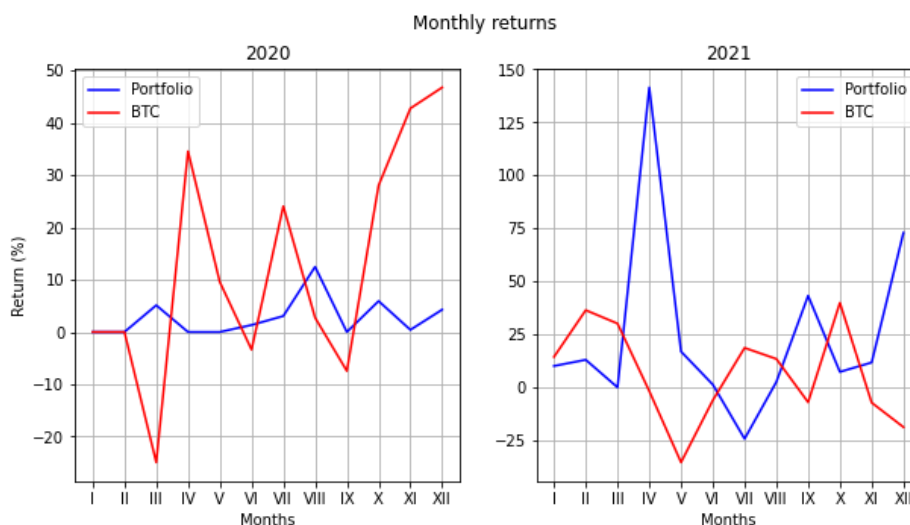


PORTFOLIO OVERVIEW

Here I present my journey into trading.



BTC YTD return \approx - 52.92 %
S&P YTD return \approx - 16.17 %
Portfolio YTD return \approx - 54.42 %

As entry barriers in traditional markets, in terms of fees mainly, are considerably high compared to cryptos, and they started to boom, this was my first contact with the markets as a whole.

In order to consider reliable opening positions, the first few ideas were focused on trying to find valuation models “explaining” crypto movement. Stock-to-flow model, based on mining, reserves and technical properties on how PoW consensus blockchains work, appear to be the most reliable models on the field but, overall, trying to apply “mainstream” traditional finance concepts, such as log-normal distributions, fundamental analysis, taking into account the extremely high volatilities, weren’t the best options to consider when opening positions.

For that reason, taking advantage of the clear bull market going on in crypto, the investment thesis was based on:

- Network effects.
- Correlations.
- Statistics.
- Arbitrage opportunities.
- “Exploring” option trading.

First half year of the trading mindset was focused on learning the fundamentals and ecosystem and ensuring trading movements by common knowledge cryptocurrency basics:

BTC halving, volume and crypto exchange reserves

This statement considered:

- BTC halving: BTC rewards reduced from 12.5 BTC per block to 6.5, historically it lead to big jumps and inflows into the market.
- COVID restrictions (Mar 12, 2020: - 42% dump in a daily candle). Oversold levels regarding mining profitability.
- Trading volumes rising to previous halving levels.
- Crypto miners network expanding as it becomes harder to mine BTC. This leads miners to wait in order to sell at profitable and reasonable prices in terms of cost opportunity.
- Web 3.0 exploding, and as a consequence creates a new wave of investors interested in the technology. These investors enter the market with the notions that are derivative of past halving returns and a lot of consumption of social media.

Correlation

This statement considered:

- High correlation between almost all the market with the BTC. [\[python link\]](#)
- Money flowing cycle from major coins to minor coins that are seeking for higher returns as more and more coins are reaching price exhaustion.

Korean Premium Index

South Korea is a very closed regulated market where foreign investors are scarce. Korean Premium Index has been a good indicator for BTC bull markets. Willingness to pay more in Korean crypto exchanges tend to show buying pressures in the crypto market worldwide.



BTC exchange reserves (left) and Korean Premium Index (right)

“VC approach” and ICOs

With a lack of a proper way to accurately value crypto by fundamentals, let me take an approach when selecting coins as if it was startup investing. The main points in order to open positions were:

- The problema that the project is solving
- Team
- Project execution
- Partners
- Token economics (Is the coin inflationary?)

On the other hand, together with this approach, I considered opening positions in those coins launching ICOs (Initial Coin Offering) or recently launched.

