March 2024

The Forces Moving Bitcoin

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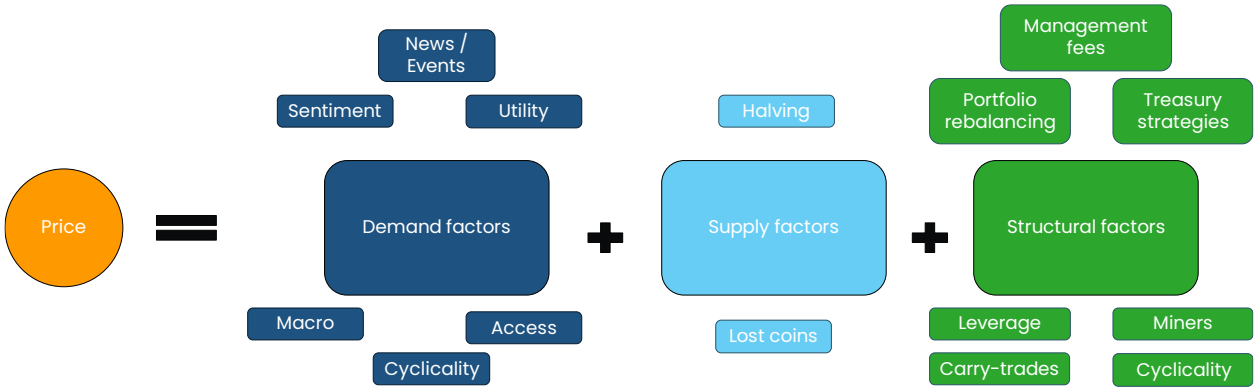
Report summary

This report aims to add to the debate on how bitcoin's price discovery can be modeled and predicted. Where most models, like the Stock2flow model, take a top-down approach, we go in the opposite direction, presenting more of a bottom-up approach.

Bitcoin's price discovery stems from multiple sources. We divide them into demand, supply, and structural factors. In our model, demand is the willingness to buy or hold bitcoin at a given price at a given point in time, while supply is the number of bitcoin available to hold or buy at a given point in time. Structural factors are automatic responses triggered by initial demand decisions. You can think of structural factors as forced buy or sell actions. For example, consider portfolio rebalancing: should bitcoin outperform other assets in your portfolio, rebalancing mandates the sale of bitcoin for each asset in the portfolio to have the correct weight.

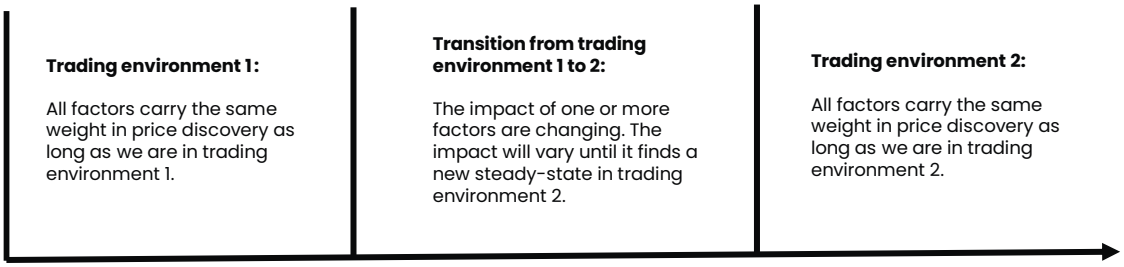
We identify six demand factors, two supply factors, and seven structural factors which we believe are the most important for bitcoin's price discovery. The factors are illustrated in the figure below.

Figure 1 – The most important factors determining bitcoin's price discovery.



Predicting the 15 factors is not enough to predict bitcoin's price discovery, as different factors carry different weights over time. Still, there will be persistence in a factor's weight in a given trading environment. We define a given trading environment as a regime where factors carry stable weight. With irregularity, that trading environment will break, leading to a transition period where one or more weights vary before finding a new steady state in a new trading environment.

Figure 2 – The transition from one trading environment to another.

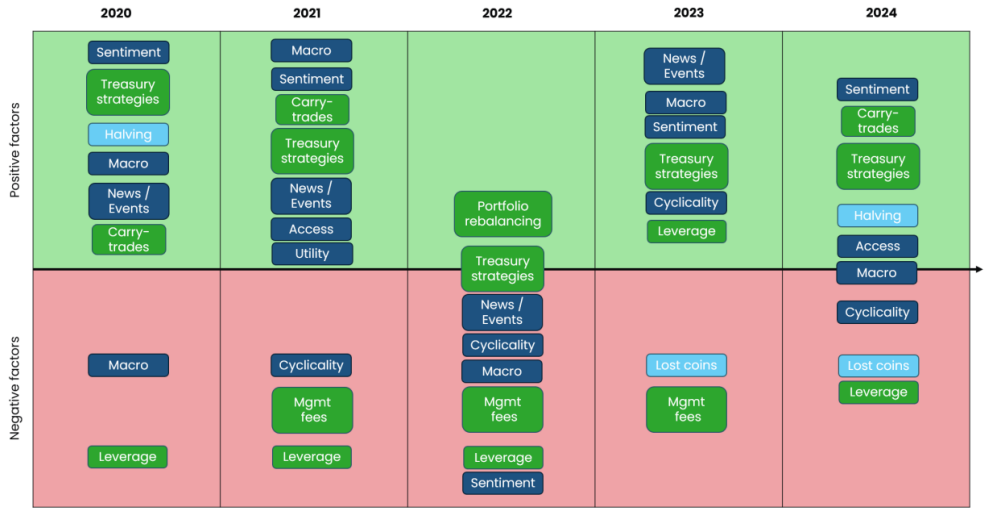


Identifying factors that cause bitcoin to move, both in the short term and in the long term, is far more than an intellectual exercise. Many market participants struggle to see the forest for the trees, overemphasizing various niches or subfactors in the market. Intentional or not, such analysis emphasizes certain subfactors while ignoring the rest of the behemoth that causes bitcoin to move.

Weighing factors and prioritizing the ones of material importance is always essential to form a directional opinion on the market. However, regimes change. A small portion of strong weighted factors may cause today's price action, but it might have spillover effects leading to transitional phases where other factors become dominant. Understanding this dynamic is key to performing as time progresses.

In the last chapter of this report, we apply the framework in practice. The figure below shows the dominating factors and their directional impact on a yearly basis since 2020.

Figure 3 – Dominant factors and their directional impact between 2020 and 2024.



Contents

1 Introduction

In this report, we present a framework that aims to describe what determines bitcoin's price discovery. The framework describes which factors are relevant for bitcoin's price discovery, the interplay between them, and how their importance varies over time.

Bitcoin's future price is impossible to determine with certainty. Acknowledging this fact, we in no shape or form claim that our framework is the final answer to bitcoin's price discovery. Still, the framework should be useful and interesting, given that it provides an orderly breakdown of the forces moving bitcoin's price.

The report is divided into three parts. The next chapter gives a brief explanation of Bitcoin, focusing on the most important factor in terms of price discovery – that Bitcoin is scarce. The following part presents the framework and explains how the factors affect bitcoin's price, while the last part discusses how you can deploy the framework in practical trading.

2 Bitcoin is scarce

Bitcoin is the first successful attempt at creating a decentralized currency. Unlike traditional currencies, it operates without a central authority or government oversight. Instead, Bitcoin relies on a peer-to-peer network to process transactions and manage the issuance of new units.

The Bitcoin protocol governs the Bitcoin network, not because some centralized party has decided it should be that way, but rather because it's the game theoretical equilibrium. Participants in the network can try to deviate from the protocol, but everyone else, looking out for their own best interest, would disregard the deviating actor. Instead, everyone else will continue to abide by the Bitcoin protocol, because it's the rational thing to do.

A critical part of the Bitcoin protocol is the issuance of new bitcoin to secure the network's historic record, the Bitcoin blockchain. To help secure this blockchain, network participants are rewarded with newly issued bitcoin for doing the costly work of adding new blocks.

The Bitcoin protocol enforces a predetermined issuance rate of new bitcoin. The block rewards are halved every four years to make bitcoin scarce. This makes the bitcoin supply the sum of a converging series, ultimately capping the total supply at 21 million bitcoin.

Bitcoin's 21 million cap is fundamental to the value proposition through basic economic principles of supply and demand. Since there will never be more than 21 million, of which 19.5 million has already been issued, the price will go up when demand increases. This stands in stark contrast to many other assets where supply is flexible.

3 What determines bitcoin's price?

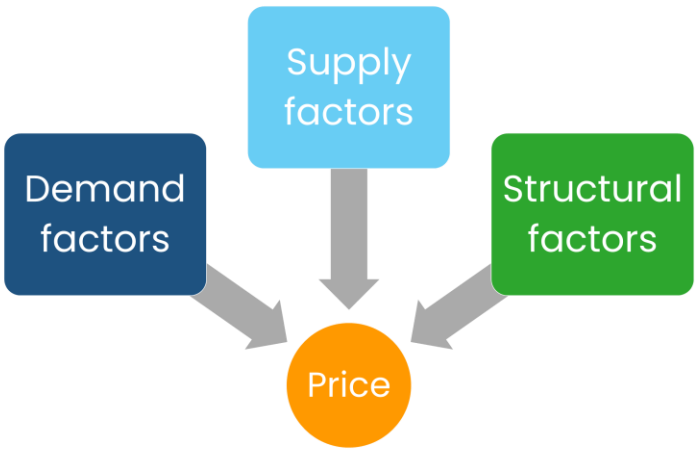
Bitcoin's price direction and momentum, both in the long and short term, are a result of a series of forces pushing and pulling the market (from here: factors). Some factors amplify directional momentum while also activating other factors, whereas other factors soften momentum.

In a framework, these factors may be identified; some may be quantified, while most factors are non-quantifiable but possible to assess, estimate, or weigh based on importance in real time.

The importance of these factors are in constant rotation. In a given period, one factor carries more weight; in a different period, another factor carries more weight. This rotation may be cyclical, market-dependent, or unique for any given period. In this section, we will scope out the most relevant factors moving bitcoin and provide a series of concrete evidence of their impact.

We present three super factors enforcing bitcoin's direction. Supply, demand, and structural effects. These super factors may be further compartmentalized into sub-factors with distinct differences and market impact.

