



THE DEEP DIVE

MONTHLY REPORT

J A N U A R Y 2 0 2 2

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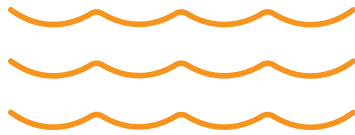
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MACROECONOMIC CORRELATIONS

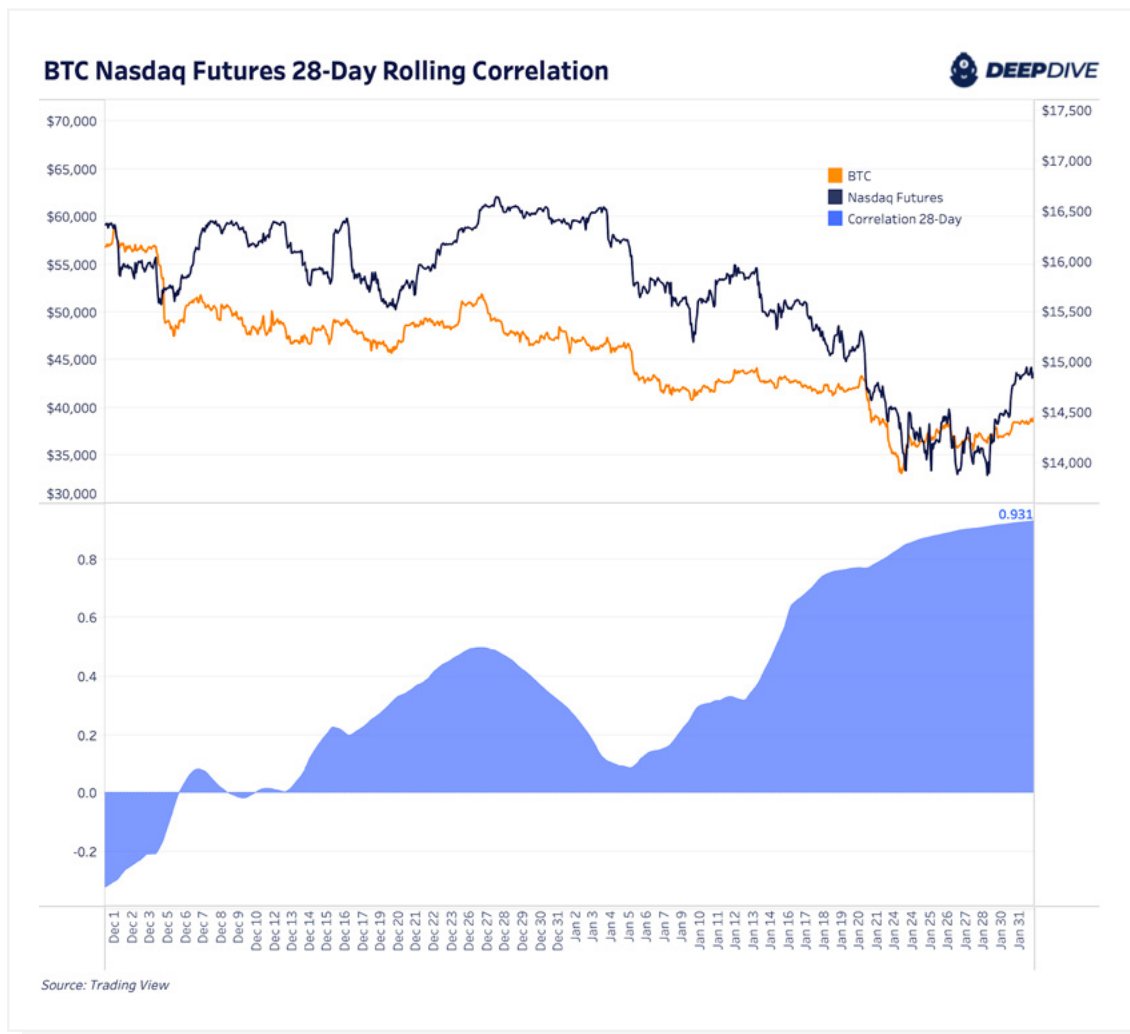


Since our 2021 Deep Dive end-of-year report, when bitcoin was trading at \$46,000, price continued to tumble as tightening fears gripped bitcoin and equity markets alike, with bitcoin briefly breaking below \$33,000 and the Nasdaq falling 20% off its all-time highs.

This report will first touch on recent macro correlations with risk-on assets before diving into on-chain metrics, relative market valuation and the state of bitcoin derivatives, and bitcoin mining. Lastly, we will zoom out and analyze the long-term global macroeconomic outlook.



Over the last month, the performance of bitcoin has been highly correlated with the performance of the Nasdaq, with the rolling four-week correlation of the two assets at 0.93, a historically high level across a four-week period.



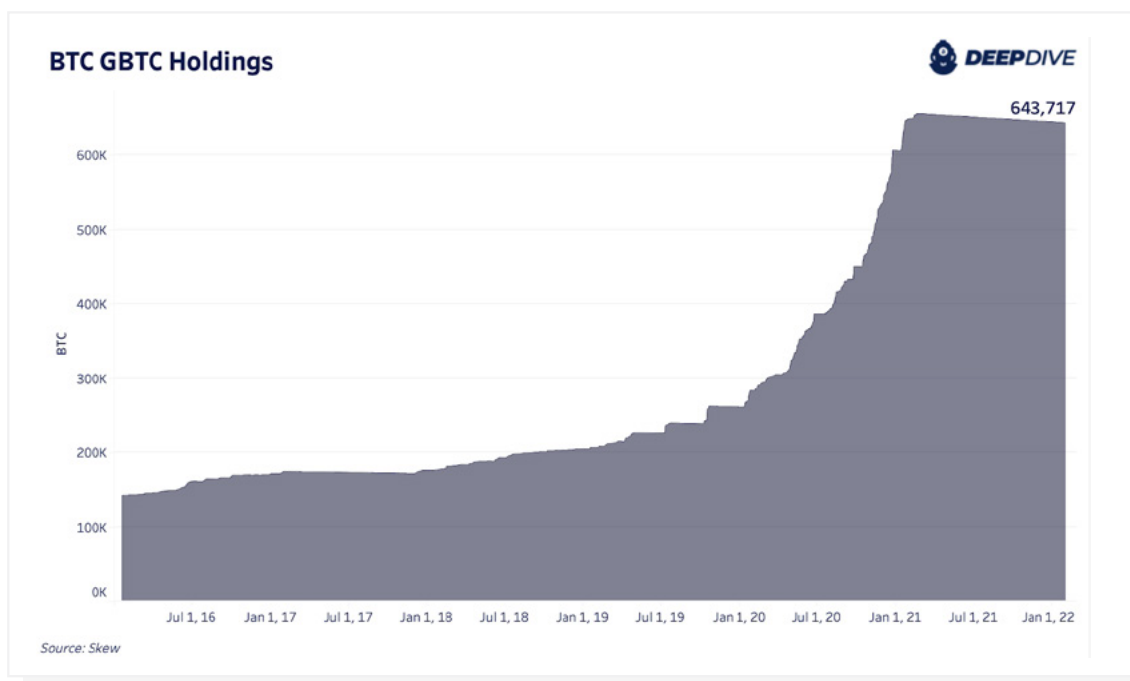
To understand why bitcoin — which is often touted as being a “risk-off” or “uncorrelated” asset — has traded so tightly in line with equities (specifically the Nasdaq) over the last month, it helps to examine the recent adopters of the asset over the past two years.

Many of the largest allocators to bitcoin since 2020 have been macro-focused funds who were looking to ride the tide of unprecedented monetary and fiscal stimulus, and thus turned to bitcoin. Paul Tudor Jones, a legendary macro investor, laid out his thesis in May of 2020,

“I also made the case for owning Bitcoin, the quintessence of scarcity premium. It is literally the only large tradeable asset in the world that has a known fixed maximum supply.”

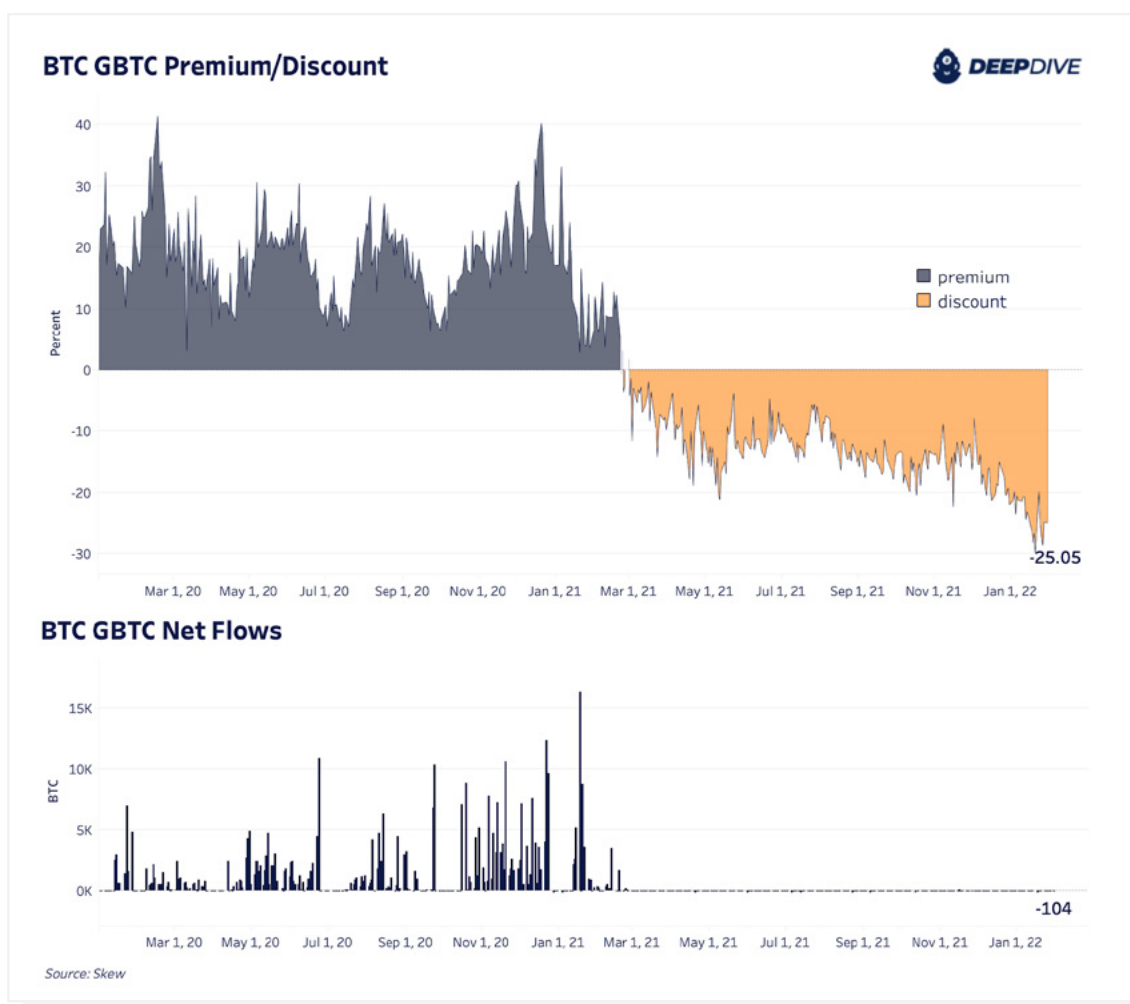
Along with Paul Tudor Jones, investors such as Stanley Druckenmiller and corporate adoption by the likes of MicroStrategy's Michael Saylor as a "treasury reserve asset" sparked off a blistering bull market.

