



## **AlphaQuest Research Series #6**

*The goal of this research series is to demystify hedge funds and specific black box CTA trend following strategies and to analyze their characteristics both as a stand-alone product as well as within a portfolio of typical financial instruments.*

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# **Return Enhancing Style Drifts in Futures/FX-Based Momentum Portfolios**

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## I. Introduction

Since 2000, the market environment in futures/FX has displayed an unusual stability in single factor strength. The typical rotation of trading styles and factors across time has not been as apparent as in the past. The main driver of this new equilibrium in factor strength was the steady hand of central banks that provided liquidity to neutralize the errors of over-optimism of investors awash in cash. In particular, long fixed income and long equity portfolios benefitted unquestionably. The “balanced” and “all weather” portfolios which combined these two assets and benefitted from their present negative correlation also reached unprecedented popularity amongst institutional investors. Value creation and central bank action were hard to differentiate. In the minds of investors, risk seemed to have been conquered through the value investing style and other mean reversion based strategies. Strong conviction ruled and self-doubt as well as preparation for the possibility of losses have been brushed aside.

The CTA industry has adapted<sup>1</sup> steadily over time to benefit from these central bank driven anomalies. The CTA industry has 1) changed its sector allocation to favor fixed income and equities, 2) extended its trading time frame to better fit the long term trends apparent in fixed income and equities, and 3) biased its models to trade long only. The strong momentum and stop-based trading discipline was slowly diversified away from. Instead there is more exposure to mean reversion trading which is particularly applicable in equities and fixed income.

In this paper we will illustrate the above CTA drifts with specific models and portfolio examples to allow investors to better differentiate skill from Alpha. None of the drifts we explore involve any skill but they all do carry a substantial amount of Alpha. As we had shown in our third research piece, these factors are all very liquid and correlate well to the residual returns of the Barclay BTOP50 Index (BTOP)<sup>2</sup> after its MA10x100 related returns are removed. They are very relevant for investors to understand as they are utilized by large managers in the space.

We will be contrasting six individual factor drifts with a vanilla classical trend following (TF) strategy MA10x100<sup>3</sup>. Three of these factor drifts relate to changes in trading strategy and three of these factor drifts relate to the introduction of risk-on exposure. All six factor drifts are accessible within just the futures/FX markets.

The monthly returns for all data series<sup>4</sup> mentioned in this paper can be obtained by reaching out to Quest.

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<sup>1</sup> AlphaQuest CTA Research Series #3 Quantitative Trend Following Strategies and Equity Risk: From Diversifier to Hedge by Nigol Koulaian and Paul Czkwianianc, Quest Partners LLC April 2013

<sup>2</sup> In this paper the Barclay BTOP50 Index is unfunded and scaled by a factor of 2.5 to achieve 14.7% annualized volatility.

<sup>3</sup> MA10x100 is a simple moving average cross-over strategy applied equally on a volatility adjusted basis to the four sectors traded by CTAs: fixed income, equity, FX and commodities. AlphaQuest CTA Research Series #1 Black Box Trend Following – Lifting the Veil by Nigol Koulaian and Paul Czkwianianc, Quest Partners LLC September 2010. In this paper MA10x100 is scaled to achieve 15% annualized volatility, the required weight is 0.90.

<sup>4</sup> Data series included are MA10x100, 1Y MOM, overall, per sector, long vs short. Also included are data series for individual factors.



## II. Three Factor Drifts Related to Changes in Trading Strategy

All TF factors are sized to achieve 15% annualized volatility of monthly returns. The three trading strategy drifts we will explore are:

1) TF Fixed Income:

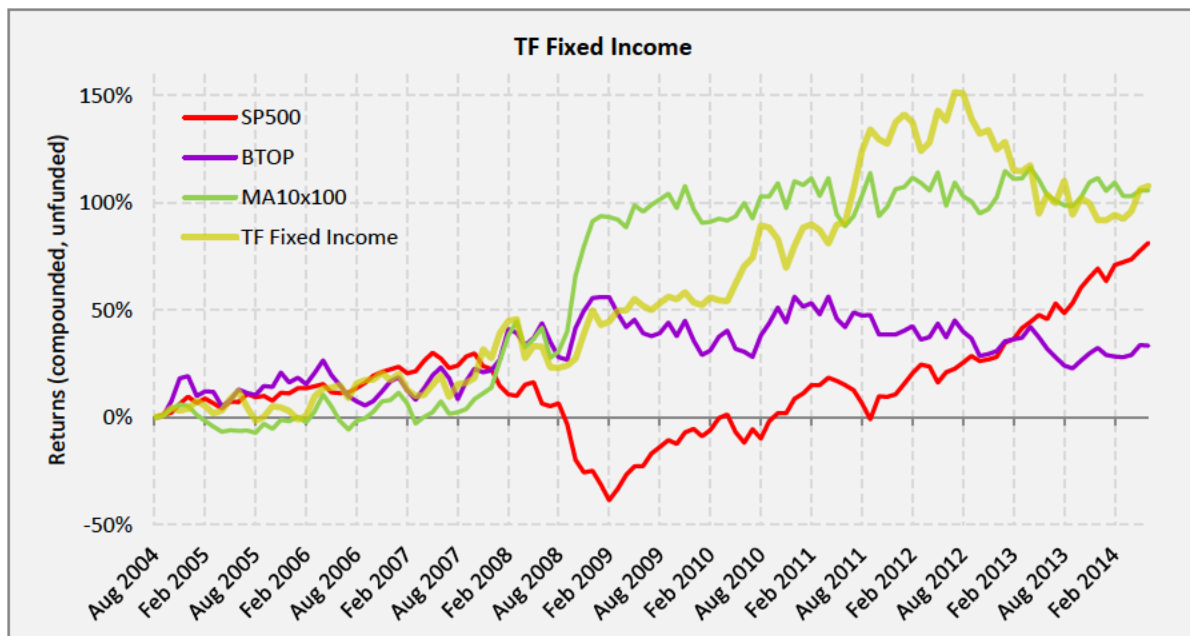
This factor involves trading MA10x100 applied to the Fixed Income sector only. The weight<sup>5</sup> required to achieve the desired 15% volatility is 2.53.

2) TF Long Only:

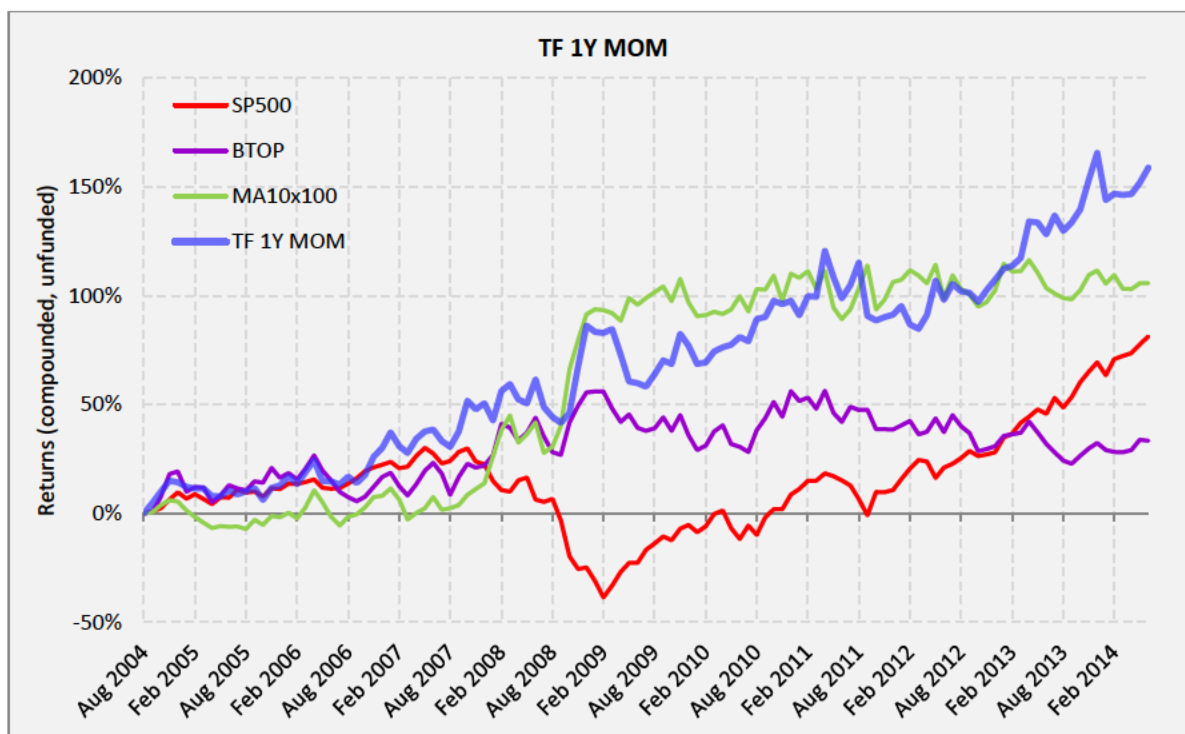
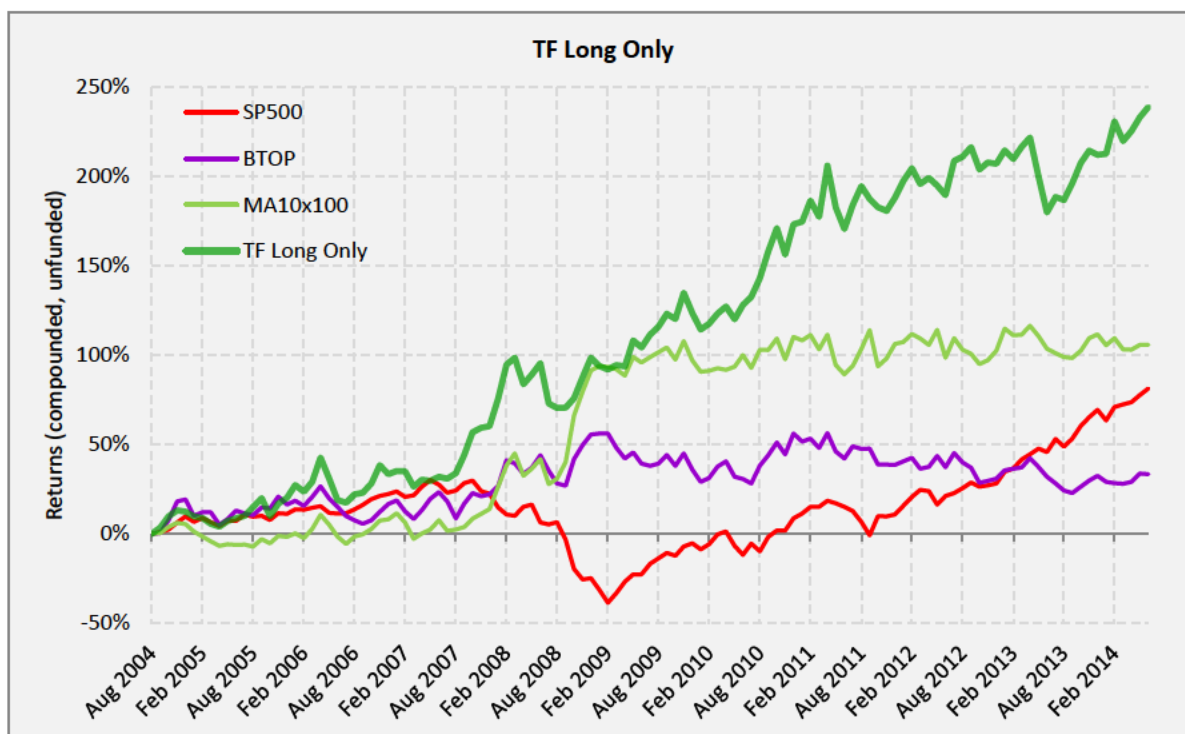
This factor involves trading MA10x100 long and flat instead of the typical long and short. The weight required to achieve the desired 15% volatility is 1.48.

3) TF 1Y MOM:

This factor involves a momentum strategy that goes long a market tomorrow at the open if the close of today is higher than the close one year ago (252 days). It goes short a market tomorrow at the open if the close of today is lower than the close one year ago. The signal is evaluated once per month on the last day of the month. The portfolio is the same as in MA10x100. This strategy is more long term than MA10x100 with 227 days per trade vs. 61 days for MA10x100.



<sup>5</sup> The multiplier of the standalone component of MA10x100.