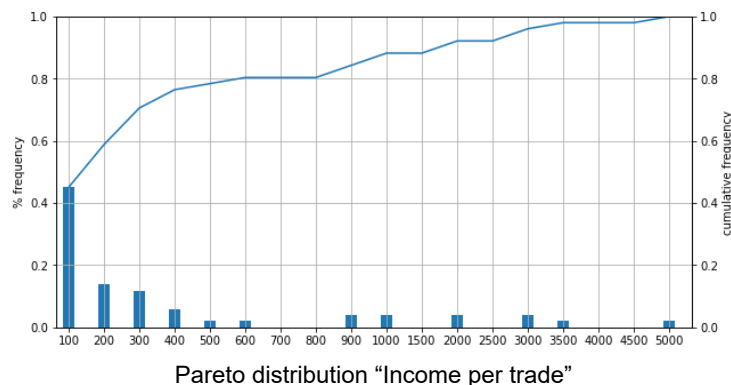
Example cases of success:

- Ethereum (ETH): Major (and still main) smart contract blockchain network. (+1400% return)
- The Graph (GRT): Indexing protocol organizing and giving context to all data one can extract from blockchain. (Regarding LINK pump and the technology implied in the coin, GRT appeared to be a safe bet as it plays an important role LINK was not covering) (+400% return)

Example cases of failure:

- NTFY: NFT fractionalization. Poor team execution, heavy competition. (-74% return)
- TraderJoe (JOE): Major decentralized crypto exchange in AVAX chain. Amongst highest daily revenue winners at BTC peaks (cash flow generators) and at the same time, “promising” technology in order to protect investors from front runners. (-80% return. Bought after the first major pump when it was released + decentralized crypto exchanges historically giving “poor” returns)

At the end of the day, it can be considered one of the poorest approaches taken into consideration when opening positions. Returns, appear to look like Pareto distribution models.



Amongst all the positions taken with this method, 20% of them reported 80% of return.

Investment conclusions for 2020

Lack of fundamentals for opening positions.
Too much subjective considerations.
No risk management.

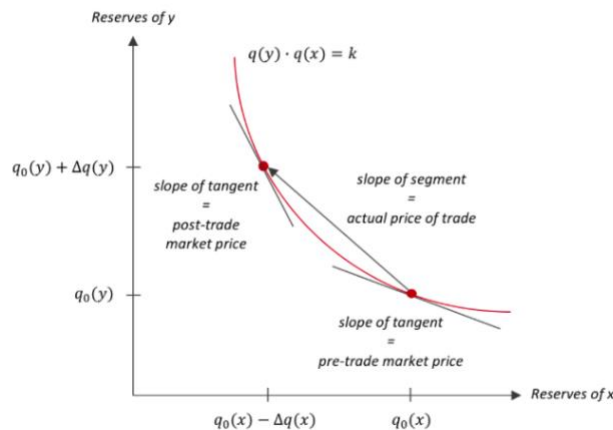
Ending 2020/2021

Knowing the basics and being in contact with the market, the strategy was focused now on going through the blockchain fundamentals and taking advantage of all the arbitrages I was capable to handle with due its recent and constantly evolving technology.

Arbitrages

Approach n° 1. Price discrepancies

“First generation” Automated Market Makers (AMM) are based on $x \cdot y = K$ principle (Constant product function model). Introduced by Uniswap, the idea is to fund a “pool”, where the reserves of the trading pairs remain constant and the execution of trades happen autonomously.



Example price movement when buying X token

To summarize, it runs as it follows:

Example:

Trading pair: ETH/WBTC

Price at pool creation: 2700 \$/ETH || 79500\$/WBTC

Initial pool reserves: 86000 ETH/2700WBTC

A trader willing to sell 5 ETH will receive:

Initial price pool ratio: 2700 WBTC/86000 ETH = 0,03195

Trader will add 5 ETH in exchange for Δy WBTC

$$x \cdot y = k$$
$$(x + \Delta x) \cdot (y - \Delta y) = k = x \cdot y$$

$$(86000 + 5) \cdot (2700 - \Delta y) = k = 86000 \cdot 2700$$

$$\Delta y = 0,157 \text{ WBTC}$$

At the end of the trade the liquidity pool will have 86005 ETH and 2699,84 WBTC. Price ratios will change to:

$$T_0: 2700 \text{ WBTC}/86000 \text{ ETH} = 0,031395$$

$$T_1: 2699,84 \text{ WBTC}/86005 \text{ ETH} = 0,031391$$

As shown, price ratios (slope $\frac{\partial y}{\partial x}$ of the function curve) change as trades happens, thus, causing price mismatches with other pools or centralized exchanges as of, for every trade, you are mathematically spending more (or gaining less if you are selling) for the same amount of tokens.