However, behind the scenes, one of the largest drivers of the bull market in late 2020 and early 2021 was none other than the Grayscale Bitcoin Trust. Grayscale purchased more than 400,000 BTC on behalf of accredited investors and institutions in return for shares of GBTC, which trades over the counter in secondary markets.



As the bull run kicked off, Wall Street and mom and pop investors alike scrambled for bitcoin exposure. GBTC was one of the only ways to gain bitcoin exposure for many market participants, which caused shares to trade at a large premium to NAV (net asset value).

With this premium present, accredited and institutional investors could go to Grayscale with dollars or bitcoin and purchase GBTC shares at net asset value while the shares were trading on secondary markets at a large premium. The only catch was that shares were locked for six months, and as the trade became increasingly crowded, shares of GBTC (which historically always traded at a premium) began trading at a discount to NAV. This enacted a lot of pain on investors and funds partaking in a seemingly "risk-free" trade.



The reason we are highlighting this dynamic nearly a year later is that the recent performance of GBTC is highly indicative of the market conditions bitcoin finds itself in today. As the discount to NAV bled from -10% in late November to as low as -30%, GBTC and its approximately 646,000 bitcoin held in the trust began to weigh heavily on the market.

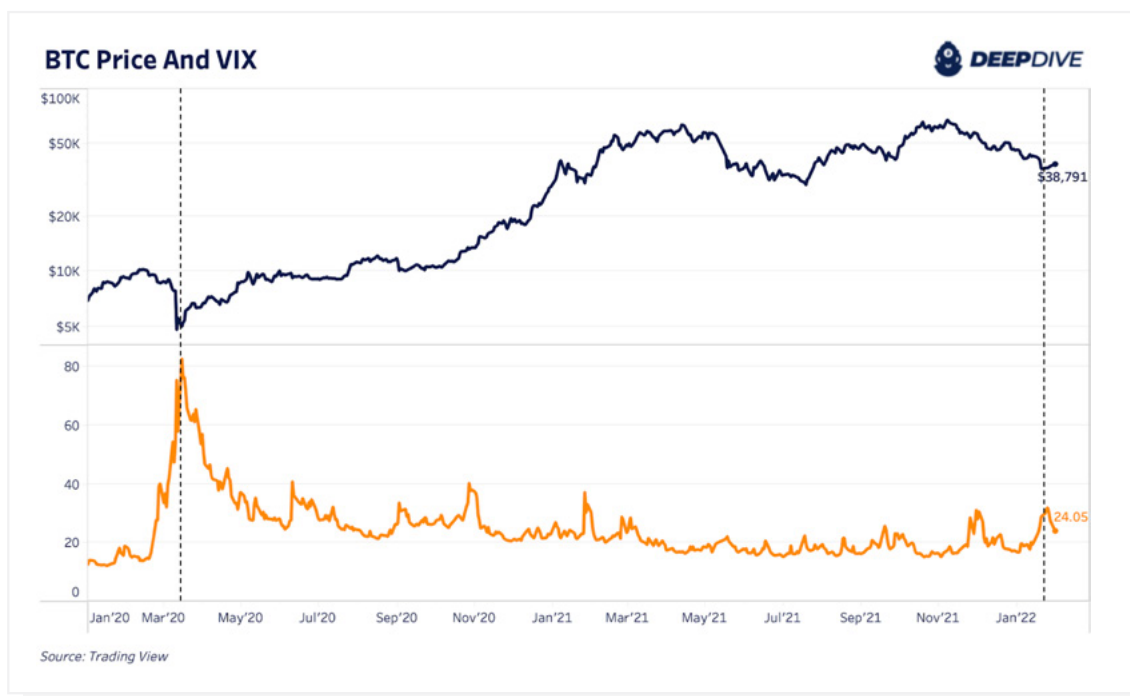
We can assume with a high degree of certainty that the same macro allocators who were indiscriminately dumping tech exposure, were also market selling shares of GBTC. Although no bitcoin can be released from the trust (aside from the automated 2% fee rolloff), the greater the discount to NAV that GBTC trades with, the more spot demand the product siphons from bitcoin itself.

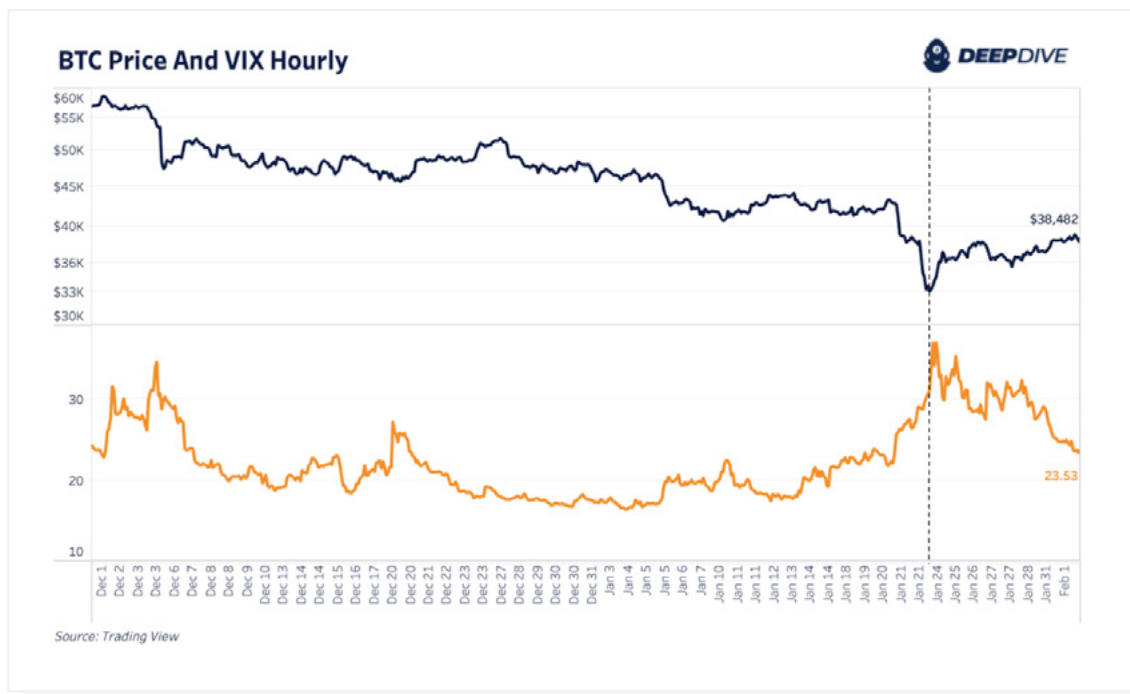
For the time being, shares of GBTC look to present an attractive opportunity to buy bitcoin at a large discount for institutional investors or for exposure in traditional retirement accounts. It should be noted that shares of GBTC do not have the native properties that bitcoin itself carries (i.e., sovereign ownership, censorship resistance, global liquidity).

One should expect the GBTC discount to approach closer to NAV before significant price appreciation in bitcoin (the asset itself), due to the incentive the discount places to allocate to GBTC.

During bitcoin's maturation process as a global asset, it has increasingly become correlated to equities and risk-on assets. As a response (and as a result of how investors view the asset), bitcoin price falls with higher periods of macro volatility. Spikes in market volatility as seen through the VIX, the Chicago Board Options Exchange's CBOE Volatility Index, emphasize the relationship between S&P 500 volatility and bitcoin price short-term.

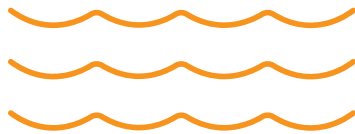
The most recent VIX spike reaching over 37 on the index over the last two weeks coincided with bitcoin's correction down to approximately \$33,000.





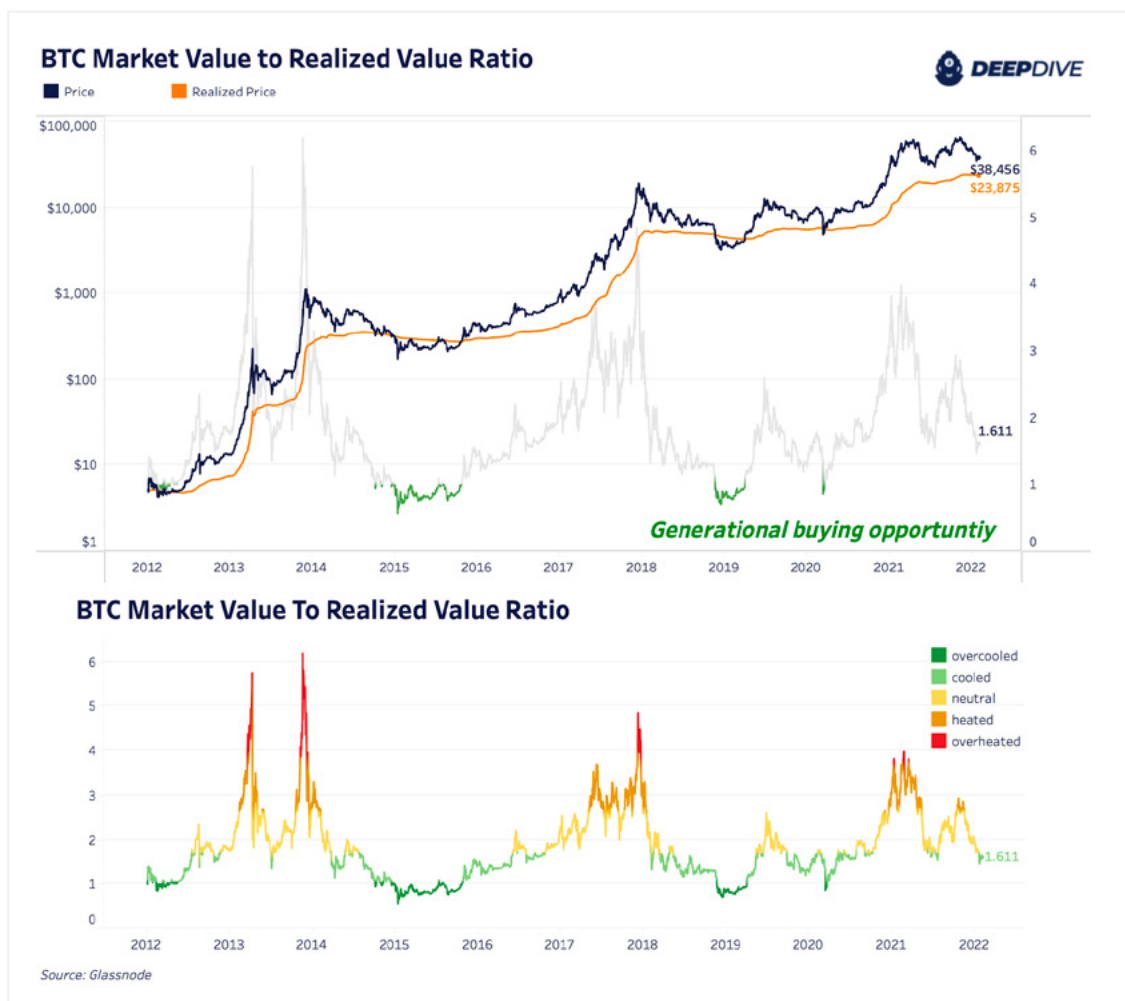
Going forward expect bitcoin to experience temporary weakness during risk-off periods in legacy markets, which can be viewed through the VIX.