### III. The Three Risk-On Factors

We will also evaluate three risk-on factors as additions to a trend following portfolio as we would expect liquidity seeking CTAs to utilize them. For each one of these, we will construct a 15% annualized volatility portfolio which is a Sharpe ratio optimized mix of MA10x100 and the risk-on factor. The factors are:

1) RO SP500:

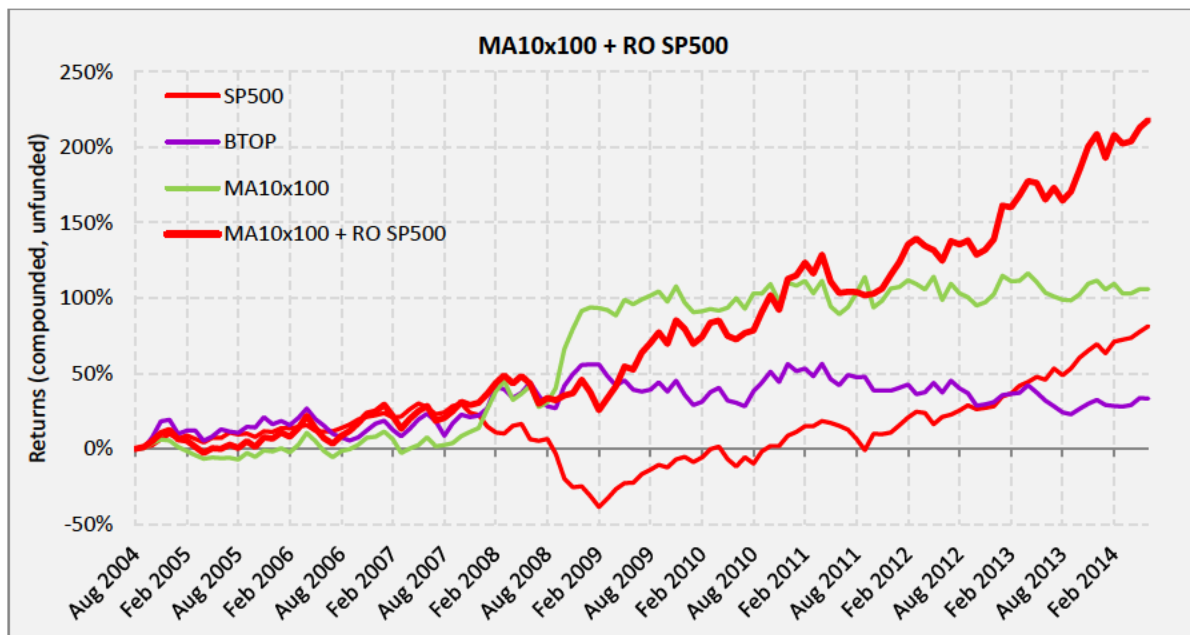
This is a Sharpe ratio optimized mix of MA10x100 and the SP500 with weights of 0.86 to the MA10x100 and 0.79 to the SP500.

2) RO Short VIX:

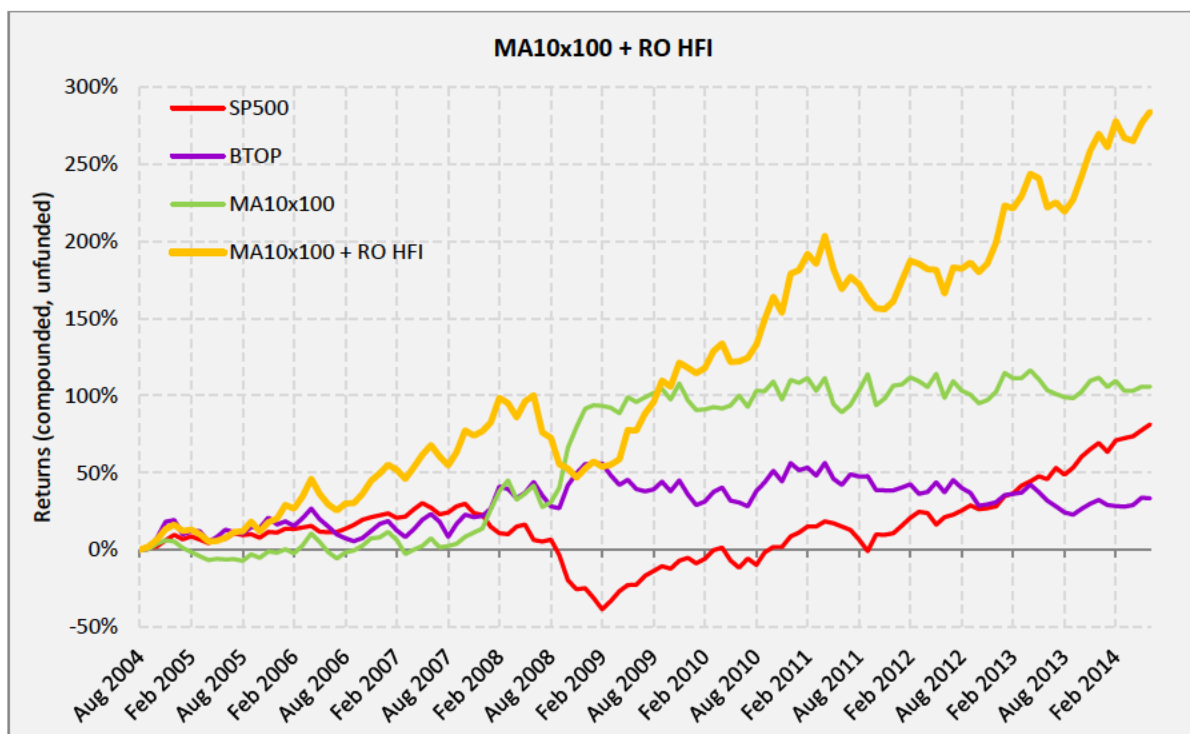
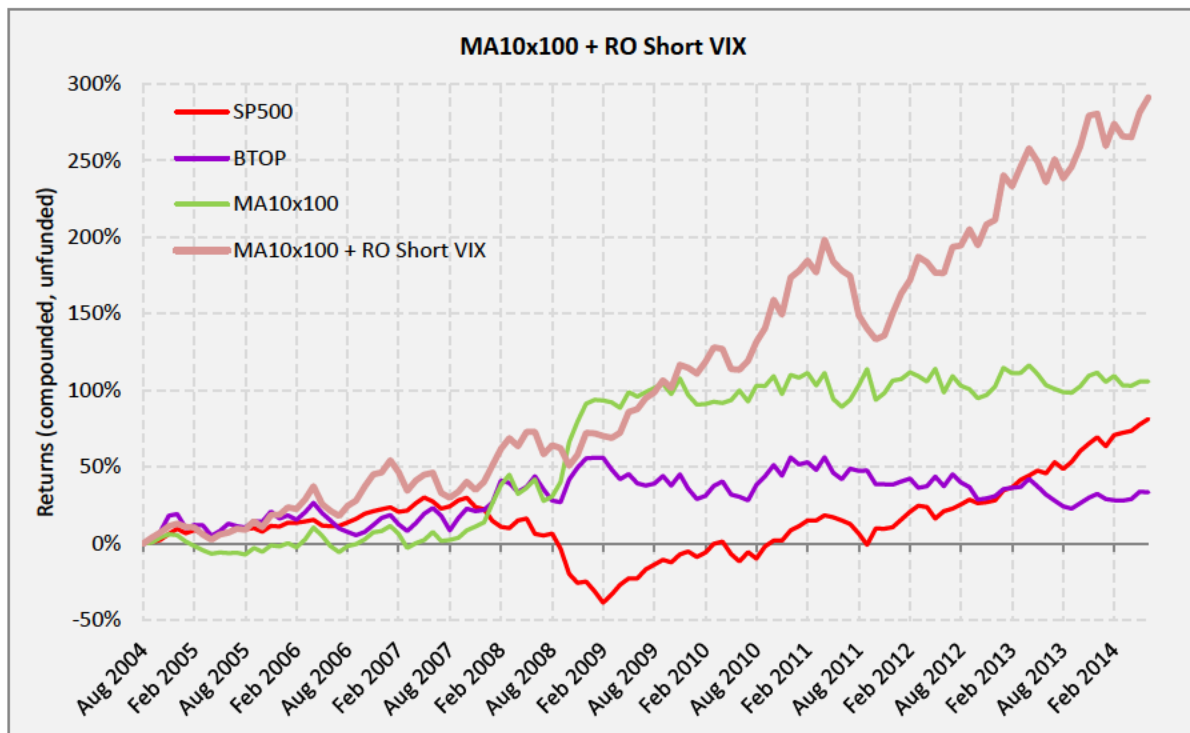
This is a Sharpe ratio optimized mix of MA10x100 and a short VIX futures position with weights of 0.81 to the MA10x100 and 0.18 to the short VIX. The short VIX futures position is a full exposure to short VIX futures, rebalanced monthly on the last day of the month.

3) RO HFI:

This is a Sharpe ratio optimized mix of MA10x100 and the Credit Suisse Hedge Fund Index (HFI) with weights of 0.63 to the MA10x100 and 2.08 to the HFI. In our fifth research piece<sup>6</sup>, we show a top-down approach to replicating the HFI using a futures-only approach.