Figure 4 – The three super factors impacting bitcoin's price

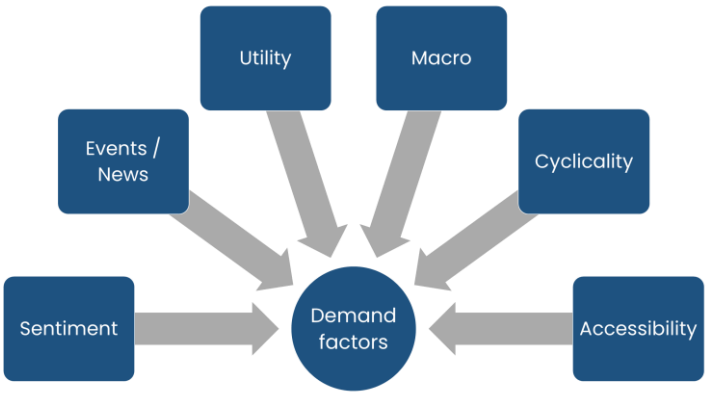


3.1 Demand factors

Bitcoin's price is a result of a historic chain of demand shocks. Some demand shocks are reactionarily enforced by supply shocks, whereas others are exogenously driven. Bitcoin's purely inelastic supply leads the demand side to dictate directional momentum, and the demand side is constantly changing.

We identify six particularly relevant demand factors nurturing both the shocks and the market's direction. These factors are sentiment, event/news, utility, macro, accessibility, and cyclicality. All of these factors are constantly at play, some in interplay with each other – and these factors represent the core of bitcoin's price path.

Figure 5 – Demand factors

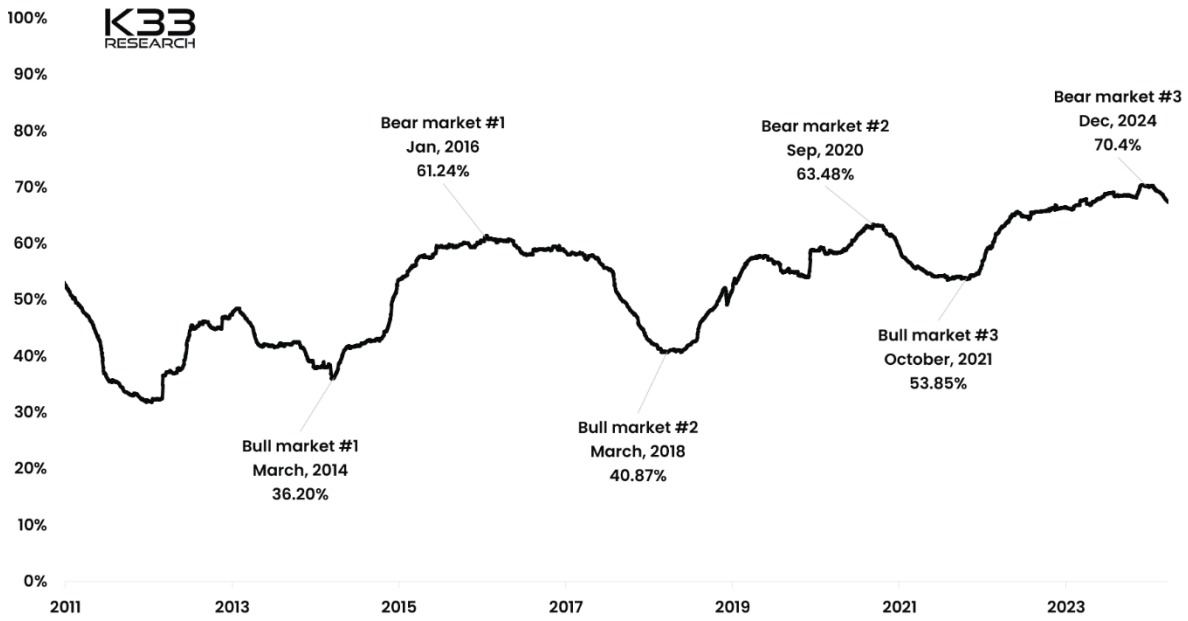


3.1.1 Sentiment

We may differentiate sentiment into three fractions: Long-term holders, institutional, and retail. Long-term holders may be assessed via on-chain data, whereas retail participation requires a common blend of website traffic, public data, sentiment aggregators, derivatives yields, and leverage. Institutional sentiment is best gauged through yields on BTC futures on CME, exposure on CME, and flows into ETFs.

Astute long-term Bitcoiners tend to accumulate when sentiment is poor and distribute when sentiment runs warm. Long-term holder patterns may be assessed through monitoring supply age cohorts, with the 1-year band tending to plateau near breakouts from past cycle all-time highs.

Figure 6 – Percentage of supply held by long-term holders

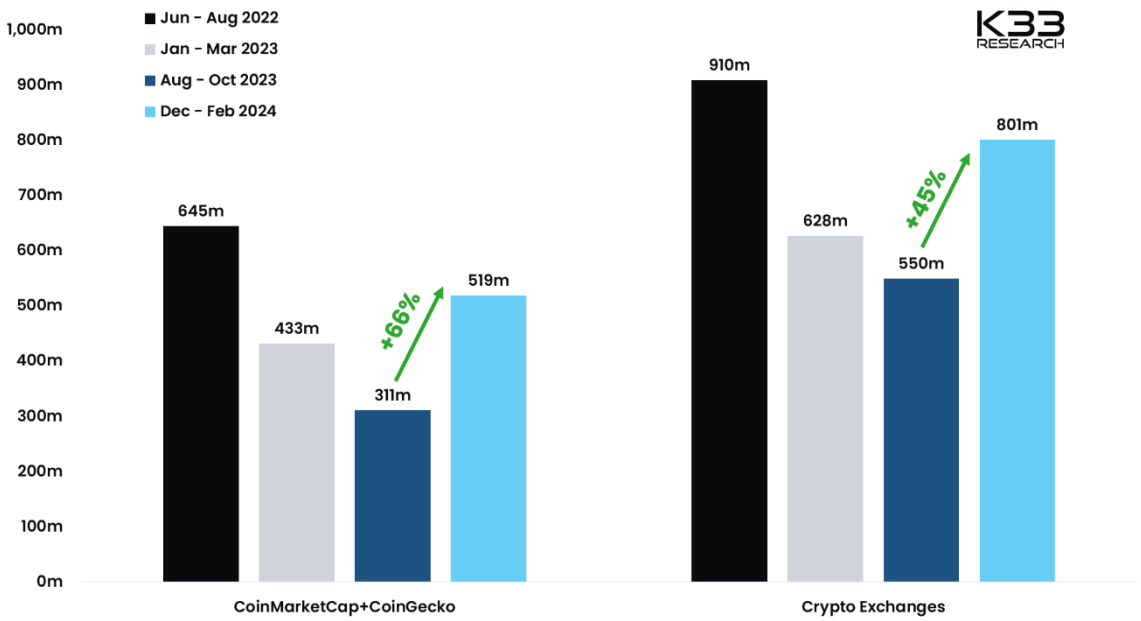


Source: Coinmetrics

New retail participants amplify direction. They buy when bitcoin rallies reach mainstream media and sell when bitcoin crashes reach mainstream media. Retail presence is challenging to quantify directly, but one may use various proxies.

One proxy to monitor retail participation is by examining website traffic to various crypto-related sources. Websites showcasing cryptocurrency prices, such as CoinMarketCap and CoinGecko, are frequently used to examine crypto market prices, both within the retail and long-term holder cohorts. A growth in this number suggests that more participants are monitoring crypto markets. Similarly, increases in crypto exchange visitor traffic are a good indicator of retail presence in the market.

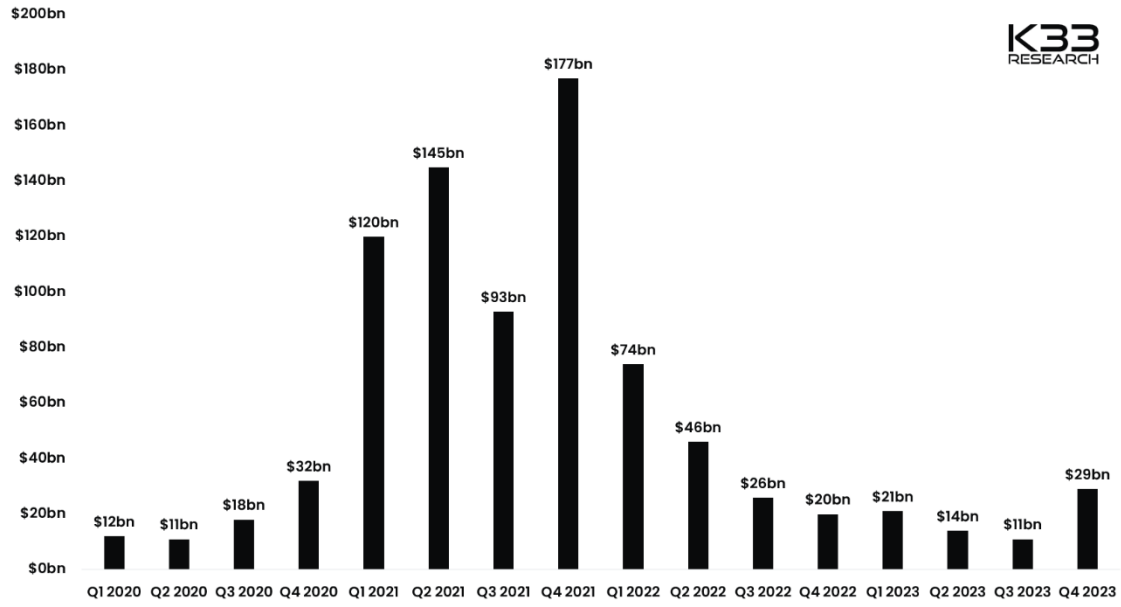
Figure 7 – Website traffic to popular crypto websites



Source: Similarweb

Alongside website traffic, Coinbase differentiates between retail and institutional volume in its quarterly financial statements. One can infer from Coinbase's reports whether retail participants have returned to the market.

Figure 8 – Quarterly retail trading volume on Coinbase

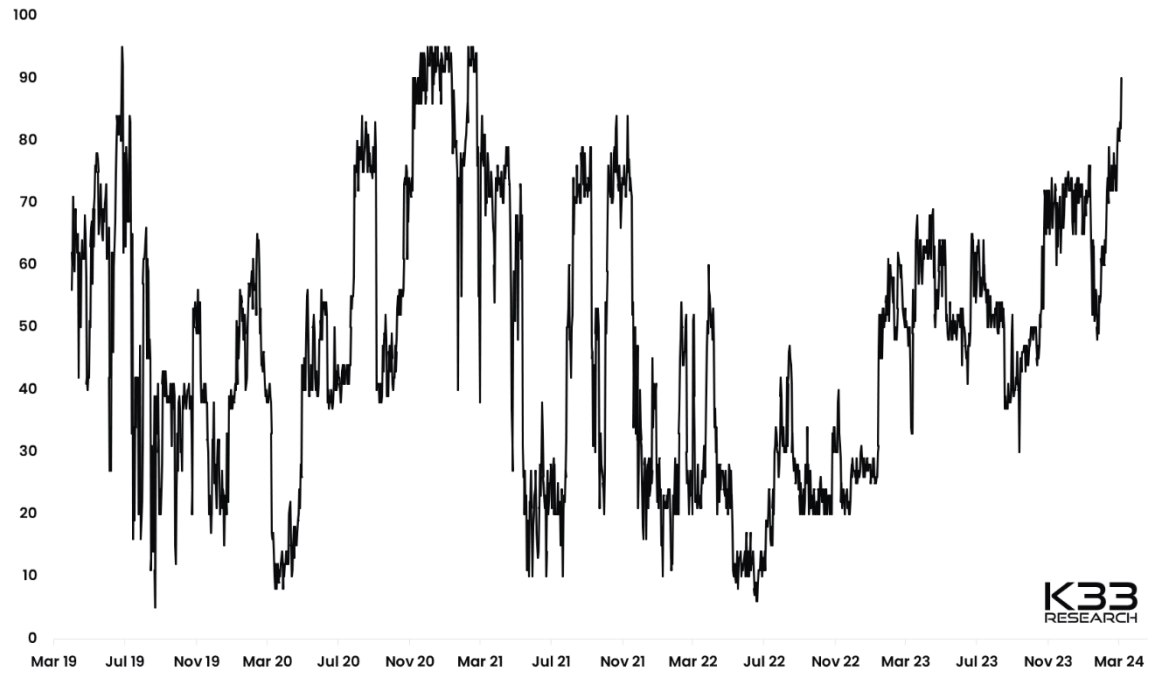


Source: Coinbase

Further, various indicators aim to highlight the market sentiment, with the most commonly used indicator being the fear and greed index. In a "normal" state, the fear and greed index should fluctuate near 50, whereas peak fear should see the index below 15 and peak euphoria above 90.