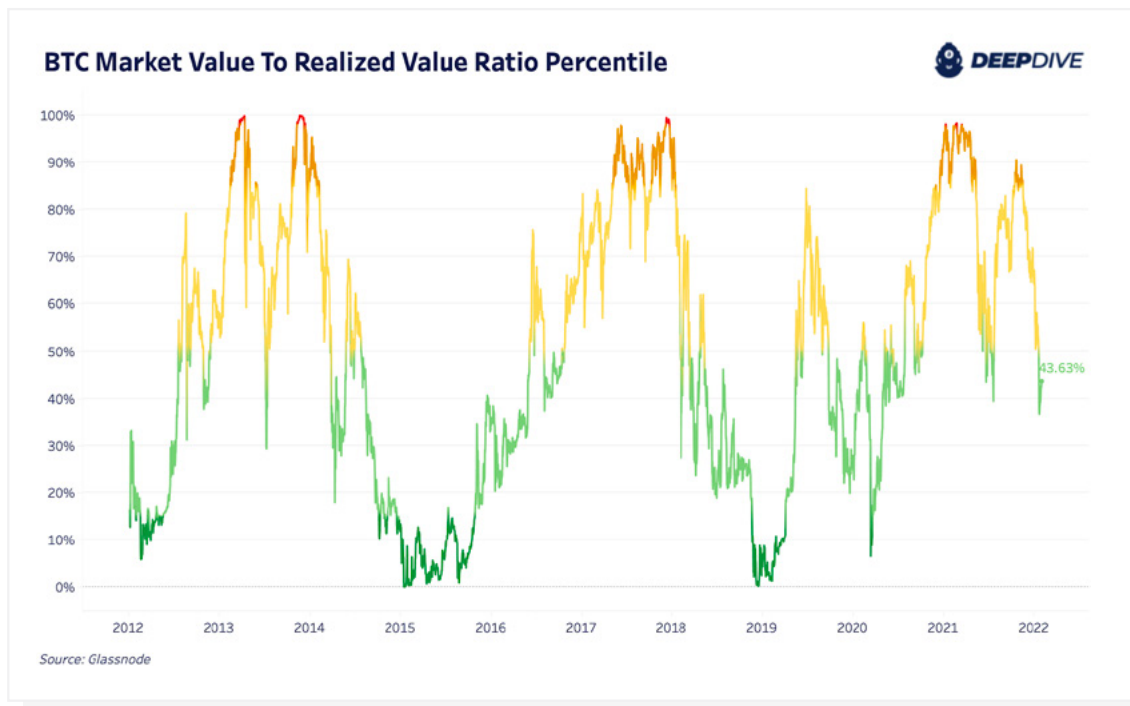
ON-CHAIN ANALYSIS



One of our most referenced on-chain metrics is the realized price. Realized price takes realized cap, which values the circulating supply at the price that each bitcoin (technically: UTXO) last moved, and divides it by circulating supply. Simply, realized price can be thought of as the on-chain average cost basis of the network.

Currently, the realized price is \$23,875. A historical look at the ratio of the market price and realized price displays the boom and bust monetization cycles of bitcoin throughout history. This ratio, called the MVRV (market value to realized value), reached a cycle peak of 4.02 in February of 2021, with a current reading of 1.61.





These boom and bust cycles, which can be observed as “MVRV bubbles” occur because an influx of capital chooses to enter the market and attempts to acquire a share of supply. This dynamic occurs while the available supply remains fixed in absolute terms and the market is much smaller in terms of willing sellers.

One should note that anytime that the price of bitcoin has fallen below its realized price, it has served as a generational buying opportunity for convicted buyers. While it is certainly not our base case that bitcoin falls to \$24,000 or below, nothing is ever certain. A historical framework for evaluating the bitcoin market and its wide range of extreme possibilities should serve market participants well.

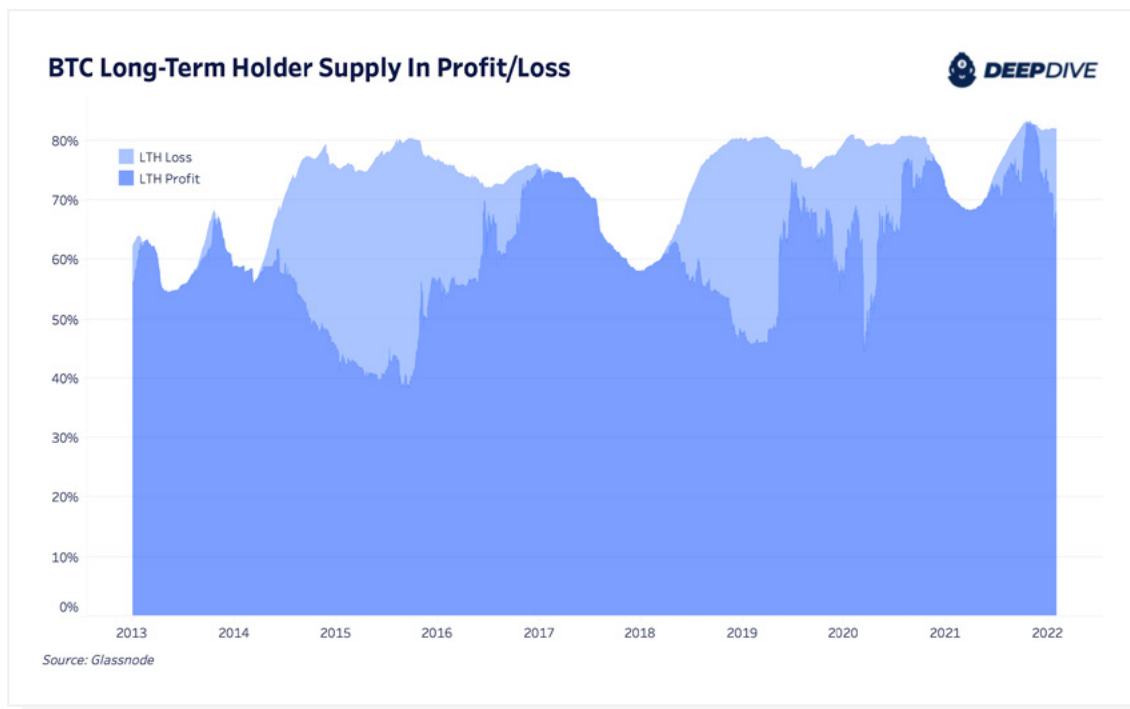
Currently the MVRV Ratio is in the 42nd percentile, a sign showing bitcoin is moderately cheap relative to historical data.

LONG-TERM AND SHORT-TERM HOLDERS

[For information on the quantification of long-term and short-term holders, click here.](#)

Key insights can be gathered about the bitcoin market from the actions of long-term and short-term holders.

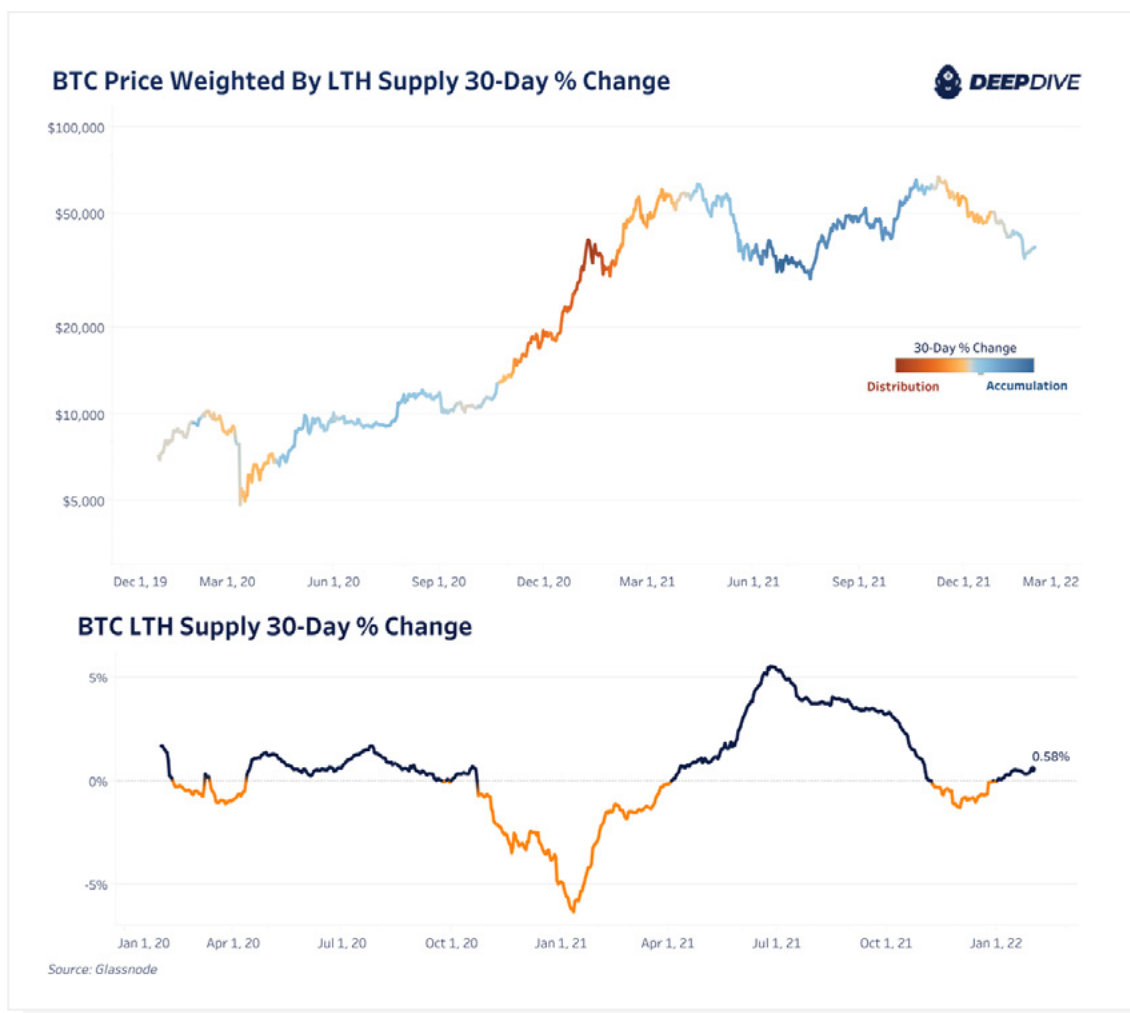
Throughout bitcoin market cycles, the long-term holder base accumulates supply during bear markets and consolidation periods, priming the market for price appreciation as new capital enters the fold.



Interestingly, despite long-term holders making up over 80% of the non-exchange balance supply, which has previously served as a threshold for an impending bull market following an extended period of consolidation/bearish price action, bitcoin's price declined by more than 50% from its November all-time highs.

Similarly, long-term holders were net distributors for two months of downtrend starting in November, a historical oddity.