ETH sold	ETH reserves (Δ ETH \uparrow)	WBTC reserves (Δ WBTC \downarrow)	Price ratio	K (const.)
2,5	86002,5	2699,92	0,031393	232200000
5	86005	2699,84	0,031391	232200000
3100	89100	2606,06	0,029248	232200000
4400	90400	2568,58	0,028413	232200000
5700	91700	2532,17	0,027613	232200000
7000	93000	2496,77	0,026847	232200000
8300	94300	2462,35	0,026111	232200000
9600	95600	2428,87	0,025406	232200000
10900	96900	2396,28	0,024729	232200000

Reserves and price changes per X ETH tokens sold

This characteristic makes AMM to be dependent on arbitrageurs to balance prices, by adding or subtracting tokens (this cause what is commonly known as impermanent loss).

Thoughts on price pool arbitrage:

- Worked for BEP20 new AMMs (based mostly on meme coins and low volumes) where they have low gas fees and they are based on constant product function.
- Impossible to arb in ERC20 based tokens, gas fees too high.
- The amount of capital required is too high in comparison with the initial investment.
- Risk of frontrunning as I was working with very basic models.
- Price oracles, smart order routing and new approaches to AMM autonomous models, erase the dependence on arbitrage as it harms investors.

Approach n° 2. Frontrunning [\[python link\]](#)

Easiness accessing public blockchain data provided the opportunity to get into front run strategies.

Frontrunning strategies would cover any strategy in which a trader can read trades before happening and taking advantage from that. The strategy here was focused purely on frontrunning ICOs.

When AMMs create pools for new trading pairs, a set of rules have to be written in a smart contract in order to establish the trading basis for the new pair. When adding a pair into an AMM, two main functions have to be used:

- Router functions: Defining basic requirement checks in order to exchange tokens, add liquidity or remove liquidity from a pool.

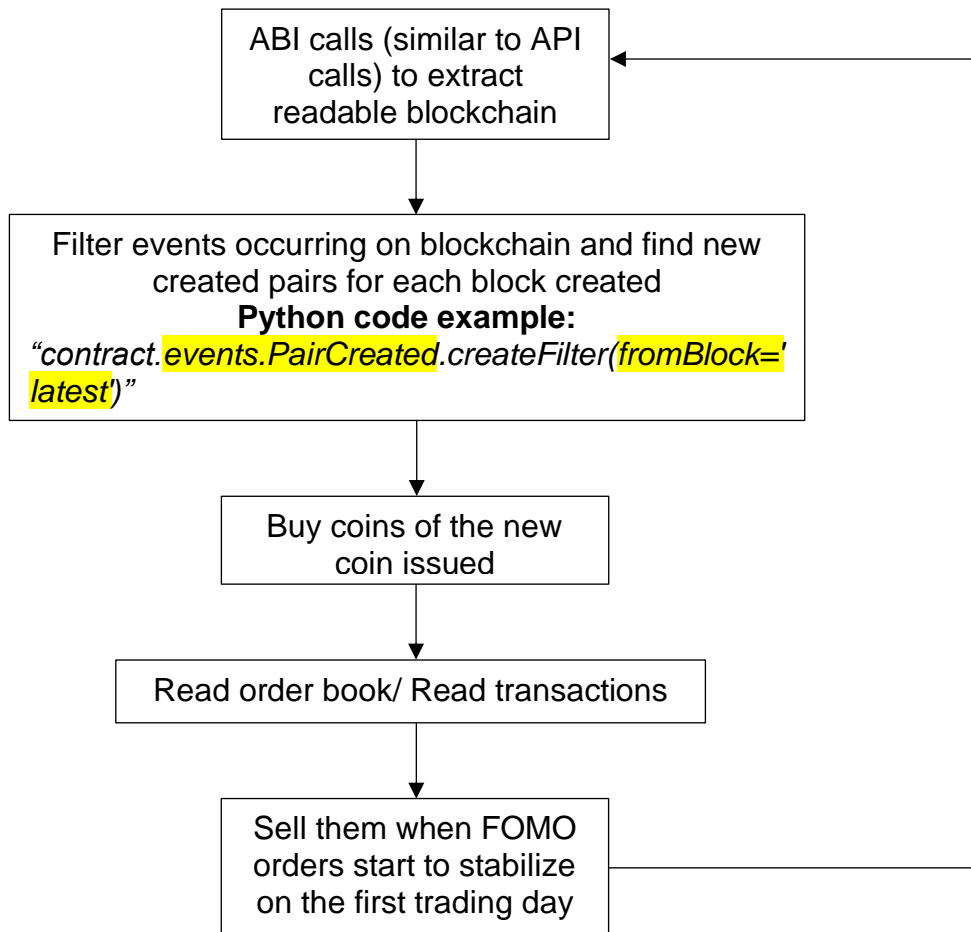
(Uniswap router function hash: 0x7a250d5630B4cF539739dF2C5dAcb4c659F2488D)

