals also rose during the months as supply concerns rose and flights to safety also meant that precious metals rose whilst silver hit its highest point in 30 years. S&P 500 also traded back to 1,300 levels. The main driver for the month was a strong trend in commodities with emphasis on energy related products.

March (-2.25%)

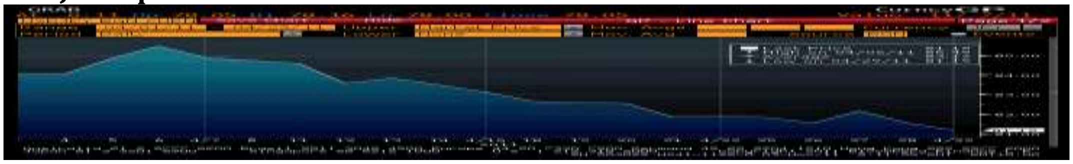
The pattern from February continued to the 11th of March when the earthquake and tsunami hit Fukushima. Japanese and global equity markets sold off sharply as investors cut risk and became concerned about future global growth prospects. The commodity market also saw a modest sell-off. The market recouped to a certain extent at the end of the months as some strong economic US data emerged. The main negative contributor for the months was the sharp selloff of equities which for the majority of CTA managers had been long equities.

April (+4.78%)
The USD continued to weaken against the major currencies in April. Energy and oil related products performed well during the month as the military action in Libya began. Standard & Poor also cut the rating outlook of the US which led to a surge in precious metals.

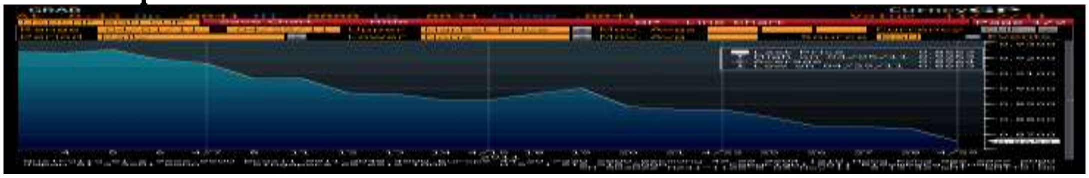
USDEUR Apr 2011



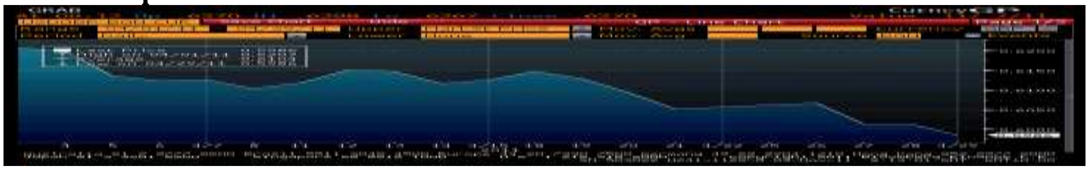
USDJPY Apr 2011



USDCHF Apr 2011



USDGBP Apr 2011



A lot of CTA funds performed well during the months, the main driver for which was the weakening of the USD. The USD lost ground against all major currencies and was down on the Euro (-3.87%), JPY (-3.41%), GBP (-3.56%) and CHF (-6.33%). All of the major currencies appreciated relatively gradually versus the USD with the exception of EUR where the USD made a short rebound on 18th of April on the back of parliament elections in Finland and fears that the European rescue package could be thwarted by the True Finns.

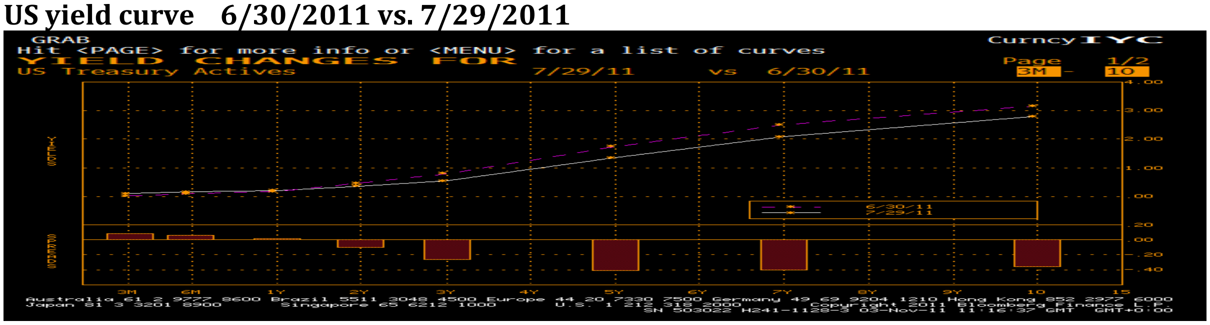
May (-4.40%)
May was a tough month with falling commodity prices. Indeed, WTI went down by almost 10%, whilst Brent and Gasoline were just shy of 7%. Equity markets also continued to fall during the month whilst there was also poor economic global data coming through. Increased risk aversion also led to a rallying of the USD versus the EUR +3.01 and to a smaller extent versus the sterling +1.27% whilst the effect versus the JPY was marginal. The CHF continued to gain strength versus the USD during the month. The main negative

contributor to the performance for CTA managers during the month was a fall in commodity prices and a strengthening of the USD versus the EUR.

