Perpetual Futures Spread Strategy

Attractive Returns with Lower Risk in Crypto Markets

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Overview

- Crypto markets have taken off in a major way over the last several years - total value of the markets topped $2.0 trillion for the first time this year
- The problem for institutional investors is the significant volatility - price swings in excess of 50% in a year are not uncommon
- Perpetual futures contracts, with prices tethered by formula to the underlying spot price, provide an opportunity to execute a spread trading strategy with attractive returns at significantly less volatility
- Backtesting indicates annualized returns in excess of 40% with a maximum weekly drawdown of less than 1%
- Seeking an initial investment of $10 million and believe in excess of $100 million can be deployed on an ongoing basis at similar returns
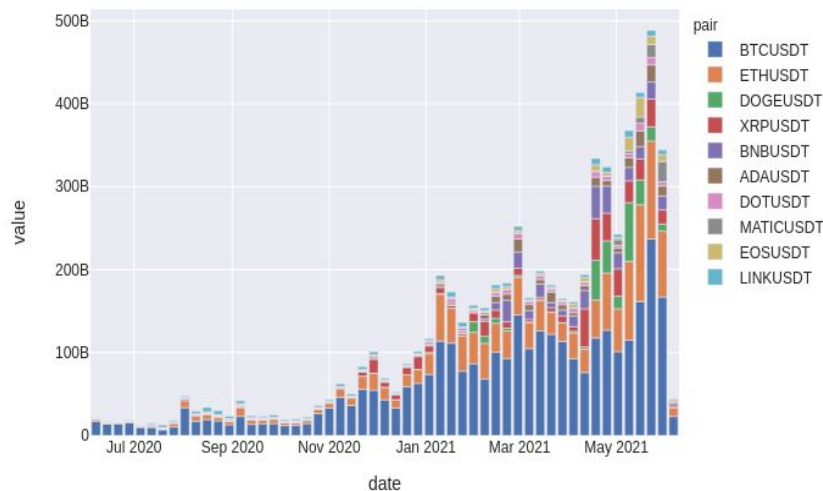
Agenda

- Perpetual Futures Contracts
- Strategy Mechanics
- Returns
- Risks and Mitigation
- Future Enhancements

Perpetual Futures Contracts

- Similar to traditional futures contract, except no expiration date - no need to roll
- Over $100 billion average daily volume year to date
- Binance is largest exchange - weekly volumes on Binance alone over $100 billion year to date
- Exchanges not registered in U.S. - have to trade from outside of U.S.
- Funding rate mechanism based on spread between futures price and spot price keeps futures price tethered to spot
  - Longs pay shorts in bull market
- Up to 125x non-interest bearing leverage

Weekly Dollar Volume Top 10 Perpetual Futures Contracts on Binance

pair
- BTCUSDT
- ETHUSDT
- DOGEUSDT
- XRPUSDT
- BNBUSDT
- ADAUSDT
- DOTUSDT
- MATICUSDT
- EOSUSDT
- LINKUSDT

Funding Rate

- Funding rates set in advance every 8 hours
- Paid based on notional value outstanding at the time of funding
- Individual tokens have periods where the funding rate is not attractive enough to open profitable positions
- Funding rates across tokens are highly correlated, but uncorrelated enough to provide consistent investment opportunities
- The chart on the right show the average rate per 8 hours on a daily basis.
- Funding rate of 0.1% per 8 hours ~ 100% p.a.

Average Funding Rate - Perpetual Futures on Biance
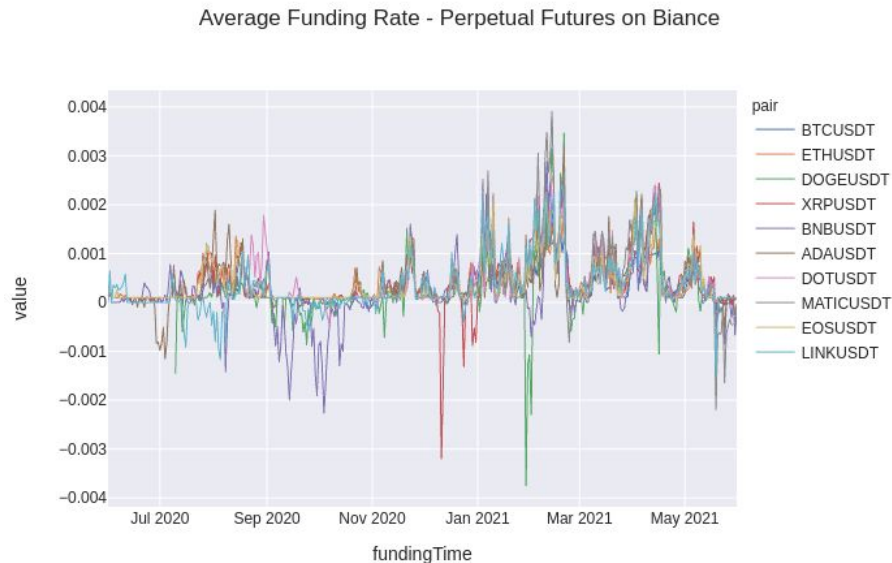
Strategy Mechanics