The index typically ranges at extremes during deep bear markets and extreme rallies – but often become extreme well ahead of peaks or bottoms, evident by the index pushing above 90 during the early stages of the 2021 bull run and pushing below 10 in June 2022, months ahead of the ultimate BTC bottom of the 2022 bear market.

Figure 9 – Crypto Fear and Greed Index



Source: Alternative.me

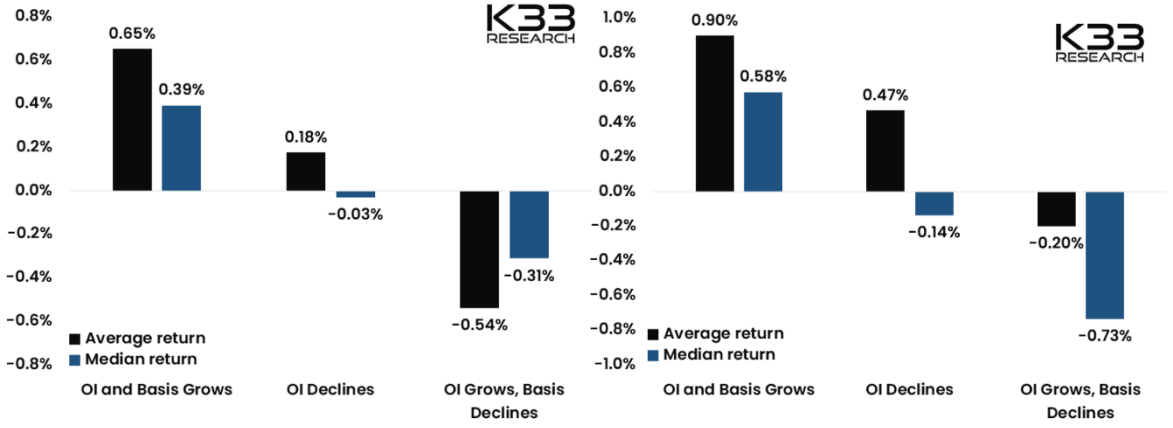
Institutional sentiment is best gauged through yields on BTC futures on CME, exposure on CME, and flows into ETFs. Historically, CME premiums have been a particularly strong indicator. Generally, when premiums are growing, institutional demand to add long exposure grows, whereas the opposite is true in a declining premium environment.

Short-time frame traders could benefit from paying close attention to CME activity, as data suggests it offers informational value regarding BTC's performance ahead. When CME traders build directional exposure, BTC tends to move in accordance with the directional exposure on CME in the following days.

We find that Bitcoin, on average, has seen a daily return of 0.65% (median: 0.39%) the day after growth in open interest and an increase in premiums. A similar pattern is clear when assessing returns for the next week, with BTC, on average, seeing a 0.9% weekly return after a day of rising premiums and OI on CME.

Similarly, BTC has seen an average next-day return of -0.54% (median: -0.31%) on the day after a growing OI and declining basis, with similar results visible over a one-week horizon. Interestingly, returns are, in general, flat in periods where open interest declines as CME traders reduce exposure.

Figure 10 – Left: Average next day return in bitcoin in various CME scenarios. Right: Average next week return in bitcoin in various CME scenarios.



Source: K33 Research, CME Group, Tradingview

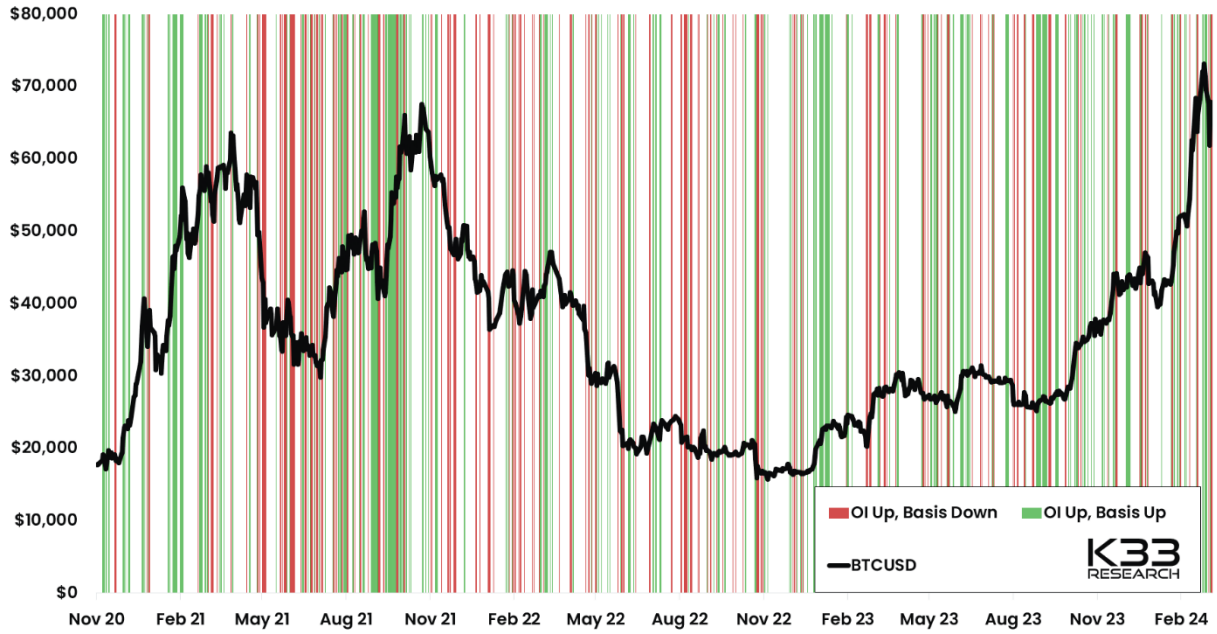
Using CME to forecast the price action of tomorrow

We use open interest as a proxy for CME exposure and the directional trend in futures premiums to pinpoint directional bias on CME.

If the futures basis grows alongside growing open interest, CME traders have increased exposure, with longs being the key aggressor. Similarly, if open interest grows and premiums decline, traders have increased exposure, with shorts being the key aggressor.

The relationship between directional aggression on CME and BTC price development is strong as evidenced above. Still, one must remember the relationship is not 1-to-1. Below, we illustrate the detailed data behind the findings above, with green representing bullish aggression on CME and red representing bearish aggression.

Figure 11 – Bitcoin overlayed with days where open interest and basis on CME increases from the previous day.



Source: K33 Research, CME Group, TradingView, Skew

3.1.2 Event/news

Major known events tend to create a narrative impacting direction, bolstering demand. In Bitcoin, we have typically seen a tendency of big launches coinciding with local or global peaks in prices. This happened during the October 2021 futures-based ETF approval, El Salvador's launch of BTC as legal tender in September 2021, Coinbase going public in April 2021, Bakkt launching BTC collateralized futures in 2019, and CME launching BTC futures in December 2017.

All major positive known events tend to impact prices positively in advance with significant drift. However, not all positive news tends to mark the top. This is most evident with the U.S. spot ETF launch, which marked a local top for January, while the product in and of itself contributed to a consistent and strong supply absorption, pushing prices well higher.

Unknown events are always lingering on the horizon, ready to skew demand. The most poignant example is COVID, which initially led to a correlation 1 moment, leading crypto to plunge before accommodative monetary policies elevated the scarcity narrative of BTC and propelled prices higher.

3.1.3 Utility

Arguably, utility was a more relevant factor in the past, particularly in a narrow definition of utility for payments. Bitcoin's utility as a long-term store of value is in constant interplay with other demand factors, particularly macro. The usage of Bitcoin to pay for goods and services, however, is less active today. In Silk Road's heyday, Bitcoin experienced solid demand initially from the net neutral buy bitcoin, sell bitcoin for weed trade, which later converted users to buying bitcoin as an alternative investment.

Bitcoin also finds utility today, to some degree, in remittance transfers or as malware payments. How much of the acquired BTC for these kinds of transactions that get re-converted to fiat impact whether or not such use cases and transactions are net neutral or positive directionally.

3.1.4 Macro

The all-encompassing macro factor is one consistently important exogenous factor causing Bitcoin to move. The past few years contain a rich history of macro data and incidents directly impacting BTC prices. Incidents range from short-term price action stemming directly from FED interest rate decisions to prolonged periods of continuously high correlation during COVID.

Figure 12 - BTC 90-day correlation vs Nasdaq and S&P 500

Source: Tradingview

In periods of strong correlation, BTC generally follows the U.S. equity markets' reaction to underlying macro conditions. As a trader, you have to assess whether the ongoing macro trend is promising or negative directionally and pay close attention to the general direction of the economy, interest rates, and Fed statements.

A correlation 1 moment arose from the COVID pandemic, where BTC crashed alongside more or less any other asset class. Correlations reigned high throughout the next 2.5 years. The zero interest rate environment encouraged risk asset investments, whereas interest rate hikes favored reduced risk profiles. Bitcoin and the entire crypto complex were massively impacted by this regime, with the industry surging amidst zero interest rates, only to deflate as rates reversed.

That said, correlations have since declined. This does not mean that macro data does not impact BTC directionally, but its impact is less predictable. The banking crisis of March 2023 illustrated an environment where BTC rallied as banks went bankrupt. BTC's performance differed from equities, as Bitcoin benefitted from its status as a self custodied bearer instrument, in itself free of credit and duration risks.

Understanding which macro factors matter to the market and the current regime and interpreting data in real-time to assess its impact on BTC is thus not a straightforward exercise. One must understand the underlying regime, the narratives emerging from that regime, and its implications for Bitcoin to form a clear, directional opinion.

