Introduction

Introduced by a faceless Satoshi Nakamoto in a 2008 whitepaper as a “Peer - to - Peer Electronic Cash System, Bitcoin and its corresponding market has since experienced multiple 80%+ crashes followed by equally dramatic recoveries and head-turning all time highs during periods of volatile price discovery. Although the Bitcoin market is still too immature in its market capitalization and lack concrete regulatory standards to be considered an independent asset class, large corporations such as MicroStrategy and Tesla, as well as some developing nations have begun seeking exposure to Bitcoin for various use cases. Considering the terminal supply of Bitcoin and the current trajectory of the Bitcoin market, it is quite likely that its corresponding markets may eventually be susceptible to large scale influence by a single entity with the largest balance sheet (ex. gold and silver). However, due to the limited liquidity of the current market - among other factors (lagging regulations, sourcing ethics (ex. Retirement funds and US companies do not want to hold Bitcoin mined from sanctioned countries or those obtained illegally) - institutional (big money, smart money) activity in this market is still low, allowing the prop and independent investors a unique opportunity period to accumulate Bitcoin ahead of further adoption*. While dollar cost averaging should be the preferred strategy for most investors who wish to take advantage of the window of opportunity, the following analysis seek to experiment with components of a more risk on strategy, with the assumption that the Bitcoin market undergoes long periods during which price is ranging and that during those periods, price action reflects the psychology of novice traders with highly leveraged positions.

Uniqueness of the Crypto Market

Things To Know

- Crypto Markets are open 24/7
- Investors have visibility to everyone's orders
- There are 3 sessions (per day UTC in 8 hour increments): Asian, European & NA (these are peak activity sessions)
- Crypto is more susceptible to higher price volatility and risk vs. the stock market
- Cryptocurrency is decentralized- they don’t rely on a central authority and aren’t directly influenced by monetary policies
    - However, changes in regulatory environments do affect market sentiment and potential for further adoption.

Data Source: FTX API_08.08.2022

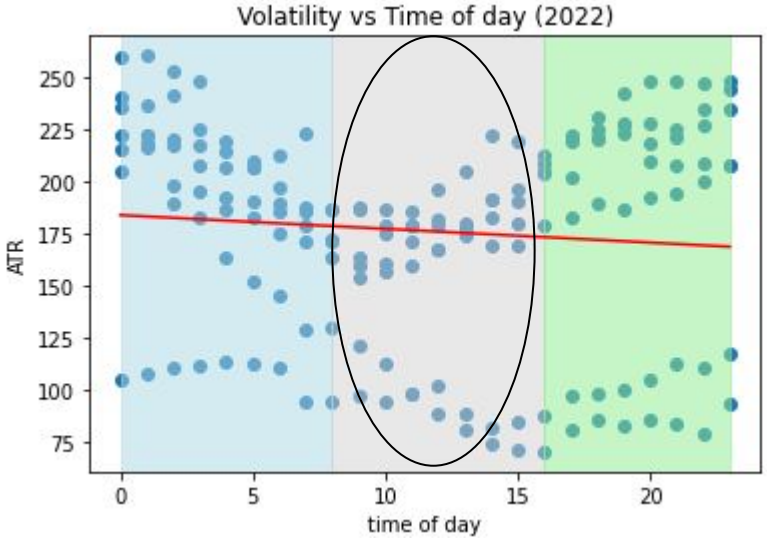
How Volatile is the Crypto Market?

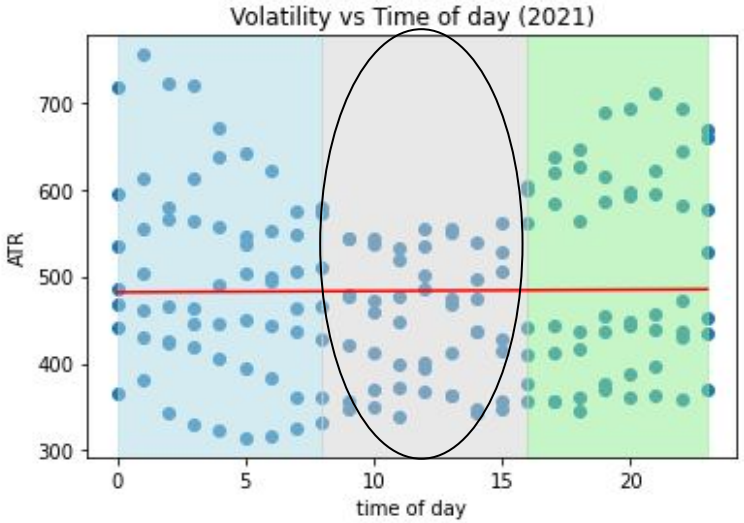
- We used Average True Range to calculate volatility- blue spikes indicate volatility
- From the graph, we can see that throughout the course of several months, crypto currency experiences multiple periods of volatility increasing an investors risk

Data Source: FTX API_08.08.2022 / Average True Range (ATR) measures volatility, taking into account any gaps in the price movement (based on 14 periods)

Are Certain Times of the Day More Volatile Than Others?