- Monitor spread between perpetual futures price and spot price on an hourly basis across portfolio tokens
  - Backtesting on top ten tokens on Binance exchange
- If spread > 0.0015, open perpetual futures position to receive funding rate and with corresponding position in underlying asset to hedge directional risk
  - **Virtually zero directional risk**
- Close positions when spread reverts to < 0.0002
- Limited leverage of 5.0x on perpetual futures contracts, resulting in total leverage of 1.7x
- Monitor margin levels of positions on an hourly basis and rebalance as necessary to avoid margin calls
- Profits primarily come from receipt of funding rate payments, but also to a lesser extent from changes in the spread, offsetting transaction costs

Illustrative Strategy Run

- This is an illustrative run of the strategy on the BTCUSDT perpetuals future contract with a capital amount of $1.0 million
- Red dots are opening or rebalancing of positions that are short the perpetual future - green dots are closing positions
- Bottom chart shows composition of profits and successfully capturing funding rate while offsetting transaction costs with spread profits
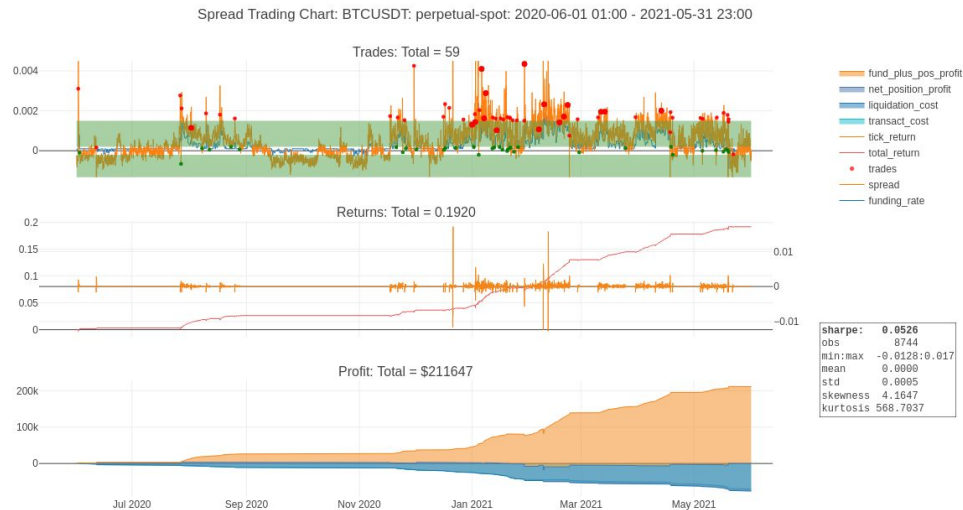
Returns

- Run strategy for each of top 10 tokens with position sizes of equal weight for last year
- Returns aggregated up to monthly basis
- Total return of 46.7% over the year
- No negative monthly returns
  - Compare to max downside for individual token of 56.7%
- Sharpe ratio of 1.46
- Virtually neutral to direction of crypto price movements

Token	No. Trades	Total Return	Min. Monthly Return	Min. Monthly Crypto Return	Sharpe Ratio	Downside Beta to Crypto
BTCUSDT	59	0.192	0.000	(0.437)	0.998	0.028
ETHUSDT	111	0.273	0.001	(0.187)	1.301	0.578
DOGEUSDT	753	0.582	0.015	(0.197)	1.507	(0.680)
XRPUSDT	215	0.360	0.001	(1.107)	1.260	(0.395)
BNBUSDT	354	0.426	0.004	(0.567)	1.075	(0.525)
ADAUSDT	205	0.325	0.002	(0.190)	1.267	0.236
DOTUSDT	154	0.315	(0.000)	(0.451)	1.165	0.075
MATICUSDT	555	0.592	0.055	(0.225)	2.964	1.000
EOSUSDT	129	0.298	0.001	(0.230)	1.004	(0.527)
LINKUSDT	175	0.339	0.001	(0.456)	1.341	0.962
TOTAL	**2710**	**0.467**	**0.003**	**(0.179)**	**1.461**	**(0.001)**

Risks

- Crypto regulatory risk
- Exchanges being hacked or prices manipulated
- Specific regulatory risk related to U.S. derivatives trading regulations
  - Partial mitigation through initial due diligence, but will not be able to gain perfect insight
  - Further mitigate by trading on multiple exchanges
- Contractual provisions of perpetual futures
  - Mitigate through due diligence
- Have to trade from outside U.S.
  - Mitigate through due diligence to understand laws, regulations, costs and tax ramifications
- Extreme volatility of underlying crypto tokens may result in unhedged positions
  - Mitigate to the greatest extent possible through real time api monitoring
  - Additional due diligence of order books trading history to better quantify potential exposure

Future Enhancements

- Evaluate other exchanges and tokens for inclusion in portfolio
  - At least 5 other exchanges and 10 other tokens with potential - should be possible to improve risk-reward profile by selecting most attractive assets from the entire market
- Optimize position establishment and duration based on further analysis of individual token funding rates and spreads
  - Trading off holding position open for longer to avoid round trip transaction costs versus keeping capital at risk without actively generating positive returns
- Optimize investment size and portfolio composition based on volumes and more advanced portfolio construction methods
- Optimize hedging position sizes based on more advance hedging practices
  - Academic literature on perpetual futures suggests 1:1 is not be optimal

Contact

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