3.1.5 Cyclicality

Internally, within the market, cyclicality is present. A rising tide tends to lift all boats. When BTC strengthens, market liquidity improves, and investors are more susceptible to aim for moonshots, selling BTC, and buying altcoins. This cyclical wealth effect rotation subdues BTC performance and tends to happen during periods of peak frenzy.

The opposite is true during drawdowns where investors seek safe exposure, selling altcoins to buy BTC, leading BTC to see more robust returns during lengthy drawdowns.

3.1.6 Accessibility

Accessibility is important to realize latent demand for most things in life, and so too with Bitcoin. For buying bitcoin particularly, accessibility has developed along two dimensions: easier UX and bitcoin investment products.

Broadly speaking, there are two ways to buy bitcoin. One is the 'native way' through crypto exchanges. The other is by buying investment products that mirror bitcoin's performance. These investment products are called exchange-traded products (ETPs) and are traded in traditional financial markets.

Crypto exchanges have provided easy access to buying crypto for years. Almost no matter where you are in the world, you will have access to a crypto exchange with fiat on and off ramps and a simple way of buying and storing bitcoin. The room left for accessibility improvement in spot buying of bitcoin through crypto exchanges is marginal gains to user experience.

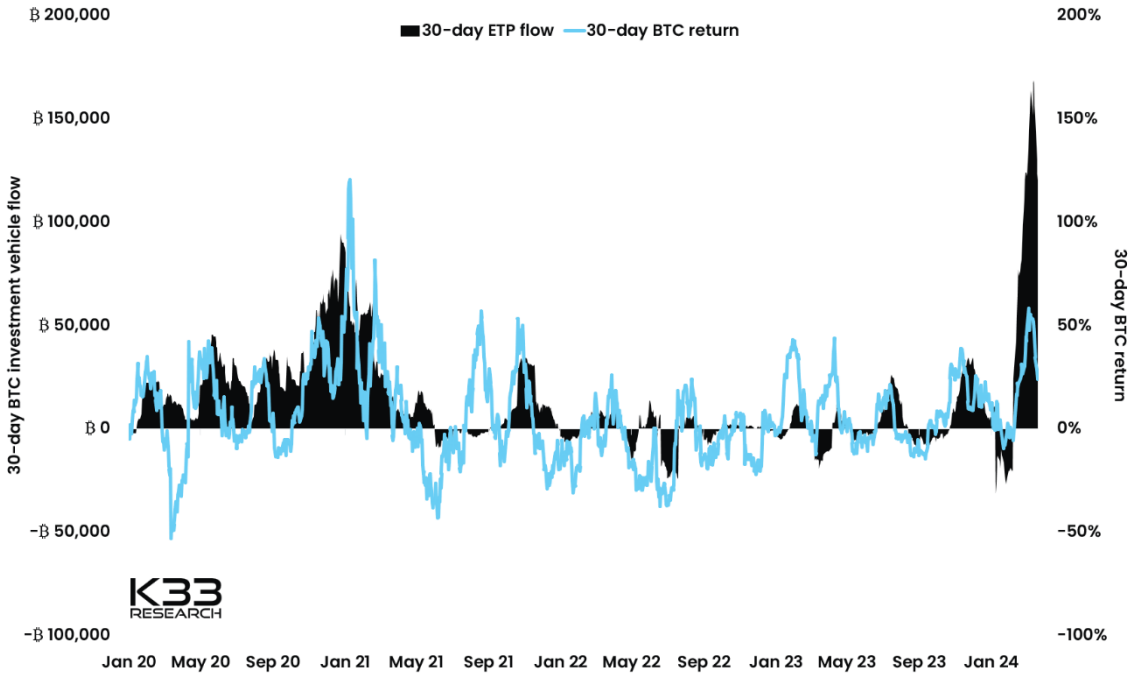
While retail buyers of bitcoin are mostly occupied with the ease of doing so, other potential investors can be limited by which products they are allowed or comfortable to invest in. This is where bitcoin ETPs come into play. Bitcoin ETPs provide bitcoin exposure in a well-regulated and familiar way for more traditional investors.

The access to bitcoin ETPs can play a huge role for unrealized bitcoin demand, as evidenced most recently by the approval of spot bitcoin ETFs in the U.S. On January 10, 2024, spot bitcoin ETFs started trading in the U.S. Previously sidelined investors have since acquired bitcoin exposure through the spot ETFs.

Data confirms that net inflows to BTC investment vehicles are tightly connected to appreciating BTC prices. Figure 13, highlights BTC's rolling 30-day return and rolling 30-day flows into BTC investment vehicles.

The relationship between strong net inflows and strengthening markets is clear from a quick glance at the chart.

Figure 13 – 30-day bitcoin investment vehicle flows vs. 30-day rolling bitcoin return

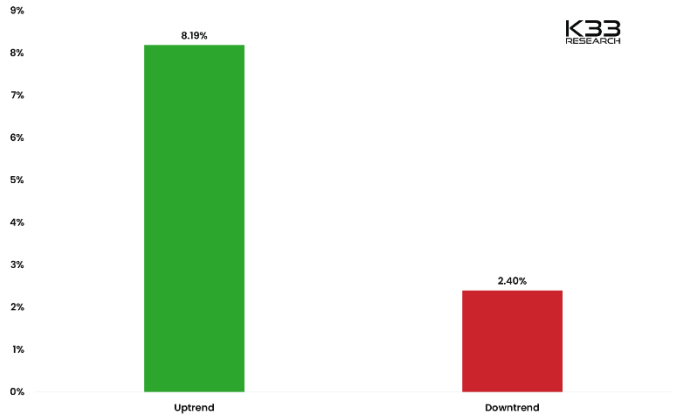


Source: Bloomberg, Tradingview, Bytetree, K33 Research

3.1.6.1 BTC gains coincide with ETP flows trending higher

Bitcoin's average 30-day return when BTC flows are on an uptrend sits at 8.2%, whereas BTC's average 30-day return when BTC flows are in a downtrend sits at 2.4%. This tendency is logical; when investment vehicles see growing inflows, bitcoins are absorbed off the market, and net buyers fuel momentum. When flows trend lower, demand for BTC exposure through investment vehicles decreases, and supply is added to the market.

Figure 14 – Bitcoin 30-day returns when BTC ETP flows trend higher vs. returns when flows trend lower (2020 – 2023)

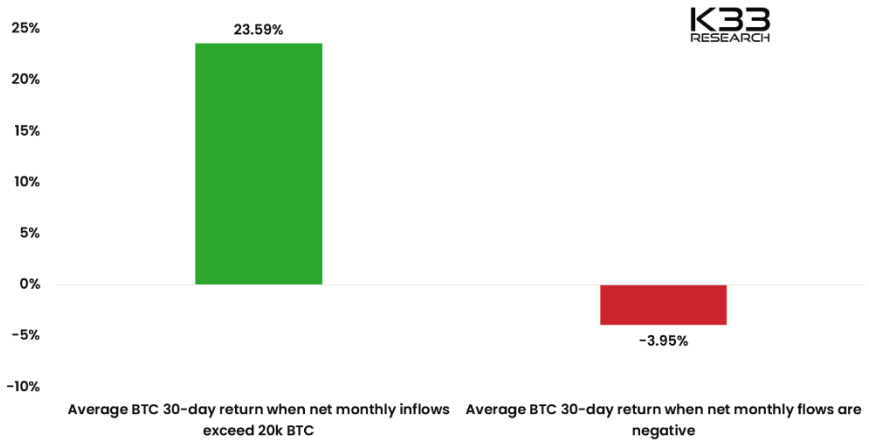


Source: Bloomberg, Tradingview, Bytetree

This relationship is even more significant when flows are extreme. In periods where investment vehicles have seen monthly positive flows of 20k or more, BTC's 30-day return has averaged a massive 23.6% from 2020 to 2023. When 30-day monthly inflows have been negative, BTC has seen an average return of -4%.

It's clear that extreme inflows significantly contribute to lifting the market, whereas drought in flows and outflows negatively impact the market.

Figure 15 – Bitcoin 30-day returns in various flow scenarios (2020-2023)



Source: Bloomberg, Tradingview, Bytetree

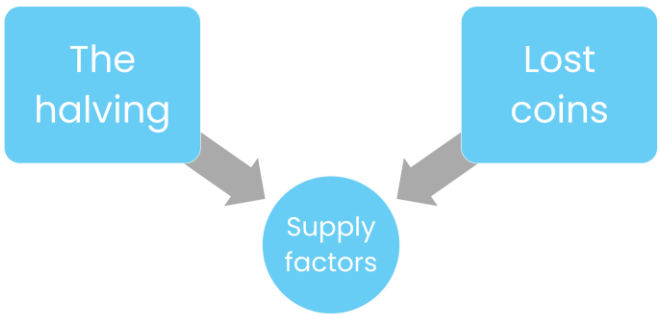
3.2 Supply factors

Evaluating Bitcoin's supply is a fairly straightforward task. Bitcoin is scarce; there will never be more than 21 million, but still, bitcoin's supply is not constant. Every 10th minute, on average, new bitcoins are issued according to the predetermined issuance schedule. The number of new bitcoins that are issued per block halves every four years in an event called the halving. The halving is not a supply shock, as it's well known in advance – but its price impact is empirically worthwhile to dwell on.

Even though the issuance schedule is well-known, supply shocks do occur from time to time. The most common supply shock is when someone loses their bitcoin, i.e. they are losing their private keys. In most cases, this would be unknown to the world and the size of the shock immaterial.

There are two dimensions to a supply shock, per our definition here. One is the simple lost / not lost, while the other is more nuanced and revolves around timing. The second is practically the most important, as there are several ongoing cases in this category. For instance, the Mt Gox case, where 142k BTC will be given back to customers. These coins have been locked up for 10 years. The market knows that these coins will be released at some point, but not when. The timing of when should, therefore, be seen as a supply shock in terms of bitcoin price discovery.