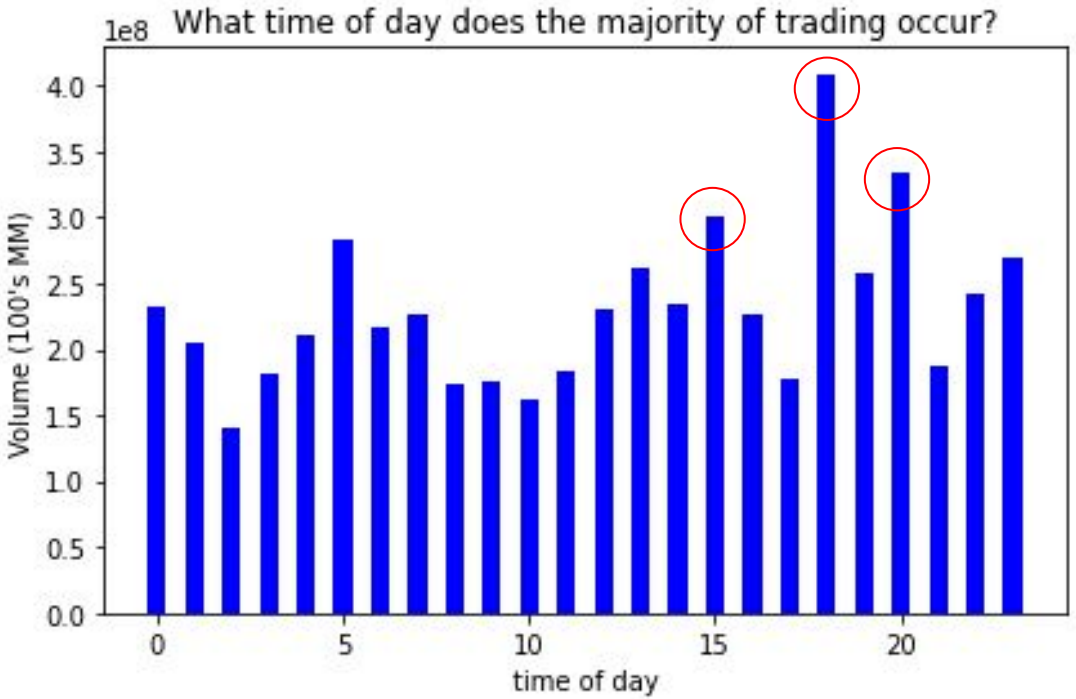
- There are 3 sessions within the crypto market: Asian (blue), European (grey), North American, Green
- Looking at our sample dataset we see that the market experiences higher volatility in the Asian and North American session.
- The European sessions experiences the least amount of volatility, which could indicate a better time of day to trade low spread strategies





Data Source: FTX API_08.08.2022 (Time Period 08.01.2022-08.08.2022 vs. 08.01.2022-08.08.2021 in UTC/ Military Hours)

Investors Want to Know- When is the Best Time of Day to Trade?



- The majority of trading is happening later in the day for investors in the North American Session
- 10pm EST has the most trades happening than any other time of day
- When trading large position sizes, segmenting orders into areas of large volume ensures

  1) the lowest probability of affecting the market with our own orders

  2) fulfillment of those orders at the lowest (or highest) average cost basis.

Data Source: FTX API_08.08.2022- UTC

Q2: Risk & Loss- Maximum Drawdown Analysis

How effective can a buy and hold strategy be when trading Bitcoin?

- Maximum drawdown analysis
  - Is the maximum observed loss the investor could or has experienced.
  - This indicator takes the last peak to the lowest point of bitcoin, before a new peak is attained.
  - It doesn't take into account the frequency of losses.
  - It's an indicator of risk over a specified time period..
- Calculations
  - bitcoin_max = df['close'].rolling(window, min_periods=1).max()
  - hourly_drawdown = df['close']/bitcoin_max-1
  - bitcoin_draw = hourly_drawdown.rolling(window, min_periods = 1).min()

Q2- Maximum Drawdown Analysis (continued)

—Visuals

- Graph 1
  - Shows example of peak and low point in hours.
- Graph 2
  - Shows the hourly drawdown and max drawdown (Total hours in one day).

—Observation

- Buy and hold strategy can be very risky in the short term following large run-ups and multiple ATHs (all time highs).
- Better to take profit while risk on or to use strategies that hedge against potentially large drawdowns.