<sup>6</sup> Please refer to our fifth research piece AlphaQuest Research Series #5 [Hedge Fund Index Replication - A Numerical Approach using Futures.](#)

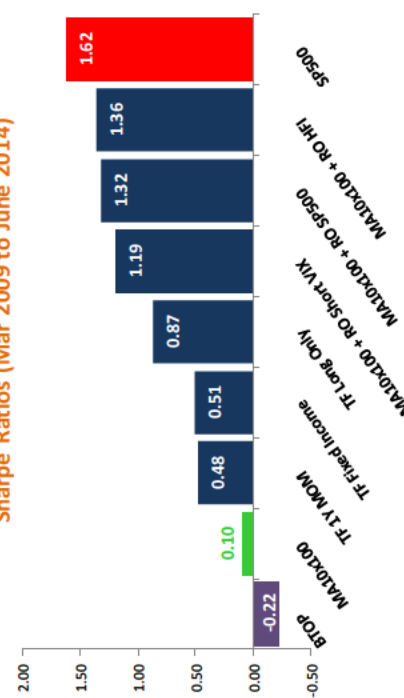


## IV. Return Statistics

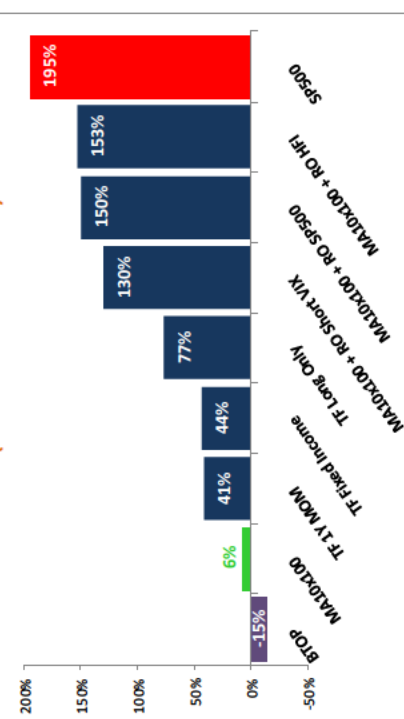
All returns are unfunded.

	MA10x100	TF Fixed Income	TF Long Only	TF 1Y MOM	MA10x100 + RO SP500	MA10x100 + RO Short VIX	MA10x100 + RO HFI	SP500	BTOP	Portfolio of Six Factors
Total Return (compounded)	106%	108%	239%	159%	218%	291%	284%	81%	33%	222%
Annualized Return (compounded)	7.6%	7.7%	13.2%	10.1%	12.5%	14.9%	14.7%	6.2%	3.0%	12.6%
Annualized Volatility	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	14.8%	14.7%	11.8%
Worst Drawdown	-15%	-24%	-18%	-16%	-16%	-22%	-27%	-53%	-21%	-12%
Skew	0.30	-0.26	-0.33	0.18	-0.31	-0.36	-0.24	-0.85	0.23	-0.32
Sharpe Ratio	0.508	0.515	0.881	0.677	0.832	0.992	0.978	0.420	0.203	1.069
Ann Return / Worst Drawdown	0.52	0.33	0.75	0.63	0.80	0.68	0.55	0.12	0.14	1.01
Correlation to SP500	-26%	-22%	17%	5%	56%	46%	45%	100%	-2%	31%
Beta to SP500	-26%	-22%	17%	5%	57%	47%	46%	100%	-1%	25%
Annual Alpha to SP500	9%	9%	12%	10%	9%	12%	12%	0%	3%	11%
Information Ratio to SP500	0.64	0.62	0.82	0.66	0.72	0.90	0.88	0.00	0.21	0.99
Correlation to HFI	-7%	-18%	39%	24%	52%	55%	78%	75%	29%	49%
Beta to HFI	-7%	-18%	39%	25%	53%	56%	79%	74%	28%	39%
Annual Alpha to HFI	8%	10%	9%	7%	7%	9%	6%	-2%	0%	8%
Information Ratio to HFI	0.56	0.65	0.65	0.51	0.53	0.71	0.65	-0.19	-0.01	0.81
Return during Subprime Crisis (Nov 2007 - Feb 2009)	78%	22%	22%	20%	-4%	21%	-13%	-53%	27%	11%
Return from Mar 2009	6%	44%	77%	41%	153%	130%	150%	195%	-15%	98%
Sharpe Ratio from Mar 2009	0.10	0.51	0.87	0.48	1.32	1.19	1.36	1.62	-0.22	1.32