Figure 16 – Supply factors

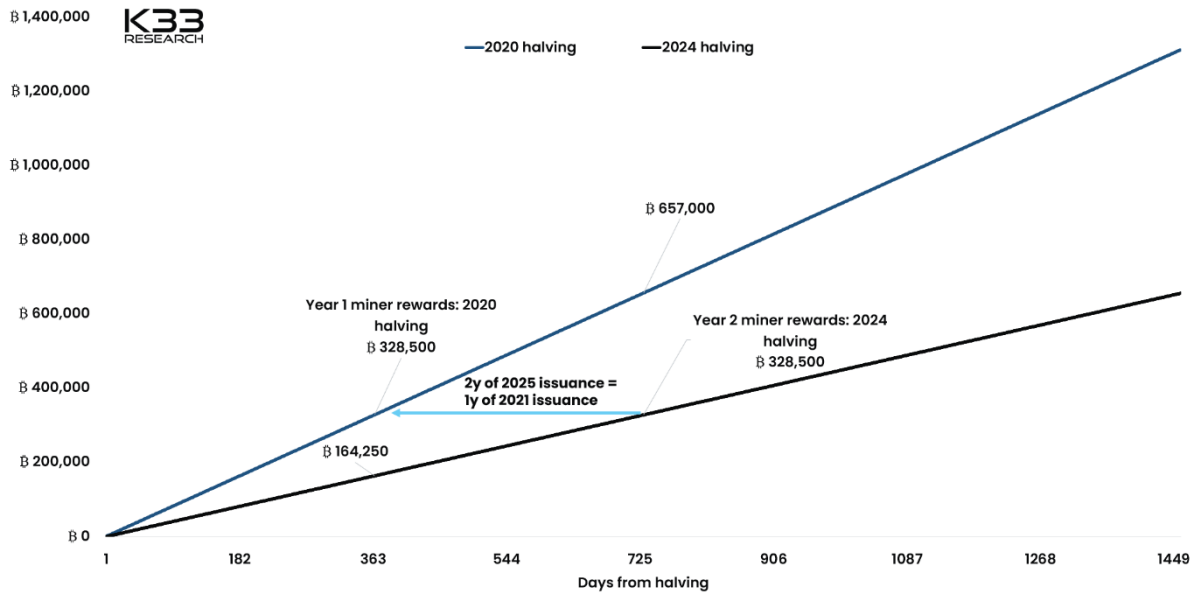


3.2.1 The halving

The halving is still a relevant price mover for bitcoin, albeit at a moderating rate. Today, 900 bitcoins are created every day. 328,500 bitcoins a year. Most of these

bitcoins are sold due to the costly process of mining a coin. After the halving, 450 bitcoins will be created every day, or 164,250 bitcoins a year.

Figure 17 – Cumulative bitcoin miner rewards.



Source: K33 Research

The daily reduction in BTC selling pressure from miners of 450 Bitcoins is almost negligible, but the yearly effect of 164,250 BTC is definitely material and something that could cause a positive drift in prices, assuming all other demand and supply factors remain constant.

The halving also signifies the narrative of Bitcoin as a digital gold. Today, bitcoin's inflation rate sits at 1.8%, comparable to gold. In a year, it will sit at 0.85%. This reminder of Bitcoin's scarcity comes timely amidst simplified access to Bitcoin through ETFs.

3.2.1.1 Speculators positioning for the known event

A very clear cyclical pattern is present in Bitcoin. Bitcoin bull markets tend to occur in the year following the halving. Speculators front-running the event might seek to add exposure ahead of the halving. This, in combination with miners holding on to inventory, can set the stage for a grind higher as we advance toward the halving.

Historical price patterns ahead of the halving contain some noise, particularly due to the Covid 2020 crash, but bitcoin's average 60-day performance in the two

months ahead of the past three halvings sits at a solid 14%, with all three halving events seeing strength in the last month into the halving.

3.2.1.2 100 days after the halving and beyond

100 to 200 days after the halving block, production rates have normalized, while miner inventories have gradually been sold down, allowing the impact of compounded reduced selling pressure from the halving to take effect in the market.

The supply issuance reduction starts to grind its effect into the market. This is where a positive drift typically occurs, and the supply/demand imbalance shows in the market, and prices start to drift higher.

3.2.2 Lost coins found

A proper supply shock occur in the event of coins being lost, or more materially, assumed lost coins return to the market. The most extreme example would be Satoshi returning to the market, but other real occurrences include:

- Silk Road coins returning to the market,
- Mt. Gox coins reaching the market,
- Rehypothecated coins leading to balance sheet imbalances and credit events.

2023 saw multiple adverse reactions in the market to the U.S. government selling of seized coins from the Silk Road era. A similar reaction may occur after coins seized from the SilkRoad hack of 2016 are distributed back to Bitfinex, and Bitfinex retorts to sell BTC to buy and burn LEO.

In 2014, Mt. Gox was hacked, losing 850,000 BTC, of which 744,000 belonged to customers. The exchange found 200,000 BTC in older digital wallets, of which 142,000 BTC is set to eventually be distributed to Mt. Gox creditors.

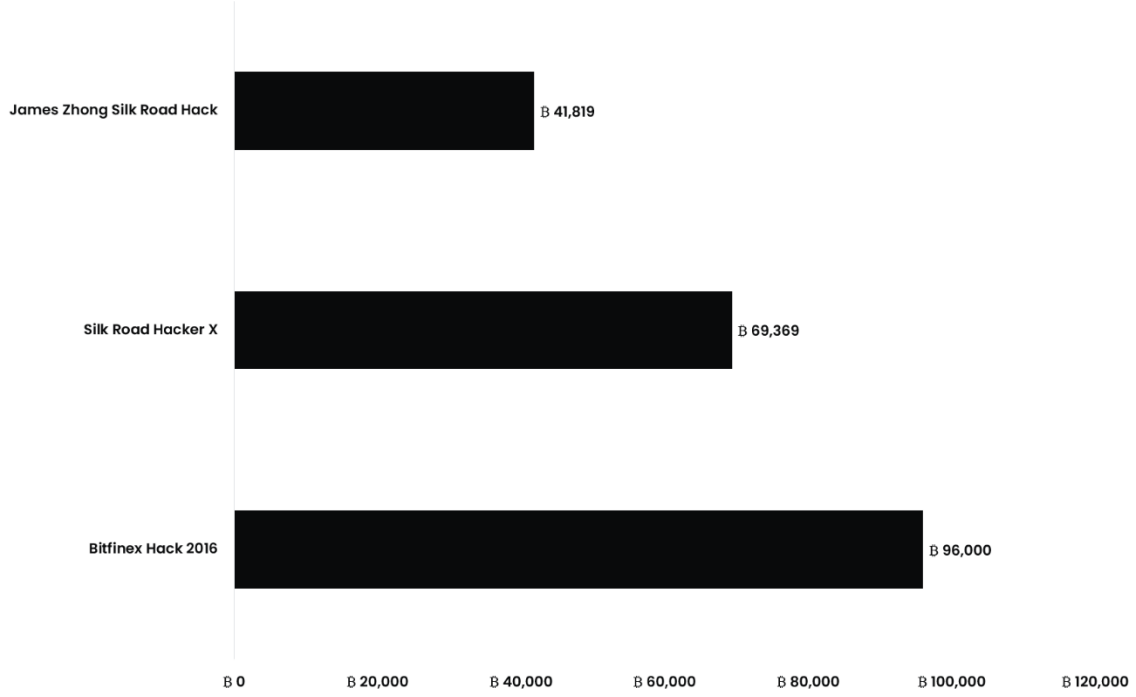
The Mt. Gox repayments have been postponed multiple times, and an eventual reimbursement to creditors is set to be a proper supply shock as 142,000 Bitcoins return to the market.

Similarly, the U.S. government holds an estimated 207,000 Bitcoins, most of which will eventually, at an unknown date, hit the market one way or the other at an unknown time.

111,118 BTC are expected to be sold directly by the U.S. government. This balance relates to funds seized from Silk Road hackers. The remaining 41,819 BTC seized by James Zhong's Silk Road hack was intended to be sold by 2023 but remain in U.S. government wallets, whereas initiatives to sell funds seized by Silk Road Hacker X have yet to be announced.

Movements and announcements of intentions to sell these funds are set to impact the market as funds currently held idly suddenly return to the market.

Figure 18 – U.S. government bitcoin balances



Source: Bitcointreasuries

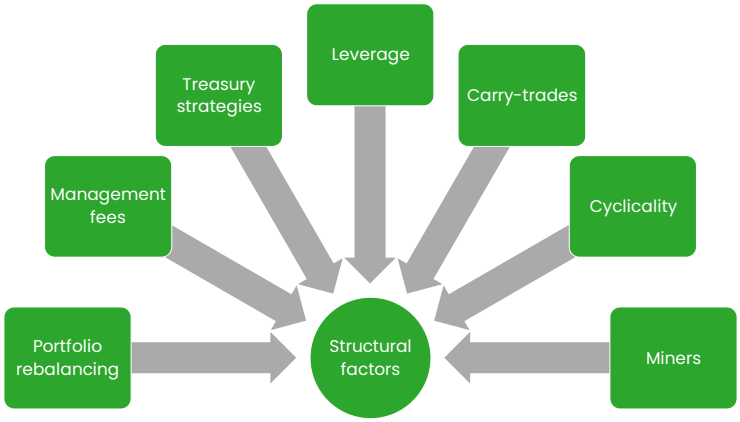
A majority of the 96,000 BTC from Bitfinex is also going to find its way into the market eventually. Bitfinex aims to recover the funds and intends to use 80% of the seized BTC to buy and burn LEO over an 18-month period to reimburse Bitfinex creditors. This process will gradually expand BTC's active circulating supply by 76,800 BTC, representing a negative supply shock.

3.3 Structural factors

The crypto market ecosystem plays an important role in Bitcoin's directional pattern. The reader may view these factors as miscellaneous, but they are constant forces amplifying or subduing the market's momentum and direction.

We identify seven structural factors currently contributing to or in the future contributing to Bitcoin's price path. These factors are miners selling, carry-trades, leverage, companies acquiring BTC at a constant rate based on profits from other venues, funds and exchanges selling management or trading fees, cyclicality, and portfolio rebalancing.

Figure 19 – Structural factors



3.3.1 Portfolio rebalancing

As Bitcoin is introduced to well-diversified strict portfolios, rebalancing will gradually materialize as an important directional factor.

An investor strictly adhering to a rebalancing mandate will sell BTC during rebalances where BTC has outperformed the index and buy BTC in periods where BTC has underperformed.

If adopted at a wide scale, this could naturally increase BTC's correlation to other asset classes, in addition to limiting volatility in either direction.