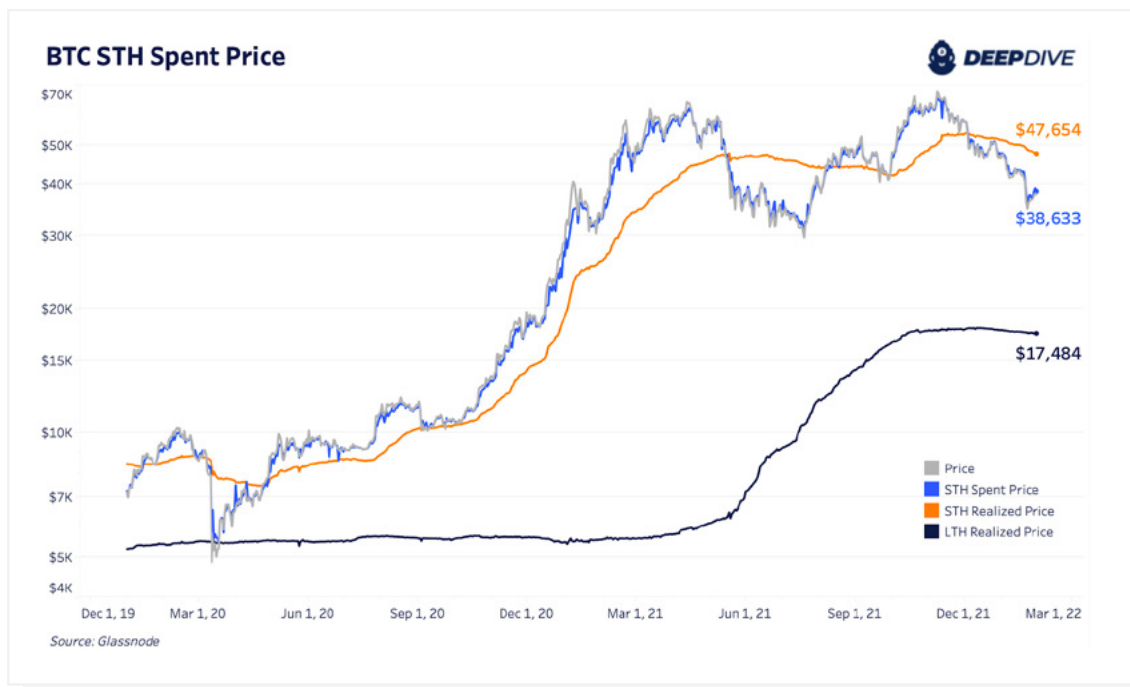
It can be presumed that this had to do with bitcoin's increasing adoption as a macroeconomic central bank debasement hedge, and during times of increasing economic uncertainty (see months leading up to March 2020), the "smart money" of bitcoin long-term holders will become slightly more defensive and "risk-off" back into fiat currency.



Bitcoin long-term holders have since become net accumulators during the month of January once again.

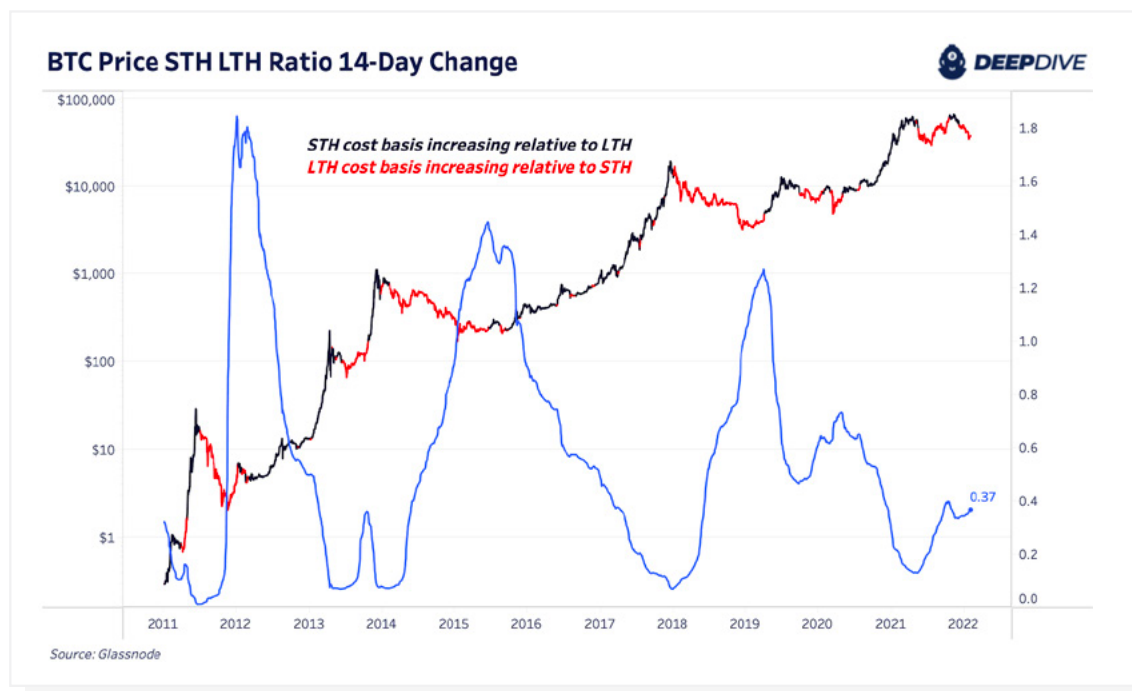
With the market decline going into December, price dropped below the short-term holder cost (realized price) at \$53,000, which has served as bull market support during previous cycles.

In the chart below, the aggregate cost basis of short-term holders and long-term holders are charted along with the daily spend price of bitcoin on-chain (daily on-chain cost basis). When price drops below the cost basis of short-term holders, this means certain newer market participants are underwater, often putting increasing pressure on the market as convicted participants happily accumulate at a discount.



As 2021 investors have realized losses (as we can see on-chain) and the cost basis of short-term holders has decreased, the STH:LTH Cost Basis Ratio has been increasing since early December. This coincides with the price fall below the cost basis of short-term holders.

Shown below is this ratio and its historical relevance to the bitcoin market.



Why does the metric perform fantastically well over the history of bitcoin in marking the bull and bear cycles? Well, in particular the STH:LTH Cost basis ratio:

Increases when:

- STH cost basis is decreasing relative to LTH cost basis (capitulation/realizing losses)
- or
- STH cost basis is increasing less than LTH cost basis (large and increasing amount of coins aging into LTH cohort, heavy accumulation)

Decreases when:

- STH cost basis is increasing more than LTH cost basis (supply squeeze, new capital inflows must competitively bid up the price)

It is important to understand that the price of bitcoin rises when the marginal seller is exhausted, which is why this metric is so effective, as we can see the supply side of the equation with complete transparency in bitcoin. In the two scenarios where the ratio is increasing, sellers are actively firing out their ammo, which eventually runs dry.

In a game-theoretic sense, bitcoin accumulators have come to understand that bitcoin is a superior monetary asset compared to anything else in the world, which is why it continues to “not die” and come back stronger than ever, following every local market top.

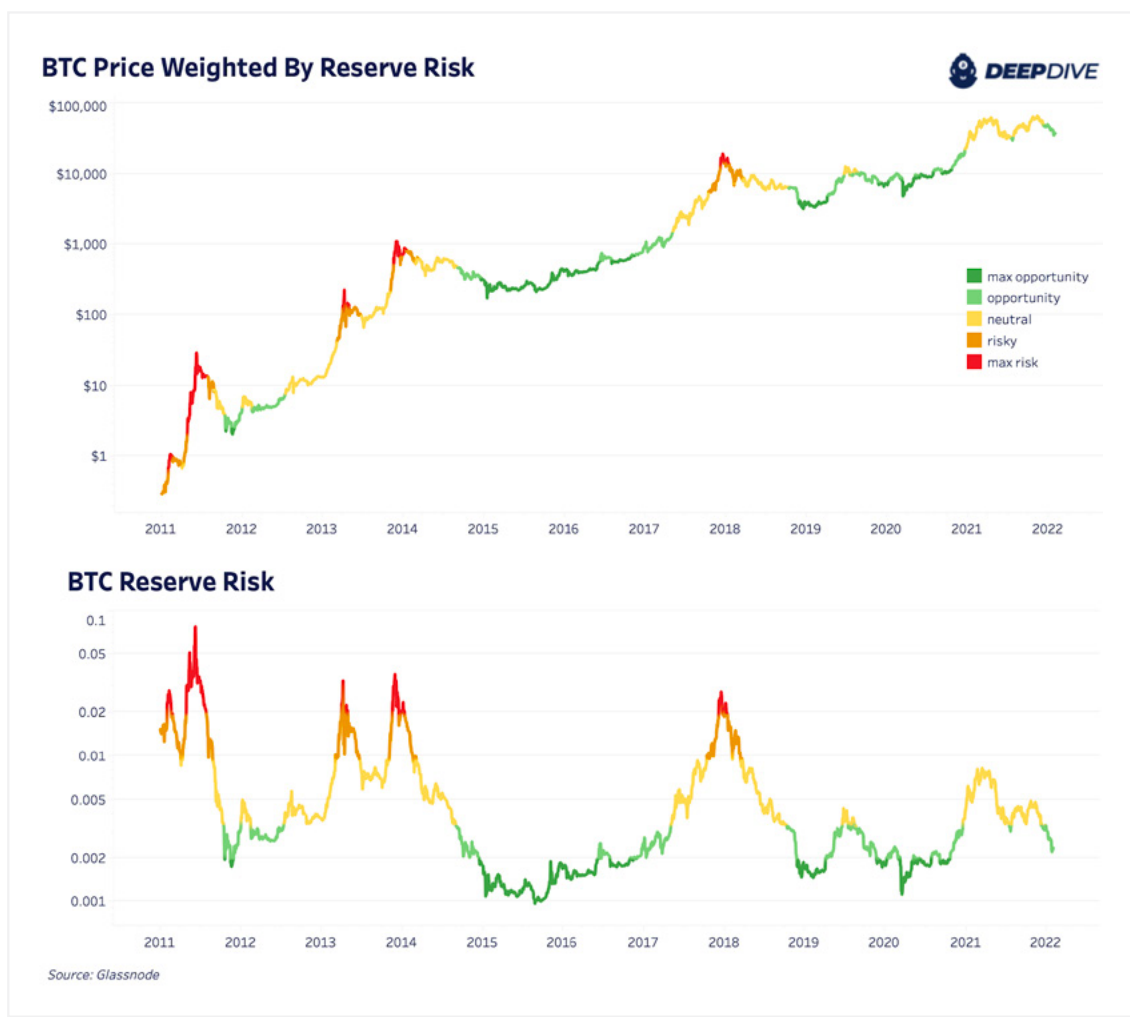
This dynamic of relentless long-term holder accumulation when the asset is unattractive from a price-action standpoint, eventually always leads to another “supply squeeze,” as marginal buyers have to compete to acquire an absolutely scarce asset in a cornered market.

This is eloquently called bitcoin’s “number go up” technology.

RESERVE RISK

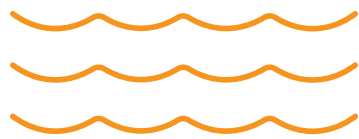
Reserve Risk is a cyclical market indicator which aims to quantify the risk/reward of allocating to bitcoin based on the conviction of long-term holders. Simply, Reserve Risk is a ratio between the current price of bitcoin and the conviction of long-term holders. The current price can be thought of as the incentive to sell and the conviction of long-term holders/investors can be quantified as the opportunity cost of not selling.

[*For an in depth explanation of Reserve Risk, read more here.*](#)



Currently the Reserve Risk indicator is far below its reading during the depths of the market in the summer of 2021, and is firmly in the *buy* zone.