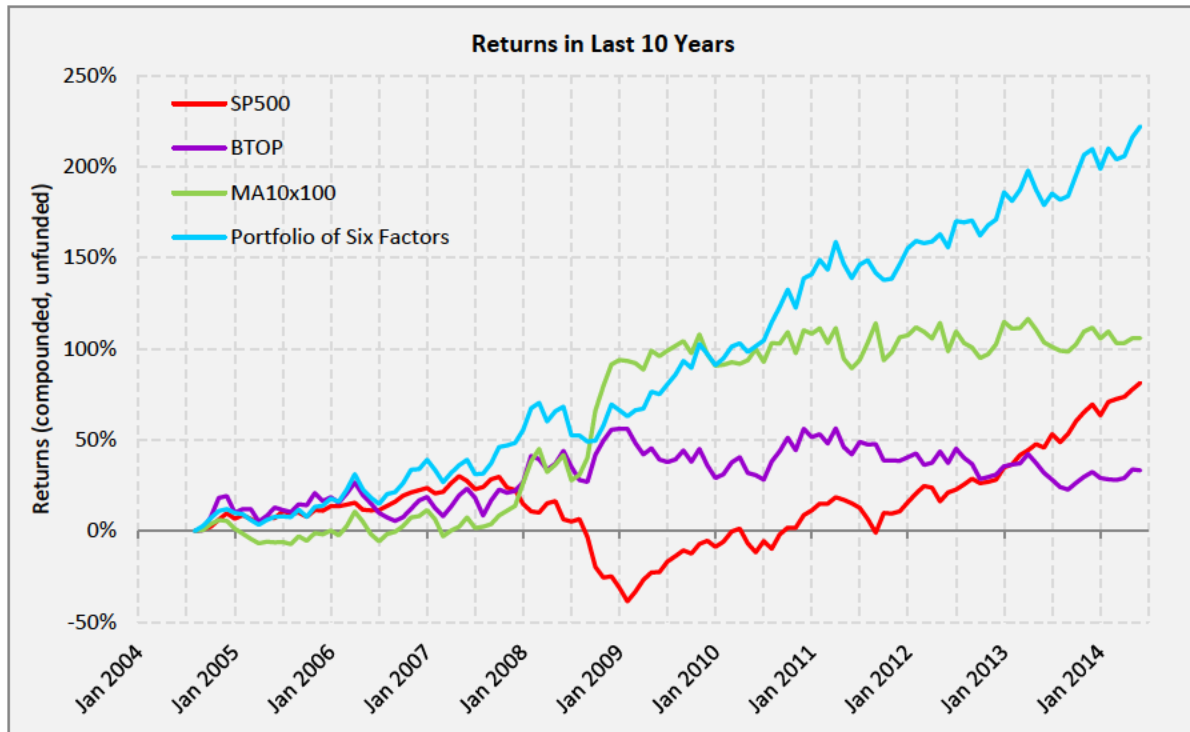
Sharpe Ratios (Mar 2009 to June 2014)



Returns (Mar 2009 to June 2014)







All factor drifts substantially improve returns vs. MA10x100 over the last five and the last ten years. Since March 2009, MA10x100 has returned +6% and the equal weighted portfolio composed of the 6 style drifts has returned +98%. Since 2004, MA10x100 has returned +106% vs. +222% for the portfolio of the six factors. With the factor drifts, the skew has gone down substantially vs. MA10x100 from +0.30 to -0.32. Similarly, the correlation to the SP500 has increased substantially from -26% to 31%. The correlation to the HFI has gone from -7% to +49%.

## V. Underperformance during 07-09 crisis

As signaled by the factor style drifts' low values of skew<sup>7</sup>, the style drifts all caused substantial underperformance versus the MA10x100 during the 07-09 crisis. In that period, MA10x100 returned +78% vs. only +11% for the six factors on average and +27% for the BTOP.