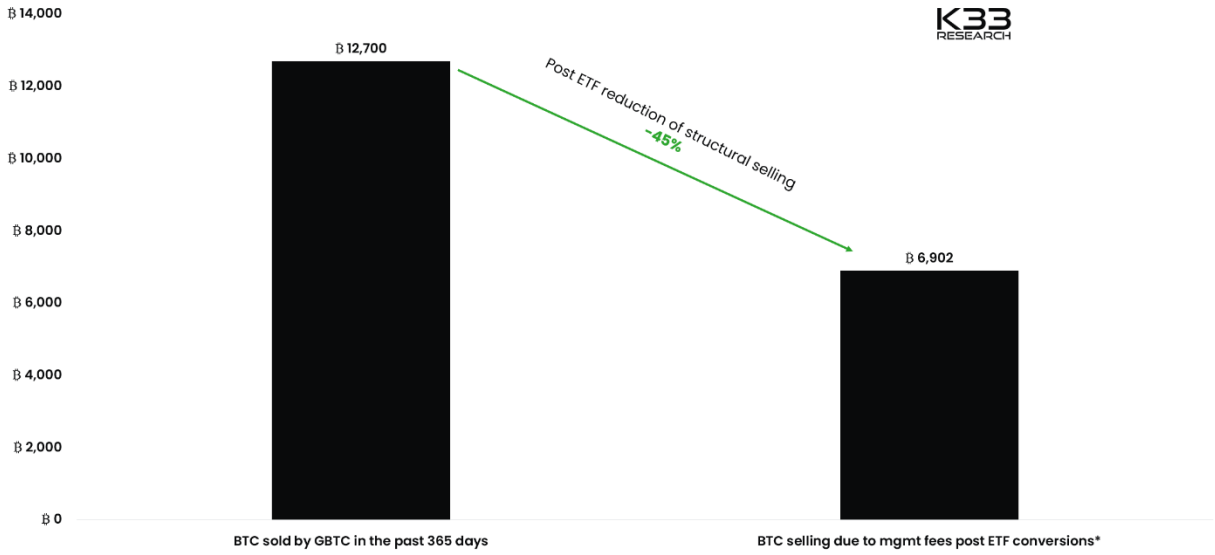
3.3.2 Funds selling management fees

ETFs and crypto exchanges are funded via fees. ETF issuers are constant sellers of Bitcoin as management fees, most clearly illustrated by GBTC's BTC balances from March 2021 until its ETF conversion, where GBTC sold 33,000 BTC in management fees.

The introduction of U.S. spot ETFs was accompanied by a fee war, reducing the gravity of sell-side pressure originating from passive funds.

Since February 2021, Grayscale has sold 34,000 BTC due to its 2% management fee, equivalent to 32 BTC sold daily. Assuming that 50% of GBTC's AUM will find its way to cheaper products and U.S. BTC ETF exposure grow by 325k BTC to 1m BTC, we find that annual selling pressure from U.S. BTC ETF management fees will decline by 45% from 12,700 BTC a year to 6,900 BTC a year.

Figure 20 – Annual bitcoin selling pressure due to fees, before and after ETFs



Source: Grayscale, New ETF Issuers Fee Disclosures, K33 Research

3.3.3 Cyclicality

One important structural factor impulse is the taxation cycle, which may work against the prevailing momentum. After a strong year, investors must sell sizeable exposure to fund substantial tax bills, whereas the opposite is true during deep drawdowns, where investors may benefit from tax returns to offset realized losses.

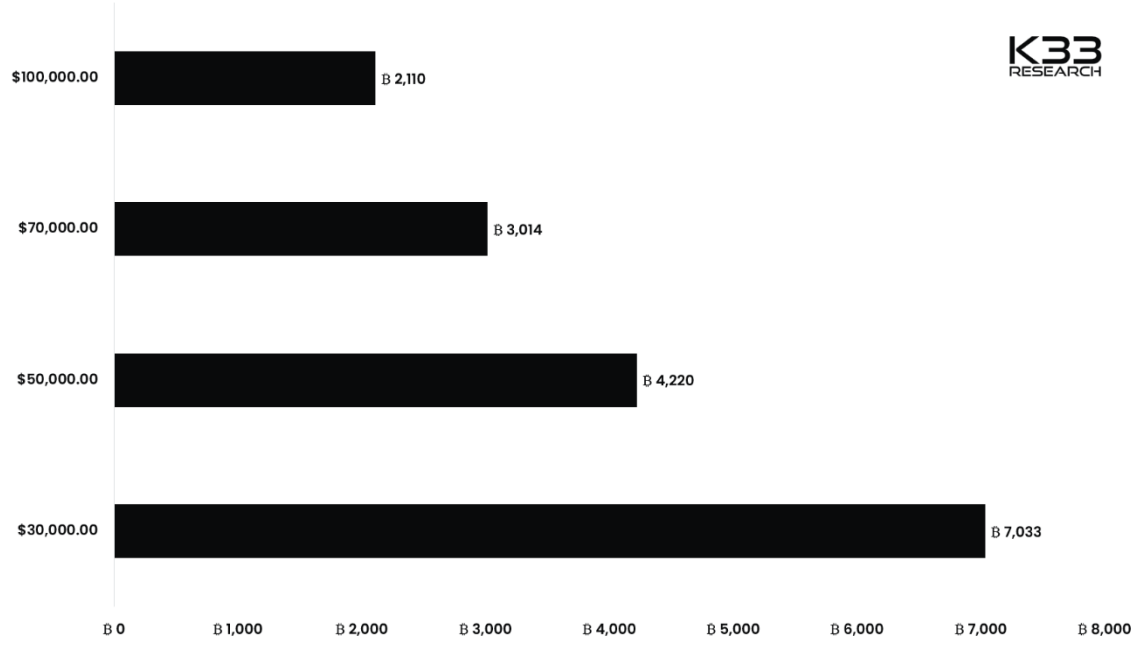
3.3.4 BTC treasury from operating profits

Tether's strategy to dedicate profits towards BTC exposure makes higher rates for longer scenarios more feasible for BTC. On May 17, 2023, Tether announced its intention to spend 15% of its net realized operating profits to accumulate Bitcoin. In 2022, higher rates were a key factor in pressuring BTC lower, while 2023 was a robust and low-correlated environment for BTC.

In the current high-rate environment, Tether pockets approximately $5.5bn in profits from treasury exposure, enabling Tether to dedicate $840m annually towards acquiring BTC. Tether bought 6,624 BTC in Q3 2023, which is in line with their announced purchasing rate. Under the assumption of steady BTC prices at $60,000, Tether may acquire nearly 14,000 BTC yearly.

This contributes to structurally softening BTC's negative relationship to rate hikes. If rates increase, at least one significant bidder will direct more capital towards BTC. Further, this strategy makes Tether a countercyclical market force. If bitcoin's price falls, Tether will be able to buy more, and if prices increase, Tether's impact will soften.

Figure 21 – Quarterly bitcoin buying pressure from Tether under various price assumptions



Source: K33 Research, Tether

3.3.5 Leverage

Leverage lets you borrow capital to increase the returns on your investment, thus amplifying both the potential profits and losses on your initial capital. Leverage builds in the crypto market alongside various demand indicators, particularly the overall market sentiment. Leverage may contribute to generating further directional momentum, but once the market course turns, leverage amplifies the trend, pushing prices lower.

When a leveraged position reaches liquidation, a forced buy or sell occurs. While the demand for leveraged positions is very much a demand factor, the response through liquidations is a structural one.

This structural dynamic in price discovery is especially evident when it comes to short-term fluctuations. In any leveraged trade, there is a long and a short side; hence, the market is neutral overall by definition. The market consists of different groups of players, though, where in which direction the different groups lean tends to have a structural impact.

Retail traders are often the catalyst for leverage-driven short-term fluctuations. When an overweight of retail traders wants the same directional leverage, usually long, it often means that a more sophisticated group with deeper pockets, the market makers, takes the opposite side.

Retail traders tend to be more susceptible to liquidations through higher leverage and less management of collateral positions. When the market moves in the opposite of the retail direction, forced liquidations will exaggerate the initial market movement.

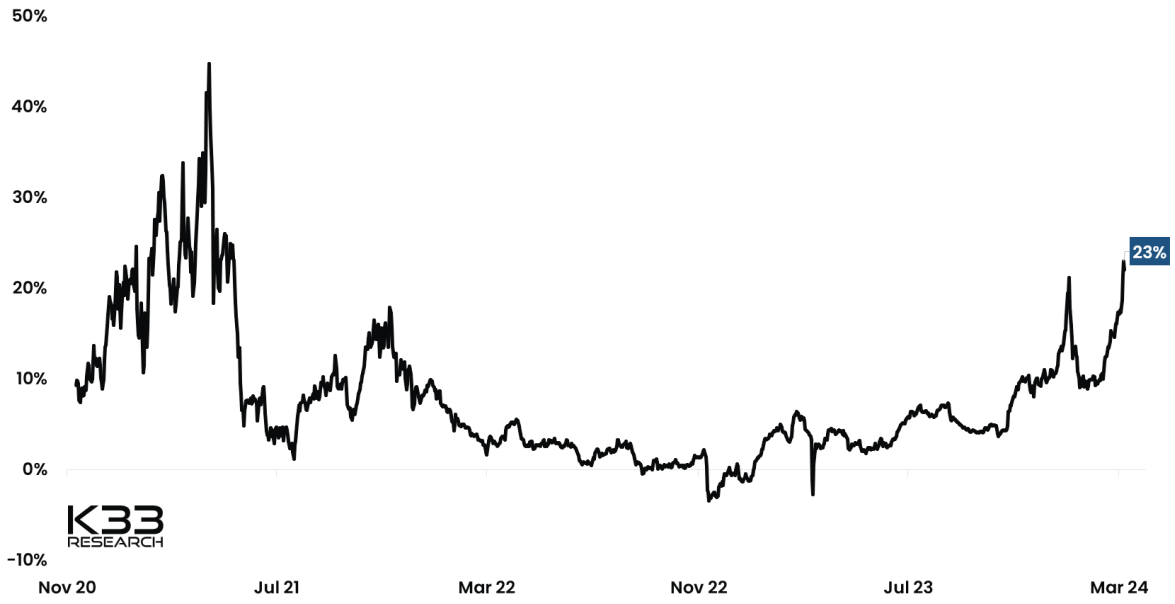
Structurally, leverage usually leads to short-term price fluctuations in the opposite direction of the market when sentiment becomes concentrated, enforcing violent shakeouts.

3.3.6 Carry-trades

When sentiment is strong, and retail participants return to the market with leverage, opportunities become plentiful for delta-neutral trading firms. A market concentrated in a steady long bias leads futures and perps to trade at premiums to spot prices. Arbitrage opportunities present themselves from such discrepancies.

In lengthy periods, futures and perps dislocate from spot markets by a large margin. Throughout Q1 2021, annualized futures premiums climbed steadily from 10% to 50% by the climax of the bull run.

Figure 22 - Offshore Bitcoin Futures: Annualized Rolling 3-month basis



Source: Skew, Laevitas

This cause a massive arbitrage opportunity, enabled by a relatively simple trade. In this environment, a delta-neutral fund will buy BTC in the spot market and short Bitcoin futures at a similar size, netting the ongoing premiums in the market.

Suppose open interest grows alongside steadily climbing futures premiums. In that case, more gas may be added to trade, with arbitrageurs netting the difference while buying BTC in the spot market in the process.

Sustained structural premiums, thus, cause long-lasting demand for spot purchases from sophisticated funds.

3.3.7 Miners selling coins

Mining Bitcoin is a costly and highly competitive process. The profitability of any given miner is dependent on three main factors.

1. Their cost of production (Electricity, storage, other)
2. Difficulty (Competition, rewards relative to share of the global hashrate)
3. The bitcoin price

The costs of mining are high. Generally, miners sell most of their rewards to stay afloat. Similarly, competition within the mining industry is tight. A lot of players are competing for Bitcoin rewards. These two factors, combined with BTC's 2022-2023 drawdown, have forced miners to sell most of their accrued rewards, only keeping an estimated (based on public miner earnings) 2.5% of all rewards from January to November 2023.

