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UNCORRELATED ALPHA SOURCES IN THE AGE OF THE MACHINES: BITCOIN AND CTAs

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Bitcoin is enjoying a plenty of attention lately due to the rally in its price driven by its usage as frictionless payment solution and the catalyst: the ambitious plans of the Winklevoss brothers to launch the first bitcoin ETF. Friday, 10th March though was the day that SEC rejected the brothers' ETF application, which could have been a 'revolution' for the digital currency in the investment space, like the first Gold ETF, due to the anticipated inflow of new institutional capital. The same day, after the ETF disapproval, the price of Bitcoin plunged to levels around $1000, which constituted an almost 18.5% decrease intraday. Bitcoin price recovered immediately and currently trades around $1230, proving that the drivers of demand for the digital currency are strong regardless of the launch of an ETF. We are living in the age of the machines, where investors are looking for fintech, artificial intelligence and machine learning supported products to source uncorrelated alpha for their investment portfolios. This perspective will examine the Bitcoin and CTA market to analyze its effect on investors' portfolios.

There are hundreds of different cryptocurrencies, but only two managed so far to distinguish themselves and establish a market. Bitcoin is the most capitalized with current market capitalization being around $20bn. Ethereum, its only relevant peer so far, has a market cap of around $2bn. Bitcoin is the main player in the cryptocurrency spectrum and its growth is significant over the last 3 years. Since 2014, $15bn of new capital has boosted the growth of bitcoin as a new asset class. CTA AuM has risen by $22bn since 2014 and is currently at an all-time high of $340bn, proving that machine related strategies are here to stay while attracting new capital allocations.

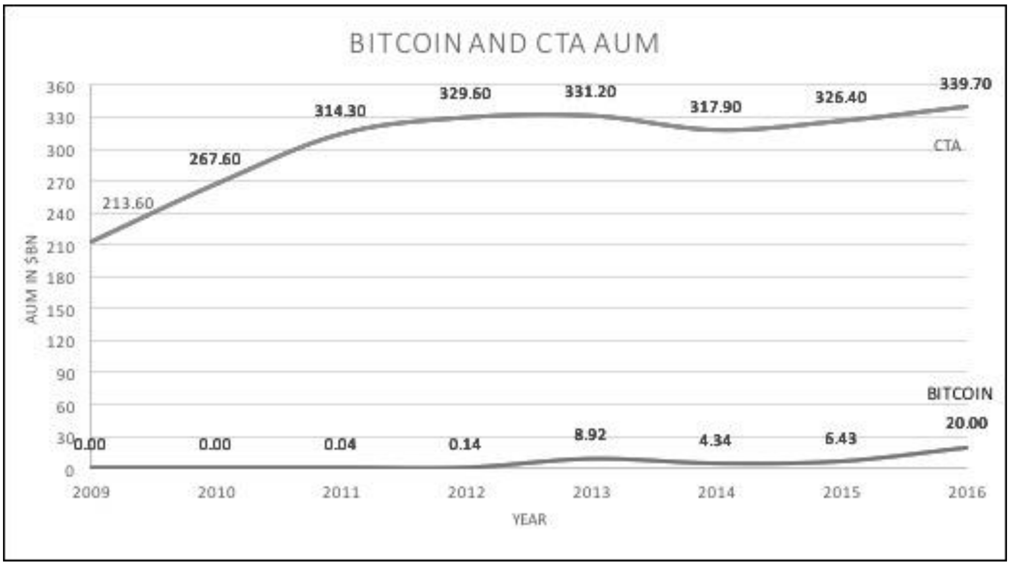

Figure 1. AUM of Bitcoin and CTAs. Source: Quandl, Coindesk, BarclayHedge, Stone Mountain Capital Research

We use monthly data for the period between August 2010 and December 2016 to analyze statistical properties of bitcoin and CTAs and theoretically understand their potential effect. We expect an asset growing from below $1 to over $1300 to have the best performance, and indeed since 2010, Bitcoin exhibits annualized returns of 148% with an annualized volatility of 137%. The Systematic CTA Diversified HFRX Index exhibits slightly negative annualised returns over the same period, while S&P 500 and BofA Merrill Lynch US Corp Master Total Return Index generated 11.81% and 4.67% respectively. Both Bitcoin and CTAs have positive skewness, meaning, that the right tail of the distribution is longer or has a greater chance for extreme positive outcomes. The more interesting fact is, that Bitcoin's return distribution is leptokurtic, meaning that there could be large fluctuations in the tails. On the other side, CTAs have negative kurtosis, thus combinations of Bitcoin and CTAs in a typical long-only portfolio, could add interesting features, such as diversification.