How can we incorporate liquidation levels into a strategy?

Liquidation events strategy - a short explanation

Sunday, August 7, 2022
5:21 AM

Given the nature of BTC (and ETH) derivative pairs, we can extract a lot of information from liquidation events and levels. For one, in a ranging market, the price moves to shake out overly leveraged positions. Here, the true demand cannot absorb enough of the liquidity at these levels (true supply + additional liquidity entering the market due to liquidations etc.) and vice versa. In short, the market reacts and the price returns to the local mean and consolidates further. In trending markets, these high liquidity zones have a reverse role in the sense that the provide much needed short term liquidity for the true demand, thus the high liquidation levels attract price towards - rather than repel.

1. Use lower liquidation areas 10x and below to confirm or deny larger trends

OR

2. Use higher liquidation levels 10x and above as support and resistance for counter trend/scalp strategies

Sample “counter trend” strategy risks and limitations

1) This is a strategy that would be the most effective in ranging to locally trending markets - but not in highly trending markets.

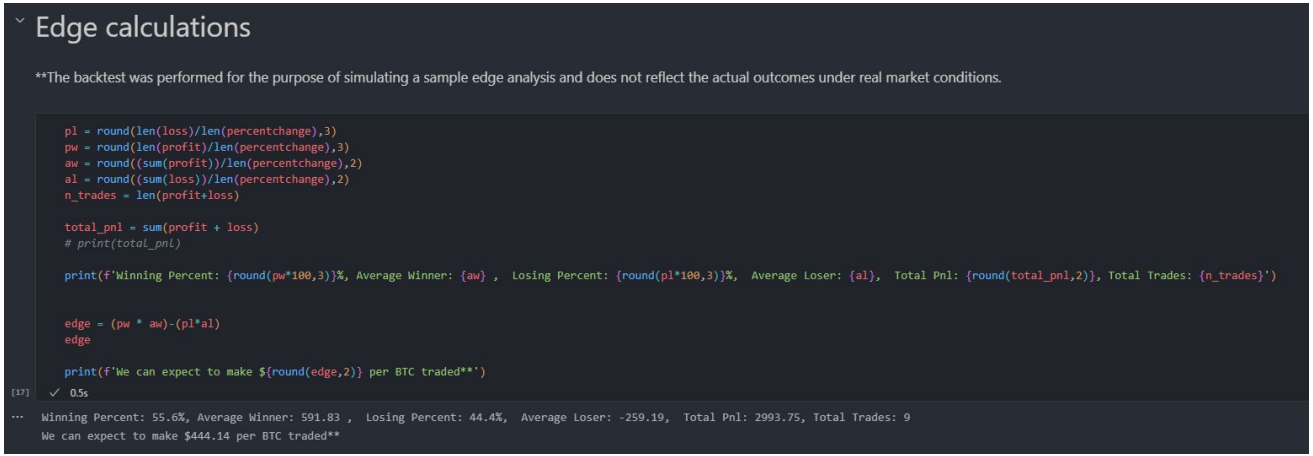
2) As with all high turnover strategies, it will be impossible to maintain a consistent alpha(edge) - since each trade utilizing this strategy will serve as another input to be analysed in the corresponding market according to the Efficient Market Hypothesis.
    a) The spread (risk/reward) for this particular strategy, even if proven effective under various market conditions, will inevitably thin and likely invert* over time. Smaller, staggered entries/exits, and smaller position sizes will yield lower returns on average, but it may help in maintaining the edge over a longer timeframe.

*referring to a scenario in which a long term strategy with less risk yields more over this short term strategy

Backtest results

-What is our edge?

- E = (PW X AW) - (PL X AL)
- E = Expectation or Edge
- PW = Winning Percent
- AW = Average Winner
- PL = Losing Percent
- AL = Average Loser



Other risks or opportunities to be explored

- Arbitrage
  - Low risk low reward
  - Slippages and frontrunning
- Other potential risks
  - Counterparty exposure
    - Exchanges
      - Ethical concerns: Exchanges that offer derivatives, mainly highly leveraged perpetual products, likely benefit from customer liquidations because a small portion of each position margin (0.05% for BTC pairs) is transferred to the respective “insurance funds” by the liquidation engines to subsidize losses due to slippages during large liquidations. It is unclear how the insurance funds are treated on the exchanges’ balance sheets, or whether these entities can or do borrow against their customers’ insurance funds in some form.
- Additional opportunities for optimization
  - Various hedging methods through a combination of spot and corresponding derivatives products
  - Position sizing
  - Laddering entries and profits
  - Other indicators (consensus = increased probability of significant price movement)