

Crypto Market Alpha Strategies

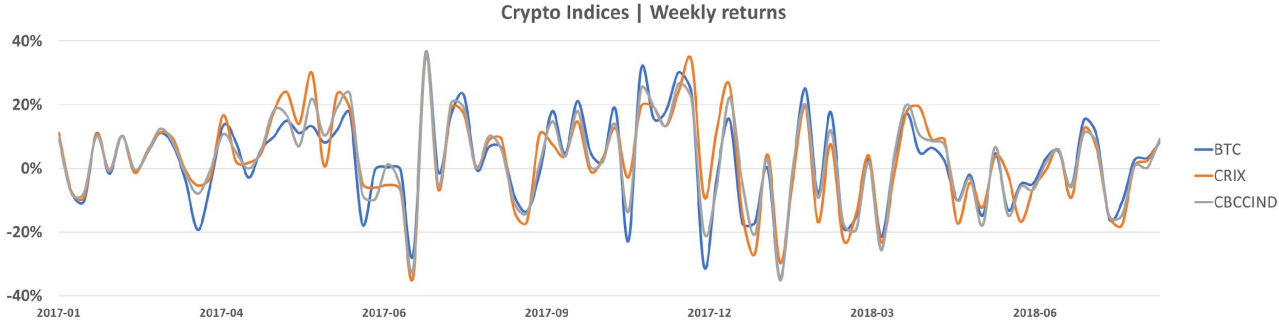
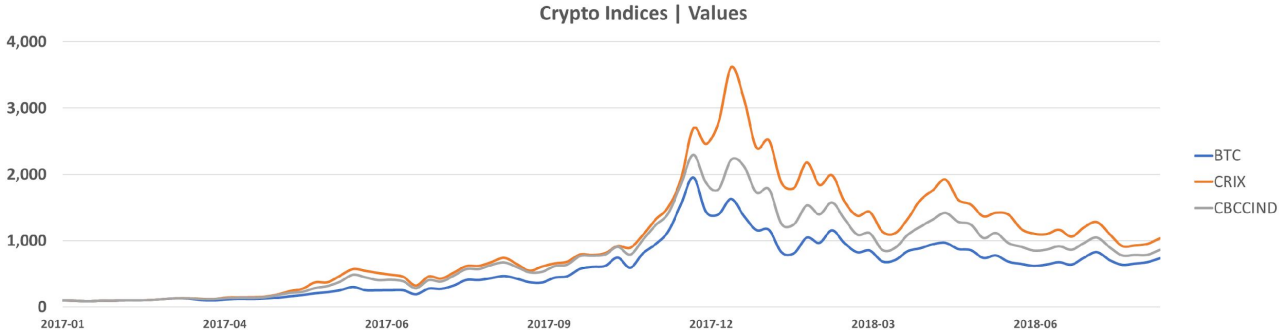
October 2018

1. A few concepts

Beta – overview

- Beta:
 - Part of a strategy which moves the same way with a market benchmark.
 - Benchmarks include: BTC, Market indices, ETH.
- Beta strategy: a strategy which mainly moves with the market.
 - Buy and hold BTC or a basket of coins.
 - Rebalance according to a market index formula (essentially market-cap-weighted basket with cap/floor).
- Properties:
 - Provide passive standard exposure to the market but cannot “beat the market” by construction.
 - Can do a bit better with some “smart beta” twist.

Beta – indices



CRIX: CRYPTO Index [3]
CBCCIND: Coinbase Index [4]

Beta – performance analysis (1)

- From 01/01/2017-31/12/2017

Directional correlation*	BTC	CRIX	CBCCIND
BTC	1	0.97	0.99
CRIX	0.97	1	0.99
CBCCIND	0.99	0.99	1

Number of divergent weeks**	BTC	CRIX	CBCCIND
BTC	0	6	2
CRIX	6	0	4
CBCCIND	2	4	0

Common statistics	BTC	CRIX	CBCCIND
Return	1,296%	2,683%	1,678%
Volatility	101%	95%	95%
Annualized Sharpe	2.6	3.5	3.0
Max Drawdown	36%	44%	42%

*Directional correlation (or sign correlation) is the correlation between the sign of the series. Mathematically: if we denote the standard correlation $\rho(X, Y) = \frac{\text{cov}(X, Y)}{\sqrt{\text{var}(X)}\sqrt{\text{var}(Y)}}$ then the directional correlation is defined as: $\rho^d(X, Y) :=$

$\sin\left(\frac{\pi}{2} \times \rho(\text{sign}(X), \text{sign}(Y))\right)$. In this slide we compute the directional correlation matrix between the weekly returns of the indices in question. See [2] for a more detailed discussion.

**Number of divergent weeks is the number of weekly returns which have opposite signs, i.e. when one index returns positively and the other returns negatively.

Beta – performance analysis (2)

- From 01/01/2018-02/09/2018

Directional correlation	BTC	CRIX	CBCCIND
BTC	1	0.99	0.99
CRIX	0.99	1	0.99
CBCCIND	0.99	0.99	1

Number of divergent weeks	BTC	CRIX	CBCCIND
BTC	0	2	1
CRIX	2	0	3
CBCCIND	1	3	0

Common statistics	BTC	CRIX	CBCCIND
Return	-47%	-63%	-51%
Volatility	93%	100%	96%
Annualized Sharpe	-0.7	-1.0	-0.7
Max Drawdown	70%	69%	76%

Beta – take away

- Concept taken from traditional finance but unsuitable to crypto market due to high correlations and concentration in BTC.
- Delivers limited diversification benefits.
- High drawdown and long periods of negative performance means entry / exit timing could be critical (what's the point of being passive?).
- “Don't put all your eggs in one basket” but so far no basket is different !