Bitcoin Correlation Table		Systematic CTA Correlation Table	
HFRX Systematic CTA	0.07	Bitcoin	0.07
S&P500	0.25	S&P500	0.11
BofA Merrill Lynch US Corp Master	0.03	BofA Merrill Lynch US Corp Master	0.13
Equity Size Spread Factor	0.03	Equity Size Spread Factor	-0.08
Fama-French Market Factor	0.21	Fama-French Market Factor	-0.24
Fama-French Size Factor	0.05	Fama-French Size Factor	-0.13
Fama-French Value Factor	-0.07	Fama-French Value Factor	-0.32
Momentum	0.04	Momentum	0.30
VIX	-0.22	VIX	-0.02
Bond lookback straddle	-0.26	Bond lookback straddle	0.44
Currency Lookback Straddle	-0.11	Currency Lookback Straddle	0.45
Commodity Lookback Straddle	-0.08	Commodity Lookback Straddle	0.20
Short Term Interest Rate Lookback Straddle	0.06	Short Term Interest Rate Lookback Straddle	0.18
Stock Index Lookback Straddle	-0.18	Stock Index Lookback Straddle	0.06

Table 1. Correlation of Bitcoin and CTAs with major Indices and Factors, Source: HFR, Coindesk, CBOE, Fama and French, Fung and Hsieh, Stone Mountain Capital Research
Data for factors can be found in: https://faculty.fuqua.duke.edu/~dah7/HFRFData.htm, http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

We evidence clearly from Table 1, that both Bitcoin and CTAs are uncorrelated to long-only indices and to long-only and hedge fund factors. CTAs are slightly positively correlated to bond and currency straddle portfolios, which could be explained by their trend following component. Bitcoin returns are truly uncorrelated and the generation of higher returns makes the asset class exciting, despite few predicaments, such as the fact, that it is less capitalized and unregulated. The economic scenery, though, makes the foreseeable future compelling, as the market continues to evolve and more tradable products around Bitcoin are designed, like futures, options, and bitcoin lending. Investment exposure to Bitcoin can be achieved via direct purchases at Bitcoin exchanges, ETNs (delta one, certificates, trackers) or active managers in cryptocurrency strategies. But is this exposure worthy? We construct four theoretical portfolios as shown in Table 2 from August 2010 to December 2016 that include long-only equity, fixed income, Bitcoin and CTAs to answer this question.

Artificial Portfolio Composition	
Portfolio 1	60% Equity – 40% Fixed Income
Portfolio 2	50% Equity – 30% Fixed Income – 20% Bitcoin
Portfolio 3	50% Equity – 30% Fixed Income – 20% CTAs
Portfolio 4	50% Equity – 30% Fixed Income – 10% Bitcoin – 10% CTAs

Table 2. Artificial Portfolio Composition for the period between August 2010 and December 2016, Stone Mountain Capital Research

In the above table, equity is represented by S&P 500, fixed income by BofA Merrill Lynch US Corp Master Total Return Index, Bitcoin by Coindesk BPI and CTAs by HFRX Systematic CTA Diversified Index. We assign Bitcoin and CTAs a maximum exposure of 20%, keeping the majority of the portfolio as a typical long-only investment.

Portfolio	Annualised Return	Annualised Volatility	Kurtosis	Skewness	Sharpe Ratio (rf=2%)
Portfolio 1	8.95%	7.60%	0.01	0.35	0.91
Portfolio 2	37.02%	29.58%	5.35	4.08	1.18
Portfolio 3	7.22%	6.65%	0.02	0.91	0.78
Portfolio 4	22.12%	16.51%	1.23	3.25	1.22

Table 3. Artificial Portfolios First Four Moments for the period between August 2010 and December 2016, Stone Mountain Capital Research

The results are evident and undoubtedly the inclusion of Bitcoin ameliorates the performance of a long-only portfolio as measured by Sharpe Ratio. Volatility is massively increased and thus, low volatility investors would be extremely averse in these type of investments, but the remarkably high return generation constitutes a great compensation for the risk taken. The large positive amount of skewness and kurtosis added, provided investors with a greater chance for extremely positive returns and large fluctuations in the right tail of the distribution. Substituting Bitcoin with CTAs reduces returns and volatility significantly, bringing also skewness and kurtosis to long-only levels. CTAs act as a great risk reducer and we will attempt to combine it with bitcoin, to produce greater risk-adjusted returns. Table 3 confirms, that the co-existence of both products produces the best performing portfolio in terms of Sharpe Ratio and the addition of CTAs in a portfolio with Bitcoin can moderate the risk.

After witnessing the diversification effects of Bitcoin and CTAs, we proceed, by investigating, if they can produce alpha. Regressing Bitcoin returns against S&P500 returns, we evidenced a statistical significant alpha at 5% significance level of 9.88% with a beta of 2.85, while CTAs exhibited zero alpha with nearly zero beta, which highlights the near absence of systematic risk. Bitcoin also outperformed BofA Merrill Lynch US Corp Master by 11.9% at a 95% confidence interval, with CTAs exhibiting zero alpha with a beta of 0.27. Using the 4-factor model, Bitcoin exhibited alpha of 8% at 10% significance level, contrary to CTAs, which exhibited zero alpha. Bitcoin constituted a good source of alpha over the examined period, and CTAs, despite failing to deliver performance, proved to be a good risk diversifier.

From a portfolio construction perspective, both Bitcoin and CTAs individually and combined, enhance risk-adjusted performance and can deliver uncorrelated alpha. As both markets are machine driven, liquidity is typically intraday or daily available, thus should contribute to an allocation decision of a limited part of the overall investment portfolio for long only equity and bond investors for return enhancement and diversification. Stone Mountain Capital is mandated from bitcoin managers pursuing long only, delta one, tracker, and actively managed and hedged cryptocurrency strategies and CTAs pursuing broadly diversified, equity, bond, energy, commodity, sector, country and volatility strategies.