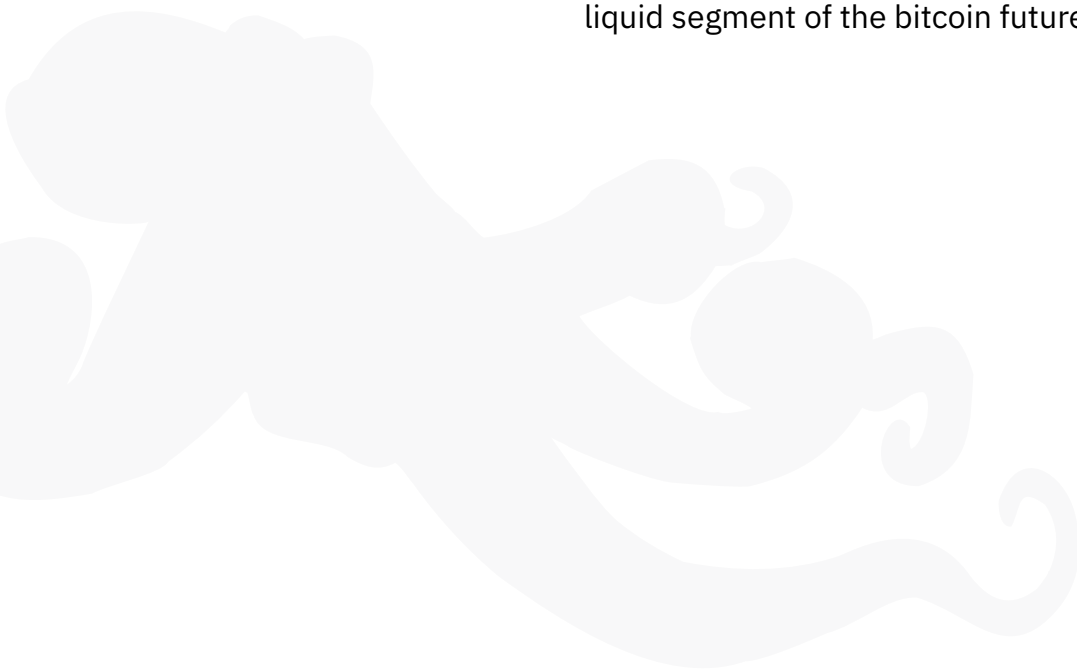
BITCOIN DERIVATIVES



The bitcoin futures and derivatives market are important to understand on a short-to-medium-term time frame. Dislocations in these markets naturally clear over the long term often through excessive volatility (to the upside or downside).

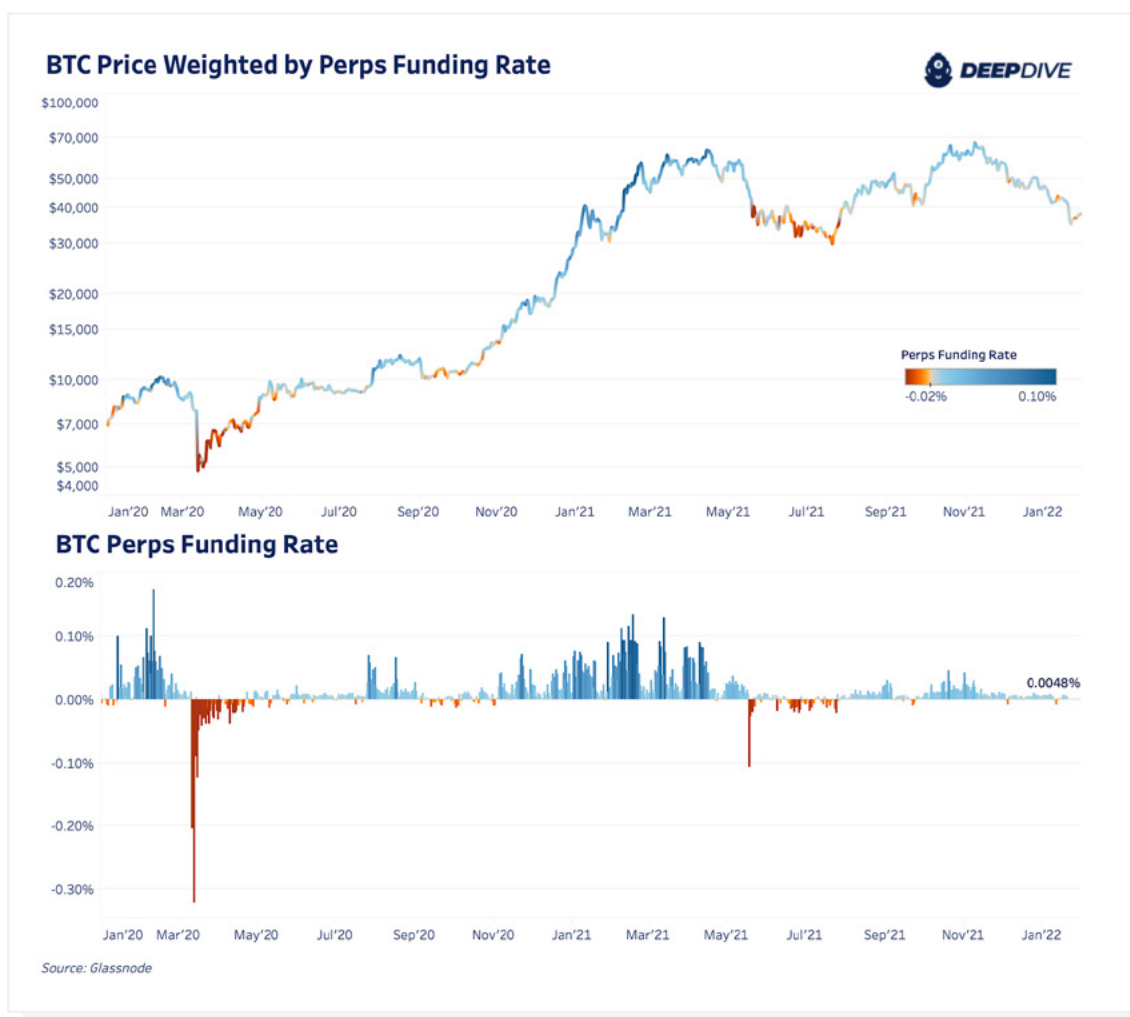
In bitcoin futures markets, there can never be more shorts than longs, it is always a 1:1 relationship, but the positioning of these contracts can tell us a lot about the state of the market.

The two distinct types of futures contracts are perpetual swaps and quarterly futures. We will first examine the perpetual swap futures market, as it is the largest and most liquid segment of the bitcoin futures market.



In a perpetual futures contract, there is no expiry, and the contract simply rolls over in perpetuity until closure. The funding rate is a periodic payment either to traders that are long or short based on the difference between perpetual contract market and spot prices. Therefore, depending on open positions, traders will either pay or receive funding. Funding rates are calculated and paid out several times per day (typically in eight-hour intervals).

Funding rates prevent lasting divergence in the price of perpetual swap contracts relative to the spot market.



The funding rate is typically positive, as there is a baseline interest rate associated with the derivative contract margin, combined with the positioning of the contract relative to the spot market, which often is leading due to the fact that people generally want to be long bitcoin.

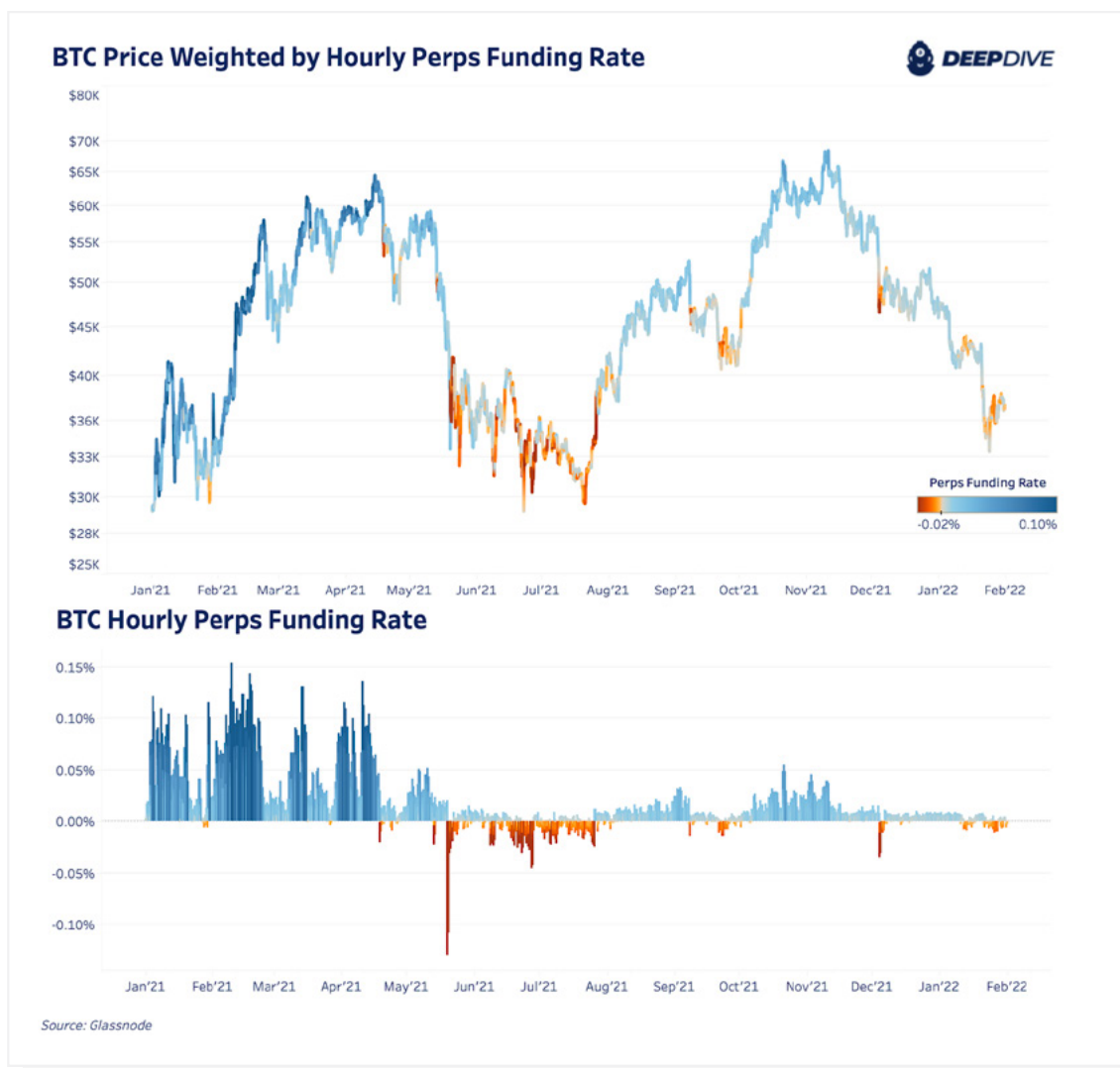
Displayed below is the average hourly funding rate across derivative exchanges since the start of 2021.

Given that funding payments are made paid every eight hours between longs and shorts, a funding rate of 0.10% is an annualized payment of 109.5% ($0.10\% \times 3 \times 365$) from longs to shorts, which is obviously unsustainable. Funding this high places a large economic incentive for market participants to short bitcoin via the perpetual futures market and receive the funding payment.

Conversely when funding is negative, if you enter a long position you are paid to hold by traders holding short positions.