Alpha – overview

- Alpha:
 - Part of a strategy which moves in an uncorrelated way with a market benchmark.
 - Also means the “secret sauce” of a trader who delivers positive returns regardless of the market conditions.
- Alpha strategy: a strategy with weak correlation to the market.
 - Buy and hold BTC is not an alpha strategy.
 - An active trading strategy which places the right bet at the right time is an alpha strategy.
- Properties:
 - A “good” alpha strategy is expected to “beat the market”.
 - But challenging to construct one.

Alpha – sustainable vs flash

- Sustainable alpha:
 - Captures certain market dynamics which likely to persist in the long run.
 - These dynamics may come from the own nature of the market or some lasting economic relationships.
 - Hence they tend to happen over and over again.
- Flash alpha:
 - Market opportunities or anomalies which stay valid in a relatively short time frame.
 - Can be a zero-sum game: traders share the piece of cake until it's no longer there.
- Different types of alpha, neither is absolutely better or worse.

2. Alpha strategies

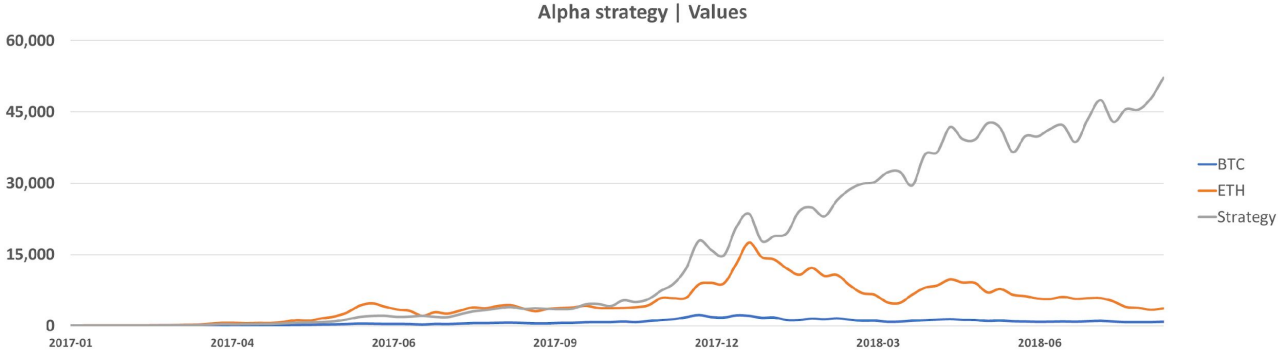
Why Alpha strategies?

- Crypto market has specific challenges and is very different in nature from other mainstream markets. See [1] for more details.
- Investors' wish-list include:
 - High returns, low drawdown, short periods of negative performance.
 - Stronger than the usual benchmarks: USD, BTC and ETH.
- Passive investing or beta strategies seem to be a wrong way to go.
- Alpha strategies is where one should focus effort on.

A toy alpha strategy

- The strategy trades BTC, ETH and USD only.
- It dynamically places capital on either BTC, ETH or USD. depending on which one has stronger recent performance.
- It can enter long position or short position.
- Fully algorithmic (i.e. no discretion involved).

Performance analysis (1)



Performance analysis (2)

- From 01/01/2017-31/12/2017

Directional correlation	BTC	ETH	Strategy
BTC	1	0.77	0.61
ETH	0.77	1	0.84
Strategy	0.61	0.84	1

Number of divergent weeks	BTC	ETH	Strategy
BTC	0	17	16
ETH	17	0	17
Strategy	16	17	0

Common statistics	BTC	ETH	Strategy
Return	1,296%	8,824%	14,741%
Volatility	101%	131%	115%
Annualized Sharpe	2.6	3.4	4.3
Max Drawdown	36%	60%	24%

Performance analysis (3)

- From 01/01/2018-02/09/2018

Directional correlation	BTC	ETH	Strategy
BTC	1	0.95*	0.57
ETH	0.95	1	0.57
Strategy	0.57	0.57	1

Number of divergent weeks	BTC	ETH	Strategy
BTC	0	8	11
ETH	8	0	15
Strategy	11	15	0

Common statistics	BTC	ETH	Strategy
Return	-47%	-58%	251%
Volatility	93%	114%	77%
Annualized Sharpe	-0.7	-0.7	1.6
Max Drawdown	70%	81%	29%

*Altcoins (here ETH) are known to have higher correlation with BTC when they mature. See [2] for more details.

Summary

- Crypto market is new yet fundamentally different.
- Usual indices or beta strategies provide unsatisfactory performance characteristics.
- Alpha strategies are needed in order to deliver desired results.
- There is room for innovation in the search for Alpha strategies:
 - How to identify sustainable sources of alpha.
 - How to construct uncorrelated portfolio in a very high correlation environment.
 - How to outperform several market benchmarks.
 - Etc.

Thanks !

References

- [1] Crypto market, Some challenges. [stratosphère](#) presentation.
- [2] Crypto market, A technical study. [stratosphère](#) presentation (internal).
- [3] <https://data.bloomberglp.com/professional/sites/10/BGCI-Factsheet-9-4-18-WTP.pdf>
- [4] <http://thecrix.de/>
- [5] <https://am.coinbase.com/documents/cbi-methodology.pdf>; <https://fred.stlouisfed.org/series/CBCCIND>
- [6] <https://medium.com/radicle/how-has-the-bloomberg-galaxy-crypto-index-bgci-stacked-up-against-the-rad-30-crypto-composite-so-259487460197>