Prices are now growing, and the halving is nearing. This has allowed miners to keep more rewards. In effect, subdued sell-side pressure from new supply starts impacting the market well ahead of the halving. In the past three months, miners have kept an estimated 29% of their rewards.

Following the halving, the bitcoin price will need to double in order for miners to be as profitable as they are today, assuming the two other profitability factors remain constant.

The bitcoin price tends to stabilize in price the months after the halving. Miners who have hoarded coins in advance of the halving will have an arsenal of coins available, ready to deploy to the market if need be and to adjust to changing conditions, leading the immediate impact of the reduced issuance to lag. Still, eventually, these BTC balances dwindle, allowing the halving to take effect.

Miners opting to hold coins instead of selling has also been an elaborate decision in the past. During the ZIRP era, miners held more BTC and funded operations on debt. In the short term, this alleviated structural selling pressure. This approach is a double-edged sword. Once debt financing and fundraises grew harder as interest rates grew in 2022, miners were suddenly forced into selling inventory, adding fuel to the fire as BTC already faced severe downside due to the same factor.

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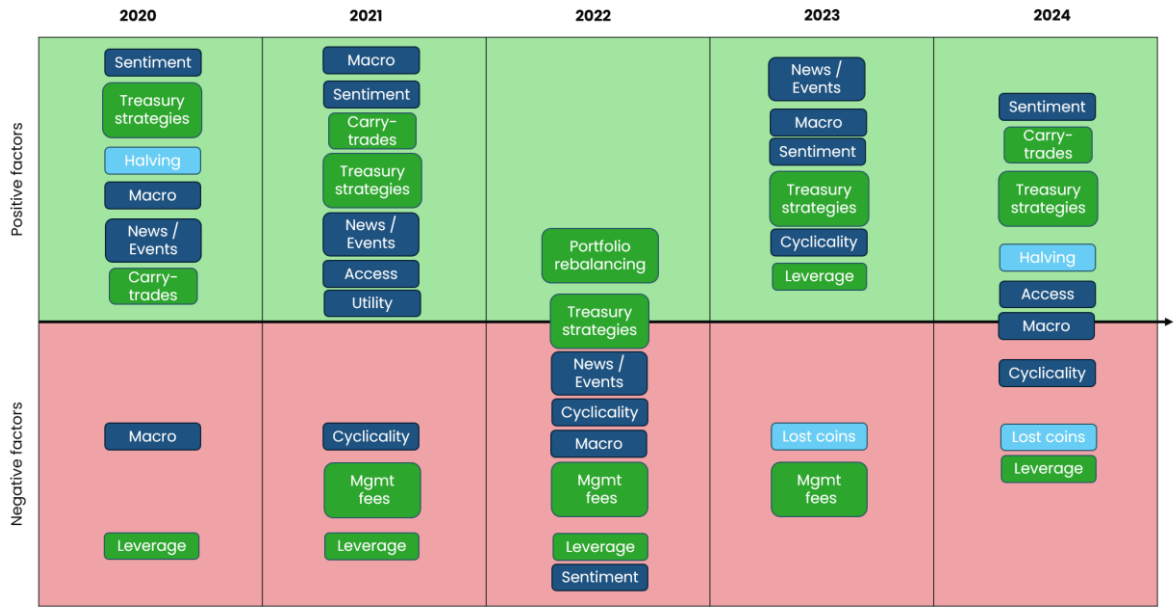
4 Applying the framework to trading

Identifying the prevailing dominant forces moving the bitcoin price and creating a weighted assessment of these forces is alpha omega for any market participant forming a directional view. We have in the previous section illustrated the role these factors have in Bitcoin's price discovery; now, we'll demonstrate the impact of these factors that have mattered throughout the past five years.

Figure 23: Dominant factors and their directional impact in between 2020 and 2024



In our versatile and adaptive weekly market update, Ahead of the Curve, we tacitly adjust our focus depending on the underlying factors moving the markets. We do this to account for the factors driving prices and form an informed data-driven opinion on the most plausible directional trend onwards.

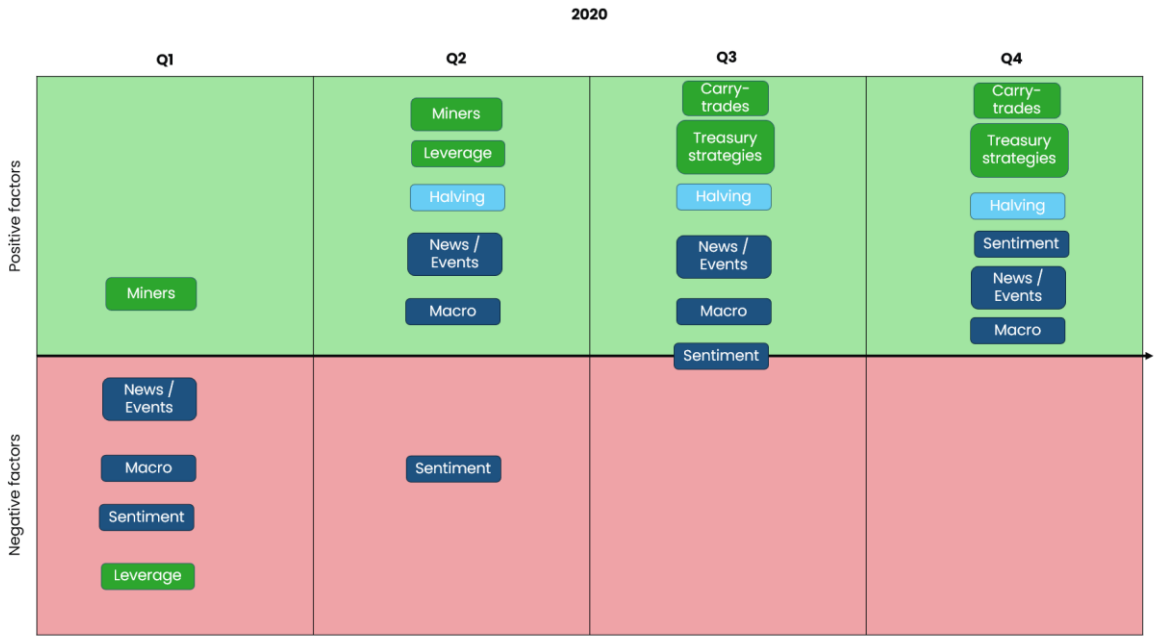
Conditions change, as do the weighing and status of the underlying factors pushing prices. Trading regimes experience frequent changes, and identifying transitional changes is essential, as it directly impacts your trading strategy.

4.1 2020

In 2020, macro, leverage, events, and the halving were all forces pushing the market. Early in the year, an institutional wave of CME demand ahead of the halving caused prices to rise alongside leverage. As COVID hit, global markets faced a massive meltdown, and the crypto sector took a huge hit as a cataclysmic deleveraging event shook the market on March 12.

From then on, zero interest rate policies and halving naturally spurred a harmonious narrative of Bitcoin as a scarce alternative to a policy regime that was expected to lead to accelerating inflation. This led MicroStrategy to form a Bitcoin treasury strategy and funds to acquire Bitcoin throughout the fall of 2020. Improved institutional sentiment and demand pushed prices higher.

Figure 24 - Dominant factors and their directional impact in 2020

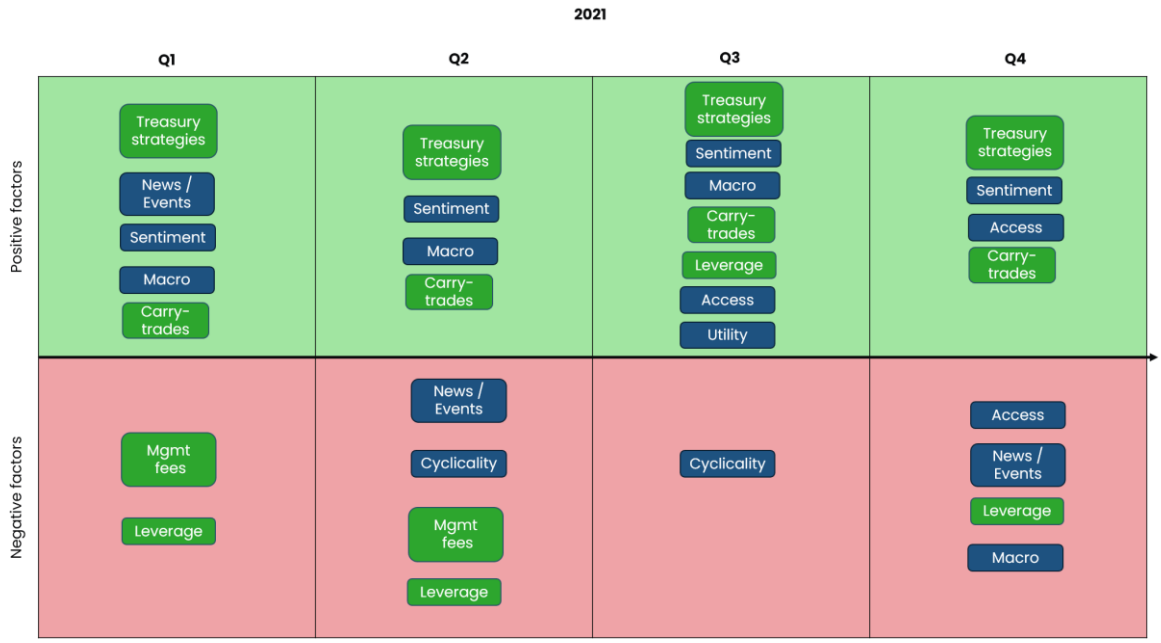


In 2020, understanding the impact of zero interest rate policies and the halving were the two most important factors in forming a directional market opinion and trade profitably.

4.2 2021

As we entered 2021, headlines of BTC's new all-time high emerged. The world was in an odd state; lockdowns were frequent, the U.S. Congress was stormed, and a meme stock mania ravaged markets. Retail participants gradually entered the market with force, buying in spot markets before longing for significant leverage. Tesla acquired BTC, more companies followed, and Elon Musk's tweets suddenly moved the market. This swiftly changed the market regime. Price action became more choppy, albeit buoyant, and institutional exposure gravitated lower. Zero rates pushed VC capital towards unsustainable crypto products, and systematic leverage was building in the industry.