Funding goes negative as a result of:

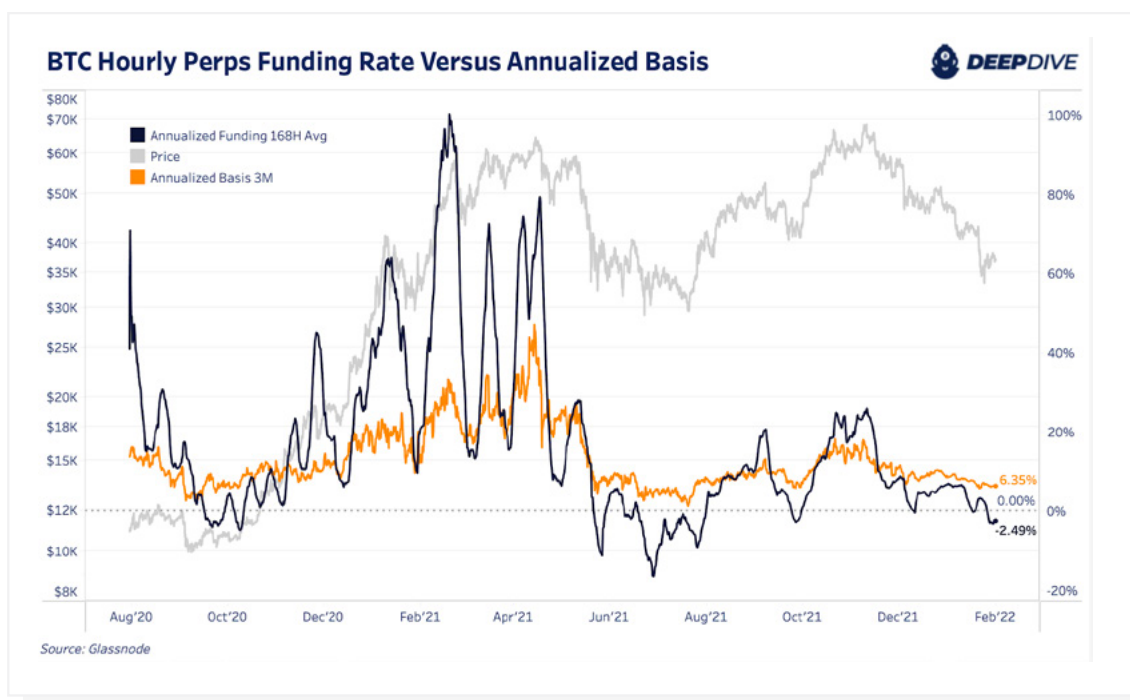
- Severe long liquidations (forced selling of futures contracts that got a margin call) that drive the price of the perpetual swap below that of the spot market
- Divergence between spot market price and perpetual swap market trading, analogous to an attempt to keep a beach ball underwater



Funding rates reached extremely high levels in early 2021, before cratering and turning negative during the summer bear market. Then traders got aggressively bearish, leading to sharp short liquidations, before the futures ETF introduction. This helped spark a new narrative, rally in sentiment, and subsequently a rise in speculative activity to go along with it.

Pictured below is the 168-hour (7-day) moving average of perpetual futures funding along with the annualized basis between quarterly futures. During the spring of 2021, bullish perpetual swaps traders were paying annualized rates of up to as high as 100% of their notional position size to remain long.

The annualized quarterly basis reached as high as 48% at the local top in April meaning traders could buy spot bitcoin and sell the forward three month futures contract to capture a 12% market neutral yield over a three-month period.



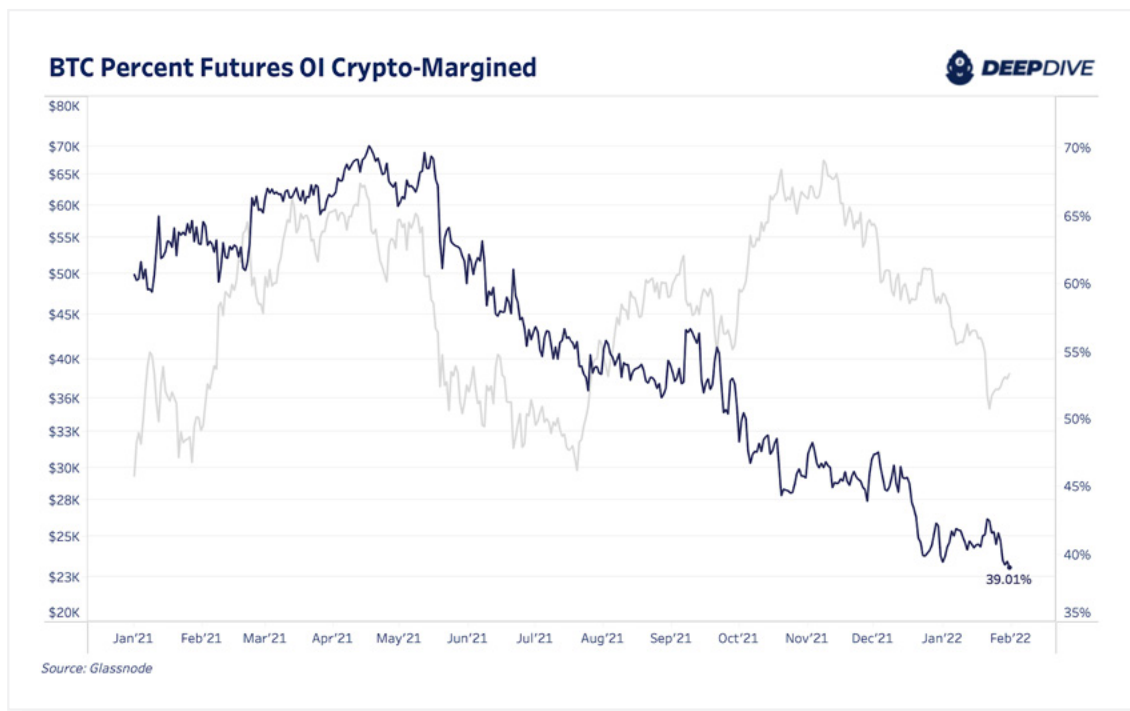
Following the summer downturn, where the quarterly basis briefly traded in backwardation (opposite of contango, when futures price is below spot price), and where perpetual futures funding was deeply negative, long-biased speculation picked up, fueling a rise to new all-time highs.

Over the past week, funding has been negative on average with the annualized quarterly basis currently at 6.35%. In terms of derivative market capitulation, there is certainly an ability for lower funding and basis, but one has to consider the macro allocators that have entered over the past two years. When thinking about a scenario with sustained negative funding/basis, arbitrageurs would be paid to allocate to long bitcoin, meaning this scenario isn't likely to be sustained for a meaningful amount of time.

Any sustained period of negative funding in the perpetual swap market or backwardation in the quarterly futures market should be viewed as a large buying opportunity by investors.

COLLATERAL MAKEUP OF DERIVATIVES MARKET

Lastly we can look at the collateral makeup of the bitcoin futures market. Since the start of 2021, aggregate bitcoin futures open has shifted from approximately 60% crypto-margined to 39%, meaning that stablecoins are serving as collateral for a majority of bitcoin futures open interest.



This is a very healthy development as it means the potential for mass long liquidation events that bitcoin has experienced many times in the past are less likely to happen, as stablecoin-margined futures don't have the convex relationship that crypto/bitcoin-margined futures have on the long side, where during a downturn position PNL declines in tandem with collateral value.

During bull markets, greed and overall sentiment that “this time is different” leads speculators to “long their longs,” aka speculating on the price of bitcoin to rise using their bitcoin as underlying collateral.

When a large proportion of the market is thinking this way, systemic downside risk is possible. Currently with a very muted basis and perps funding rate, along with a one-year low percentage of crypto-margined open interest, the derivatives market looks as healthy as it has looked in a while.

MACROECONOMIC OUTLOOK



THE END GAME

At the risk of sounding redundant, our long-term outlook on the global financial system is almost entirely unchanged. In a fiat monetary system, all money is created through credit expansion, and thus money is destroyed through debt repayment or default.

While inflation is a result of an increasing money supply chasing the same amount of goods or services shortages, monetary deflation in the way economists think of it is a balance sheet problem.



The Federal Reserve Board (and other global central banks) seemingly come to the rescue every time there is a financial crisis or asset bust because a crash in asset prices creates a fundamental asset/liability mismatch on balance sheets across the global economy. They do this by lowering interest rates or purchasing assets (buying debt) to restore the asset side of balance sheets and to quell the deflationary spiral that has started to unfold.

This is because in a fiat system if the credit system begins to unwind, asset prices fall, lending activities between counterparties stops (because of balance sheet contagion), debtors become insolvent as borrowing costs skyrocket and their assets fall, resulting in a reflexive cycle all the way down. The two differences between today and previous global debt crises is that:

1. Interest rates weren't already 0% nominally, restricting the ability of central banks to stimulate further
- or
2. There was a hard asset peg (gold) for the credit expansion and malinvestment to collapse back onto. With a bearer asset backing the unchecked credit expansion, you could (theoretically) insulate yourself from the inflationary crack-up boom and subsequent bust of a credit bubble by holding a monetary asset with no counterparty risk and an unforgeable production cost.

Following 40 years of lower years' highs in interest rates in the dollar, which serves as the world reserve currency in a previously unprecedented global fiat experiment, the economic endgame is rather binary.

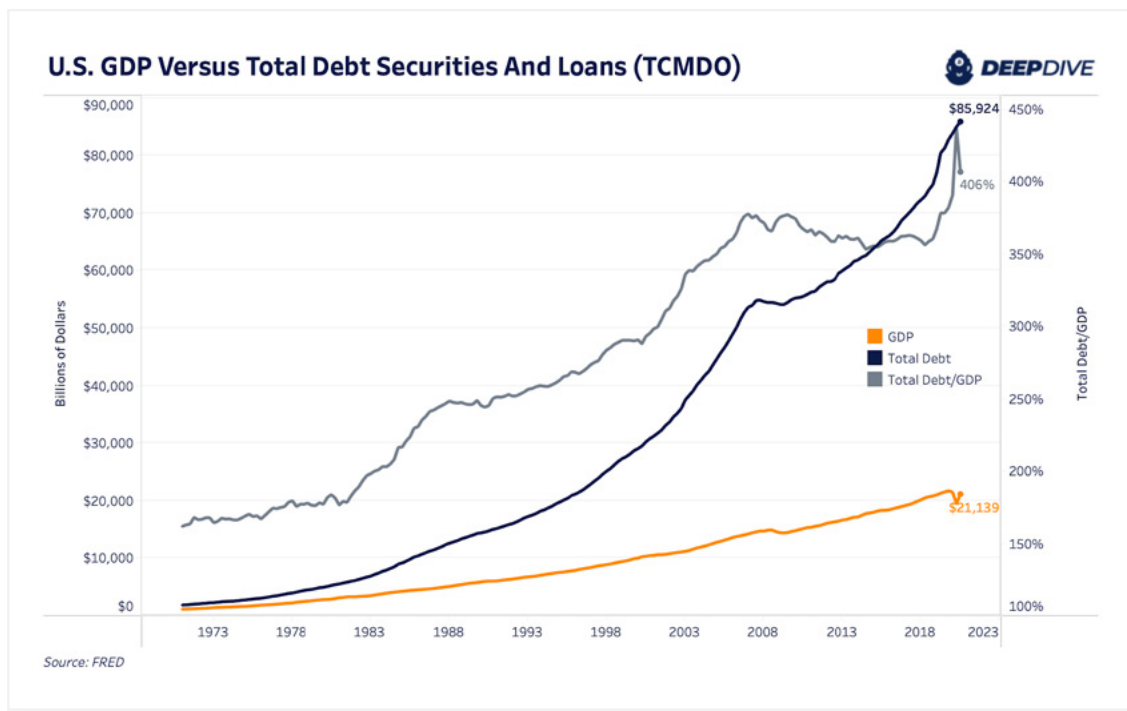
Either:

- **Deflationary Collapse**, as an entire global economic system built upon credit unwinds and the fractionally-reserved financial system becomes completely insolvent.
- **Perpetual Monetary Expansion**, as the ever-growing pool of liabilities that are contractually obligated to be fulfilled meets a political system that can create money with a pen stroke, i.e., if the proverbial can can be kicked, it will be.

U.S. GDP DEBT RELATIONSHIP

Since 1971, United States gross domestic product has increased from \$1.135 trillion to \$23.992 trillion - a 2013% increase. Total debt securities and loans outstanding have risen from \$1.667 trillion to \$85.924 trillion - a 5054% increase.