Getting increased equity exposure through these style drifts is advantageous to investors allocating to CTAs as a single, standalone investment because they receive higher risk adjusted returns. However, increased equity exposure is disadvantageous to investors investing in CTAs within a larger diversified pool of equities and hedge funds because CTAs' ability to provide true diversification gets diminished. In practice, a large portion of CTA equity long Beta is realized by market timing equity indexes, another skill-less and

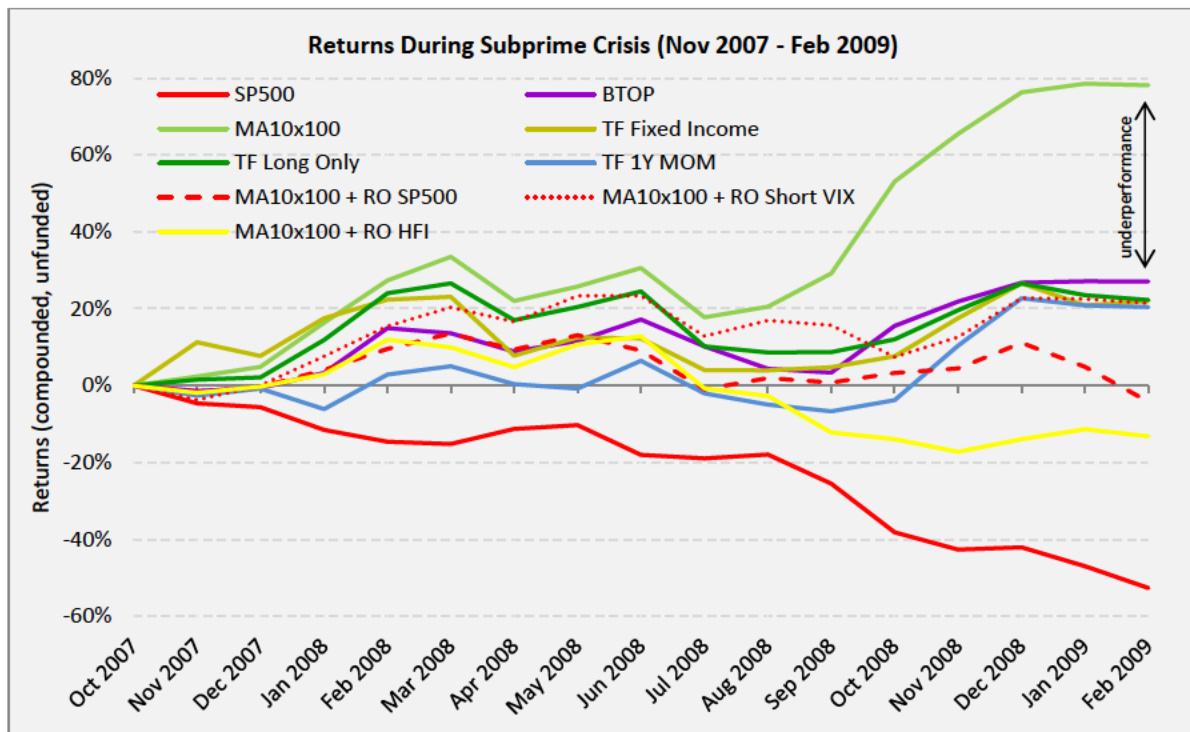
<sup>7</sup> AlphaQuest CTA Research Series #2 Know Your Skew - Using Hedge Fund Return Volatility as a Predictor of Maximum Loss by Nigol Koulaian and Paul Czkwianianc, Quest Partners LLC June 2011





heavily crowded approach. Investors should consider whether more attractive Alpha per unit of equity market Beta is achievable by exposing themselves to more idiosyncratic risk such as through individual equities.

The BTOP's -51% underperformance vs. a passive strategy such as MA10x100 was a very significant event at a critical time in financial markets. This is what most investors achieved by investing with the large style drift affected CTAs comprising the BTOP; a very heavy cost to pay.



## VI. Conclusion

Chasing liquidity and recent returns, large CTAs have ended up being cornered into some very specific factors which happened to have performed well in the last five and ten years. Due to limited liquidity, the flexibility to move away from these factors as they start to underperform is not easily available today. Underperformance in fixed income and equities sectors will particularly affect the largest CTAs.

With the advent of replication techniques, not only can broad CTA indexes be successfully replicated, specific factors driving the performance of specific CTAs can also be targeted. The large flow of assets into equity Beta heavy, large CTAs prior to the 07-09 crisis was an error which should not happen again. The now well-equipped investors with replication techniques, knowledge and transparency at their disposal, should be able to keep their portfolios clear of unconstructive style drifts which only appear to be substantial in value but do not involve true skill-based Alpha.