- Factory functions: Defining new exchange contracts for each new pair.

The filtering of this functions can allow a trader to be amongst the first users to have information on which coins are going to be released into a crypto exchange.

ICO frontrunning into practice

Blockchains run via opcodes, “comparable” to bit processing data in a computer. The idea is to convert opcodes into readable data where, from the exchange smart contracts, we can filter the events occurring at every instant to see when a new token pool is going to be created.

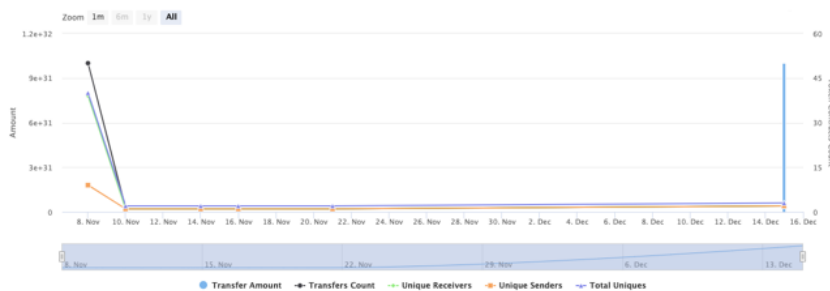


As any arbitrage opportunity, the more people that know about the arb, the more an opportunity converge becomes evident, making it disappear. Running the algorithm above it is pretty easy and there is a lot information on the internet regarding code.

Problems with this approach:

Rug pulls:

Handling this frontrunning approach has almost the same risk-return as the ICOs approach after mentioned. ERC20 ICOs are more reliable, however, gas fees are unaffordable. On the other side, BEP20 ICOs are cheaper, but, more than 90% of them are scams.



Rug pull example graphic. Liquidity added in a pool, trades happening in few days and liquidity removed a month later.

Approach n° 3. Proof of stake (PoS) Arb

PoS, commonly known blockchain consensus, offers a wide range of variety of passive income returns:

- Staking: Receiving money by depositing funds in a node where you are part of the mechanism in block verification and you collect fees for that work.
- Liquidity providing: Adding funds in AMM pools and receiving fees.
- Interest arbs: Lending and borrowing crypto coins in different exchanges where there's difference in interest rates.

Approach n° 4. Statistical pair trading

This last approach it is a very well-known strategy based on mean reversion between two cointegrated pairs.

Statistical pair trading strategy relies on finding a stationary trend, mean-reverting, where a future outcome can be “predicted”. The fundamentals relying on this statement are:

Let's have two data sets X and Y representing stock prices. Log-prices present no constant mean, nor variance, but, if we take differences (series integrated to order 1, $I(1)$) and we calculate log-returns, this ones are stationary.

In order to set if X and Y are cointegrated, if you have X and Y being $I(1)$ and, if you can build a lineal combination between them being $I(0)$ (unit roots (series being stochastic)), then there is cointegration.

By having to series cointegrated, you know they move along constantly together, plus, if we make differences between the two series you have a spread being stationary again $I(d-b)$.

This spread, allows to short and long whenever one stock is overbought and the other oversold and the contrary.

2022

Market trends started to change, high leveraged positions where taking into account when placing orders with statistical pair trading and, Luna plunge, threatened the margins taken. It was unsustainable to be so leveraged with that high volatility and decided to rotate portfolio into traditional markets.

In order to cover losses and self-finance the portfolio, options were taken into account.

Options [\[python link\]](#)

First positions involved covered calls and protecting puts for positions I was interested to invest in.

Investment conclusions for 2020

Risk management it is quite a serious problem. VaR or ES calculation can be done. Not considered for cryptocurrencies.

Some strategies rely too much on past events.

Too much leveraged taken plus huge losses for unexpected events. (Luna fall for example)

Lack of a more balanced portfolio into long term investments.