The figure that generates income to pay interest on the debt load has grown by 2013% while the debt load has increased by 5054%; notice a problem?

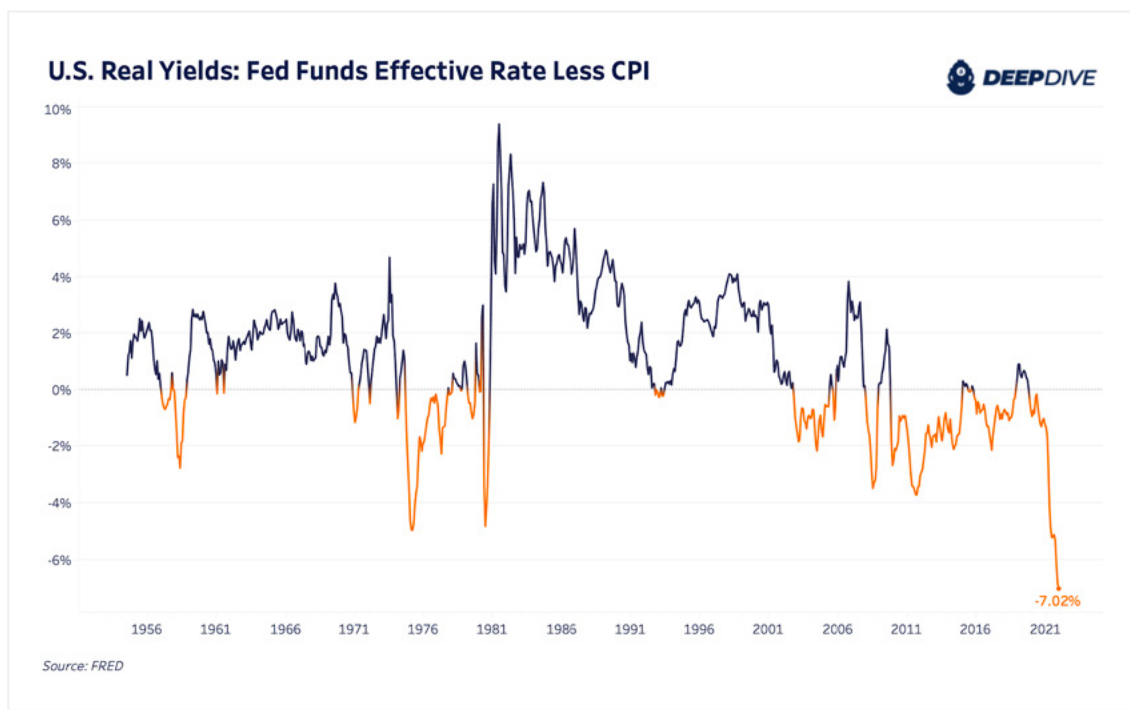
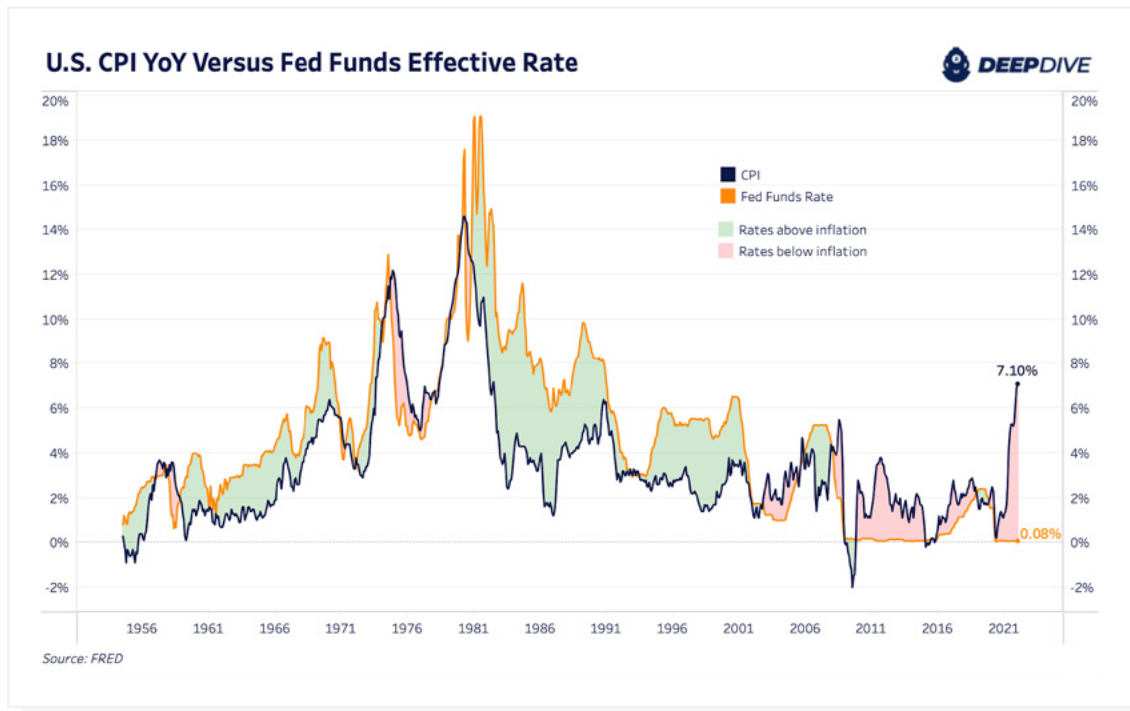


This has caused Total Debt/GDP to balloon to an unbelievable 406%. How can this situation possibly be resolved? The answer is simple in theory, and much harder in practice: financial repression, the act of holding yields far below inflation in an attempt to lower the real debt burden.

A [paper published by the International Monetary Fund](#) in 2011 lays out the playbook,

"A subtle type of debt restructuring takes the form of "financial repression." Financial repression includes directed lending to government by captive domestic audiences (such as pension funds), explicit or implicit caps on interest rates, regulation of cross-border capital movements, and (generally) a tighter connection between government and banks. In the heavily regulated financial markets of the Bretton Woods system, several restrictions facilitated a sharp and rapid reduction in public debt/GDP ratios from the late 1940s to the 1970s. Low nominal interest rates help reduce debt servicing costs while a high incidence of negative real interest rates liquidates or erodes the real value of government debt. Thus, financial repression is most successful in liquidating debts when accompanied by a steady dose of inflation. Inflation need not take market participants entirely by surprise and, in effect, it need not be very high (by historic standards)."

REAL YIELDS, CPI, FED FUNDS RATE



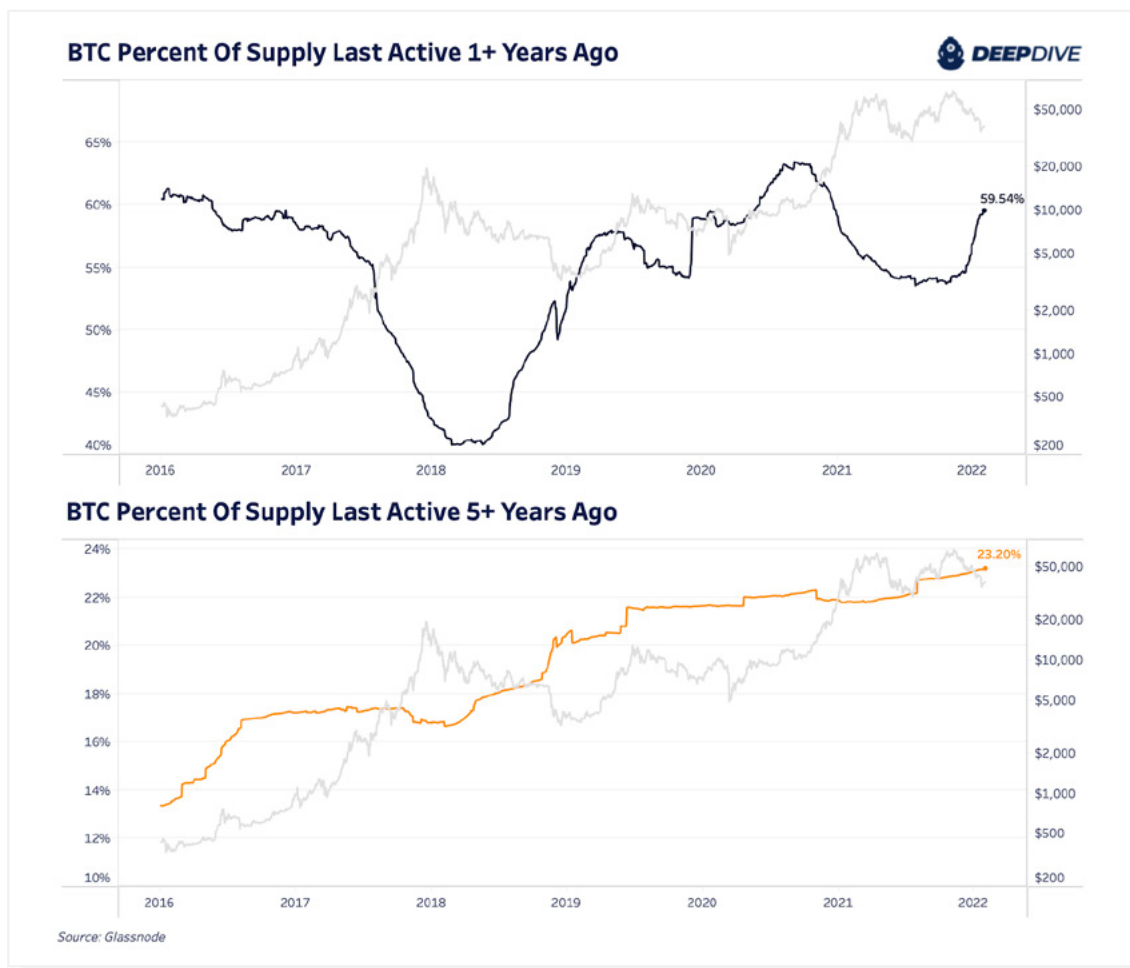
What does this mean exactly for investors? It means that hundreds of trillions worth of capital in debt markets is mathematically guaranteed to lose money over time as the currency debases faster than the nominal interest payments debtors receive from creditors.

Even with the Fed's supposed attempt to start tightening into 2022, it is extremely unlikely the global financial system can handle positive real yields, which means that creditors are transferring their real purchasing power to debtors.

The solution should be obvious: non-sovereign, credibly scarce asset with built-in native property rights to synergize global energy and financial markets. Bitcoin is a check on central bank irresponsibility during a time where they have painted themselves into a corner, with few options at their disposal.

While macro and long/short funds have rushed to sell their bitcoin at the first hint that the Fed could raise interest rates, a growing amount of people around the world understand the endgame for what it is:

Bankers and bureaucrats have been replaced by open source software and an immutable ledger of economic truth. In the monetization phase of bitcoin, the massive volatility serves as an opportunity for critically thinking opportunists to front-run the rest of the world to acquire the best money the world has ever seen.