Figure 25 - Dominant factors and their directional impact in 2021



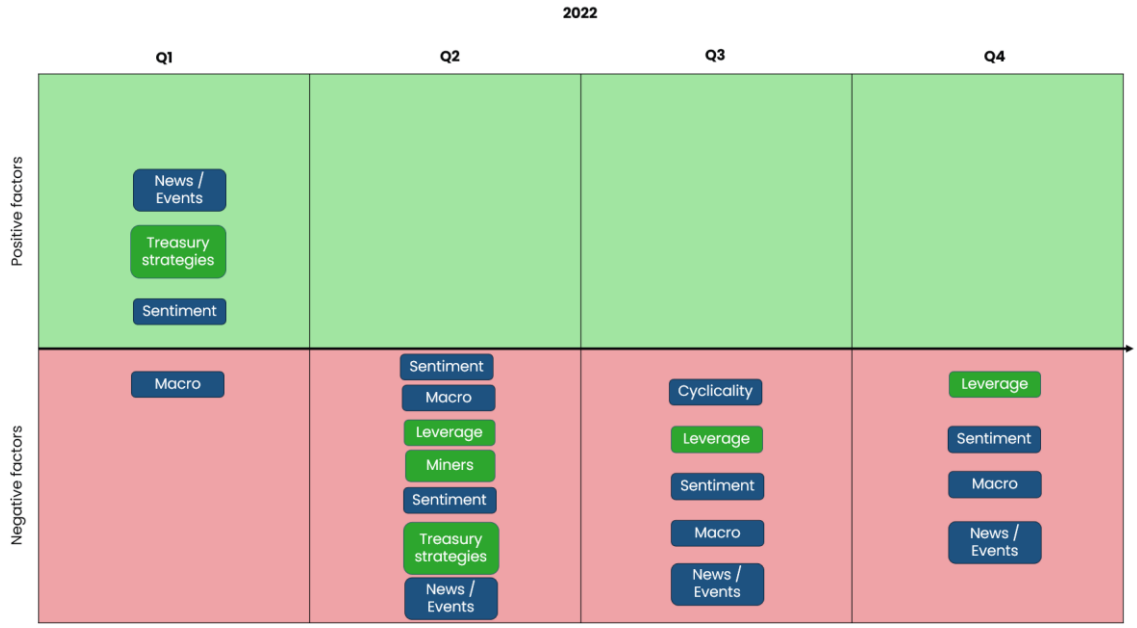
In late 2021, futures-based ETFs launched, and hopes were high for a spot-based ETF, leading to a second rally. The spot ETF rejection, alongside FED signals of rate hikes, ended the regime favoring constant risk exposure and marked the end of the thriving momentum.

To perform in 2021, a trader had to understand the significant impact of leverage in offshore derivatives and navigate the irrational exuberance amid these conditions. Known events, such as the ETF deadlines and an eventual end to the ZIRP regime, were factors that could be assessed ahead of time, which traders could identify and apply to readjust strategies.

4.3 2022

In 2022, a series of negative factor impacts pushed prices lower. First and foremost, correlations climbed. BTC traded as any other risk asset, responding negatively to rate hikes as parts of the sector were artificially kept afloat from external funding to facilitate growth when money was free. Taxable gains from the massive 2021 were due to be paid; Tesla reduced BTC exposure, and sentiment deteriorated.

Figure 26 - Dominant factors and their directional impact in 2022



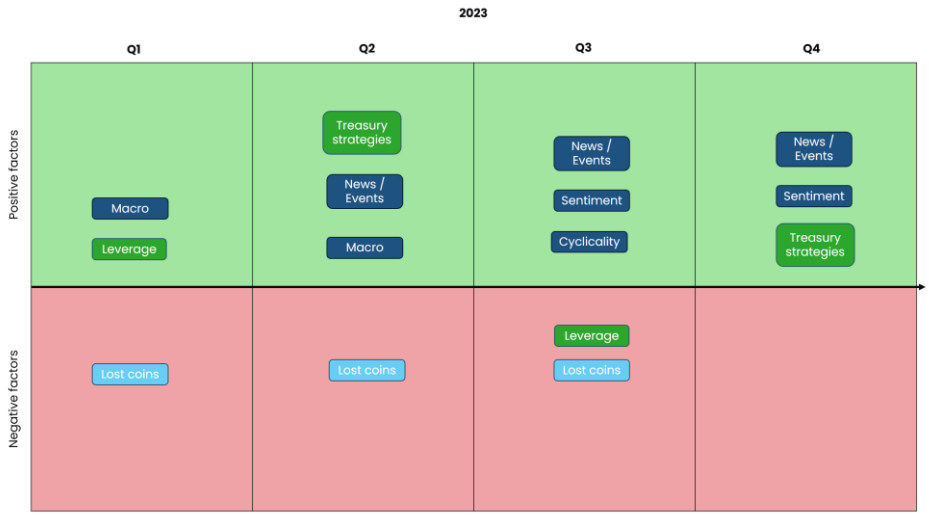
Systematic leverage that had built under the 2020-2021 regime faced its Minsky moment, leading funds, crypto banks, and maliciously ran crypto exchanges to collapse. It all culminated in FTX's collapse, leading prices to plunge below $15,000 and volatility to collapse. Hardly anyone took the industry seriously, and the remaining buyers were insiders utilizing the 75% drawdown to accumulate.

In 2022, tightening macro conditions and an assessment of the systematic leverage in the industry were key factors to apply to perform in the hostile regime.

4.4 2023

As we entered 2023, prices reigned flat, and short interest started to build while the FED hiking spree gradually reached a long-lasting hiatus. Volatility was priced cheaply, and the market was rigged for a hated rally, a proper short squeeze. Later, U.S. banks faced liquidity issues, and a narrative formed related to Bitcoin as a unique safe haven bearer asset caused strong momentum. Volatility reigned low, but there were few sellers left and a constant stream of long-term holder purchases.

Figure 27 - Dominant factors and their directional impact in 2023



The sentiment changed as an institutional wave hit the market. BlackRock filed for its ETF, while Grayscale won its lawsuit against the SEC in August relating to GBTC's ETF denial in 2022. This dramatically improved the odds of ETF approvals, a narrative that the market needed time to digest. Leverage was low at the time, but prospects were solid. The underlying conditions were uniquely strong for traders to increase their risk profile and represented one of few occasions where we argued in favor of adding leveraged long exposure and buying far out-the-money options to exploit the opportunities emerging from the informational asymmetry in the market.

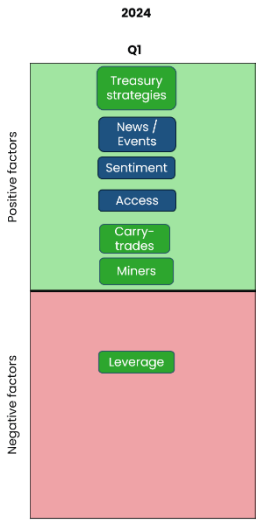
Institutional activity was thriving, which was evident through CME activity and ETP flows in other jurisdictions. Long-term holders continued buying, whereas retail activity remained idle at multi-year lows.

Understanding the impact of enhanced access via eventual ETF launches and the natural importance of well-renowned institutions touting BTC were monumentally essential factors to perform in late 2023.

4.5 2024

In 2024, ETFs launched and quickly absorbed supply, leading to higher prices. Throughout the first quarter of the year, the market has been highly sentient to ETF flows, which is a theme that will likely remain relevant throughout the year.

Figure 28 - Dominant factors and their directional impact in Q1, 2024



Higher prices have caused retail to reemerge in the market, causing less predictable price action, more frequent leverage cascades, and enhanced yields in futures. Retail sentiment and offshore leverage are gradually becoming more important factors, which are due to be primary factors to monitor and assess the state of the market from now on.

Rate cuts have been postponed longer than anticipated, and the political backdrop reigns shaky, with multiple important elections setting the stage for a growingly important macro backdrop following 1.5 years of dampened relevancy.

The Mt. Gox estate is expected to reimburse creditors this year, whereas U.S. government coins may hit the market, increasing the likelihood of "Lost Coins" to matter in the market, representing a negative supply factor.

Simultaneously, the halving is near, representing a positive known supply factor that is due to impact drift in the latter half of the year.

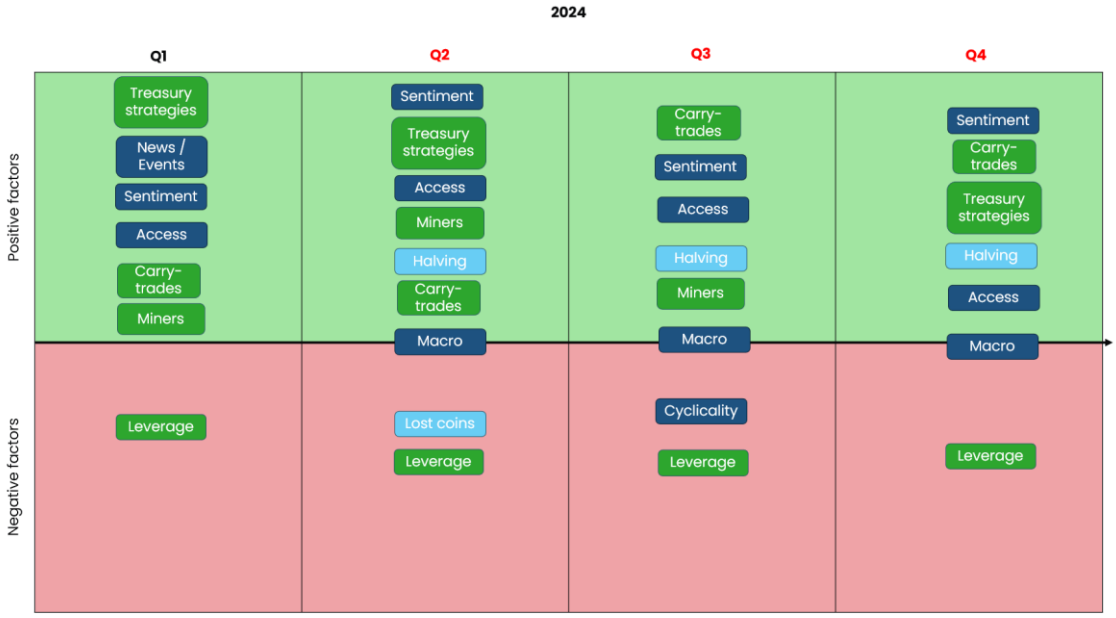
Tether and MicroStrategy are determined to maintain their BTC treasury strategies, whereas ETF providers have reported that Fortune 500 companies have acquired the ETFs. Thus, we expect BTC treasuries to be a favorable factor throughout the year.

The emerging ETFs have counterintuitively reduced annual management fees for BTC investment vehicles as funds move from GBTC to cheaper products, representing a minor positive factor for the market onwards.

4.6 Factors to define the rest of 2024

Onwards, we expect leverage to be a consistently important negative short-term factor, lost coins to be an ever-present negative factor, and, to an unpredictable degree, macro uncertainty to cause negative price reactions.

Figure 29 - Potential factors to define the market in 2024



On the positive side, we expect accessibility, the halving, treasury strategies, retail reemergence, and, to an unpredictable degree, macro uncertainty to be favorable price action factors.

In sum, the underlying factors are favorable for the remaining three quarters of the year.

We are emphasizing the importance of retail reemergence and the transitional implications of leverage and offshore price action to gain more material importance.

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