June (-2.92%)
During the middle of the month bad US forecast numbers and concerns over the Greek debt situations led to broad risk aversion across the board. Disappointing Chinese data further added to negative sentiment during the month. Stock markets and commodity markets declined and the USD strengthened against the GBP +1.76%. It was also marginally strengthened against the JPY +0.36% but lost ground versus the Eur -1.18% and CHF -1.29%. The negative performance was a combination of further de-risking in the equity market and commodity market.

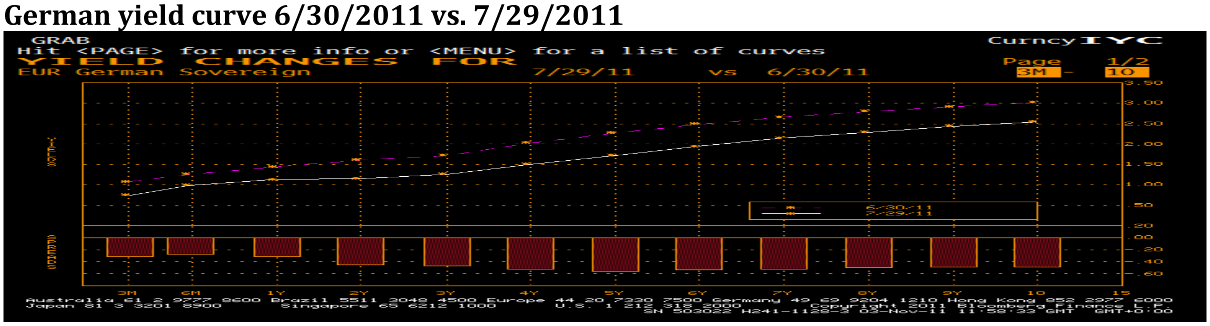
July (+ 3.61%)
The month was dominated by the debt crises on both sides on the Atlantic. The market started to take into account the probability of a US debt downgrade. The fixed income market rose significantly as the fight for quality increased. Overall, commodities also traded on positive territory for the month and gold reached its all time high of 1,627.88 $/OZ.

US yield curve 6/30/2011 vs. 7/29/2011



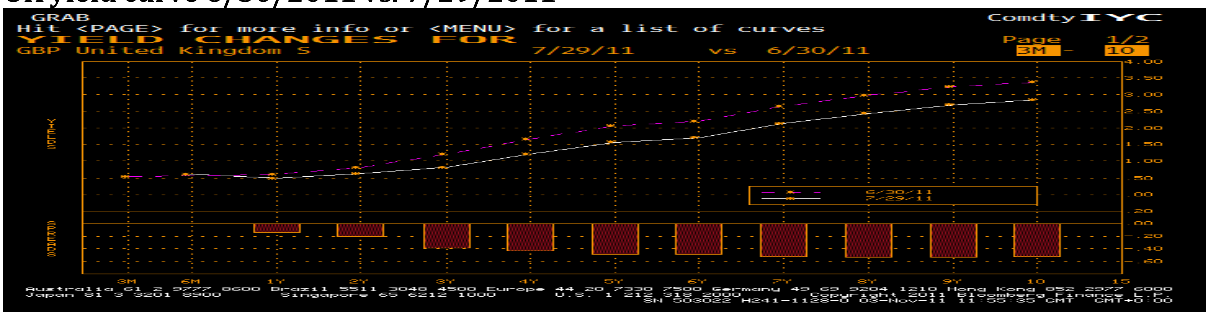
Both the long and short end of the US yield curve flattened significantly during July and 10-year yields went from 3.162% to 2.798% (11.51%).

German yield curve 6/30/2011 vs. 7/29/2011



Both the long and short end of the German yield curve flattened significantly during July and 10-year yields went from 3.025% to 2.538% (19.12%).

UK yield curve 6/30/2011 vs. 7/29/2011



Both the long and short end of the UK yield curve flattened significantly during July and 10-year yields went from 3.38% to 2.859% (15.41%).

CTA managers benefited from investors taking risk of the table and re-allocated capital to safe heaven assets. The compression of yields predominately on the long-end of curve was the main contributor to performance in July whilst bunds was the main winner followed by Gilts and treasuries

August (1.78%)

The European sovereign crises continued and the US was downgraded from AAA to AA+. Despite the downgrade treasuries continued to rally as well as other safe heaven assets. The Japanese and Swiss Central bank also intervened which saw the USD rally whilst commodity currencies such as BRL -2.22% (8th of August) and AUD -4.72% (10th August) fell from their highs early in the month. Gold also continued to climb and reached new highs of 1,870.60 $/OZ. The main performance contribution continued to come from the fixed market with a little bite of help from the strength of the USD.

September (-0.14%)

The Federal Reserve launched operation twist and both equity and commodity markets sold off whilst the government bond market continued to rally. Precious metals constantly fell during the month and both gold and silver fell from their recent highs. There was really no dominating trend during the month.

October (-5.70% (e))

Early on in the month strong US data and the Bank of England boosting their quantitative easing with £75bn increased risk appetite. The European government also reached an amended rescue package for the Eurozone. There was also some encouraging data from the Chinese and Hong Kong stock market. Equity markets rallied sharply and fixed income market sold off in the first three and half weeks of the month. As risk appetite increased the USD sold off and the Euro strengthened on the back of the European rescue plan. The commodity market also recovered a bit during the month and WTI crude edged slightly higher on supply concerns. [3] The sharp reversal in fixed income, strong rally equities and the sell-off of the USD had a negative impact on most CTA manages during October.

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[3] October month number was an estimate when this paper was written.

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Data

Dow Jones Credit Suisse Core Hedge Broad Indexes

Bloomberg: Graphs

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