In the words of European Central Bank President Christine Lagarde on bitcoin,

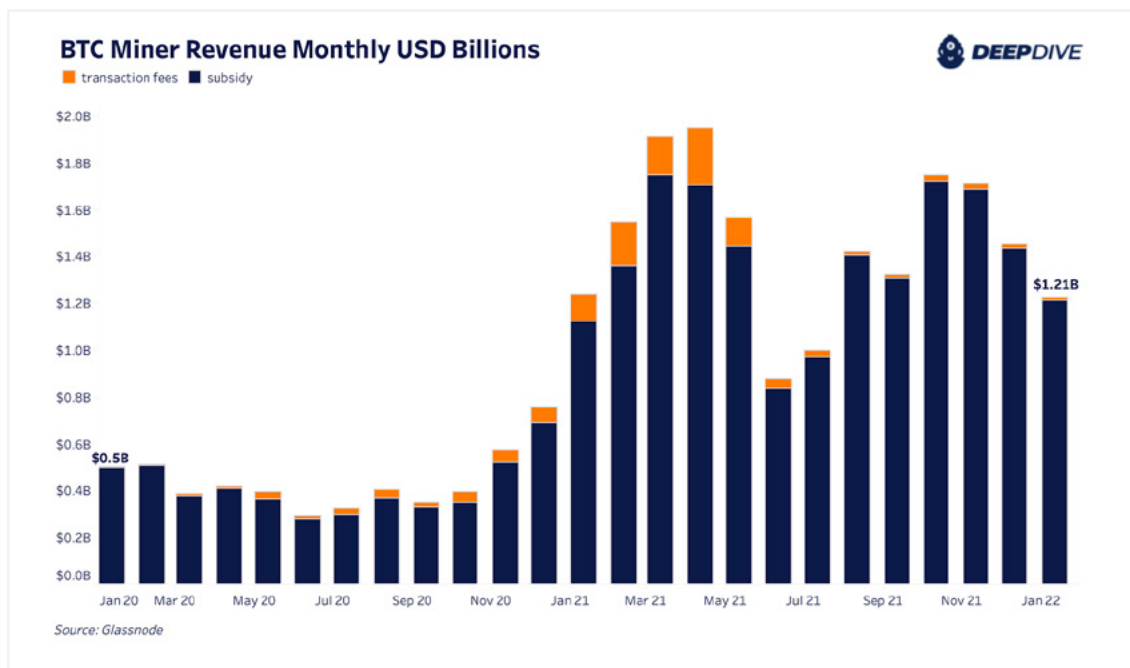
"There has to be regulation. This has to be applied and agreed upon ... at a global level because if there is an escape that escape will be used."

Unfortunately for the central bankers of the world, the escape is open as an increasingly large number of people are seeing the current economic situation for what it is.

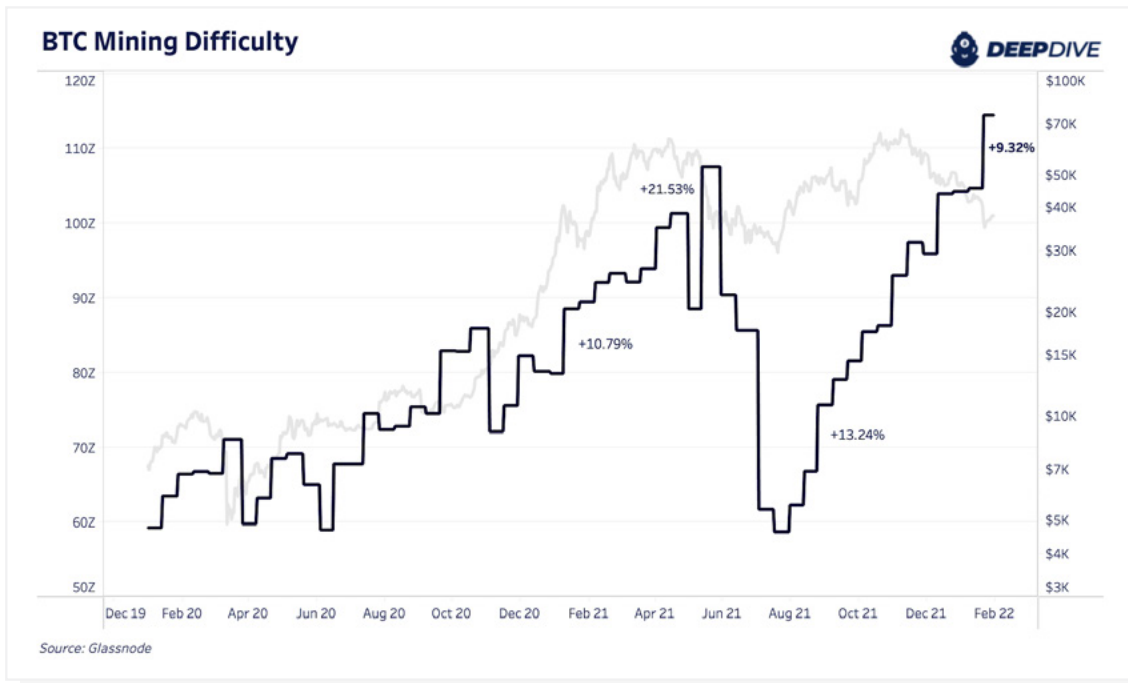
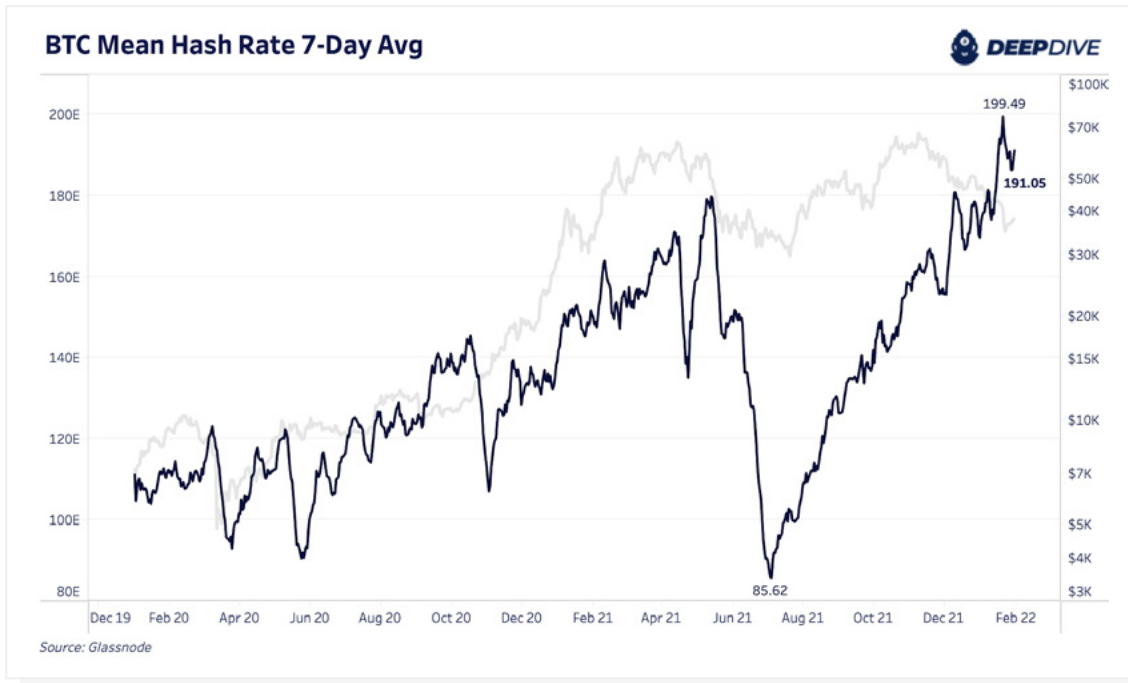
BITCOIN MINING



As bitcoin price has fallen since October so has monthly miner USD revenue. January total monthly revenue came in at \$1.21 billion (or \$14.52 billion annualized). Although we've seen this revenue fluctuate with price, miner monthly USD revenue is up 142% over the last two years.



Bitcoin's hash rate hit new all-time highs this month reaching just shy of 200 EH/s. Hash rate quickly came back down to 191.06 EH/s after a 9.32% difficulty adjustment which was the fourth-largest upward difficulty adjustment over the last year. In response, the next difficulty adjustment is expected to be slightly negative.

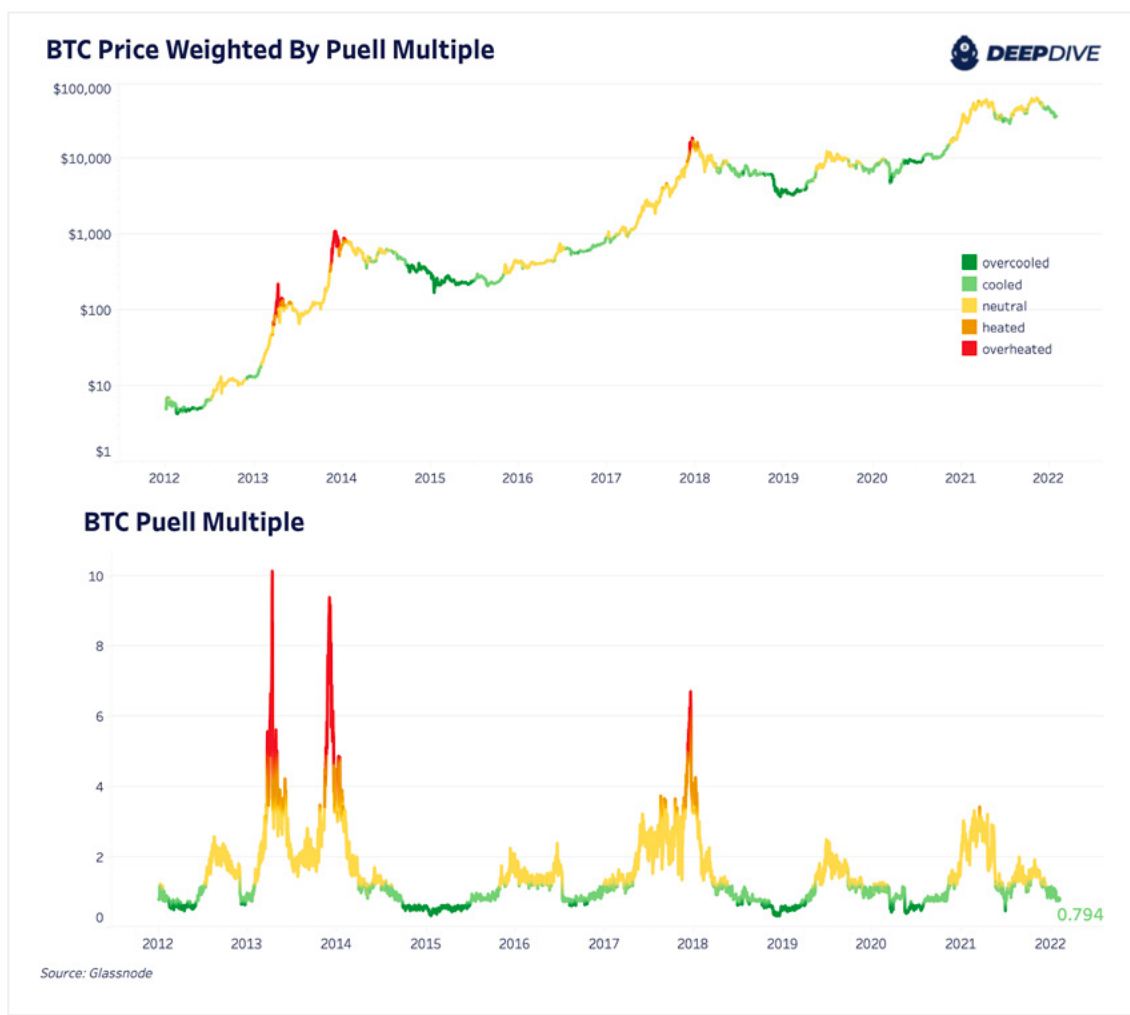


With hash rate rising and price falling, hash price has been in free fall over the last few months, down to \$0.18. We expect that to continue falling short- to mid-term as price ranges and hash rate growth continue to grow in 2022. Although this has been a golden year for miner profitability, miner expansion and competition is catching up. Hash price now sits roughly in the middle between the two-year high and low.



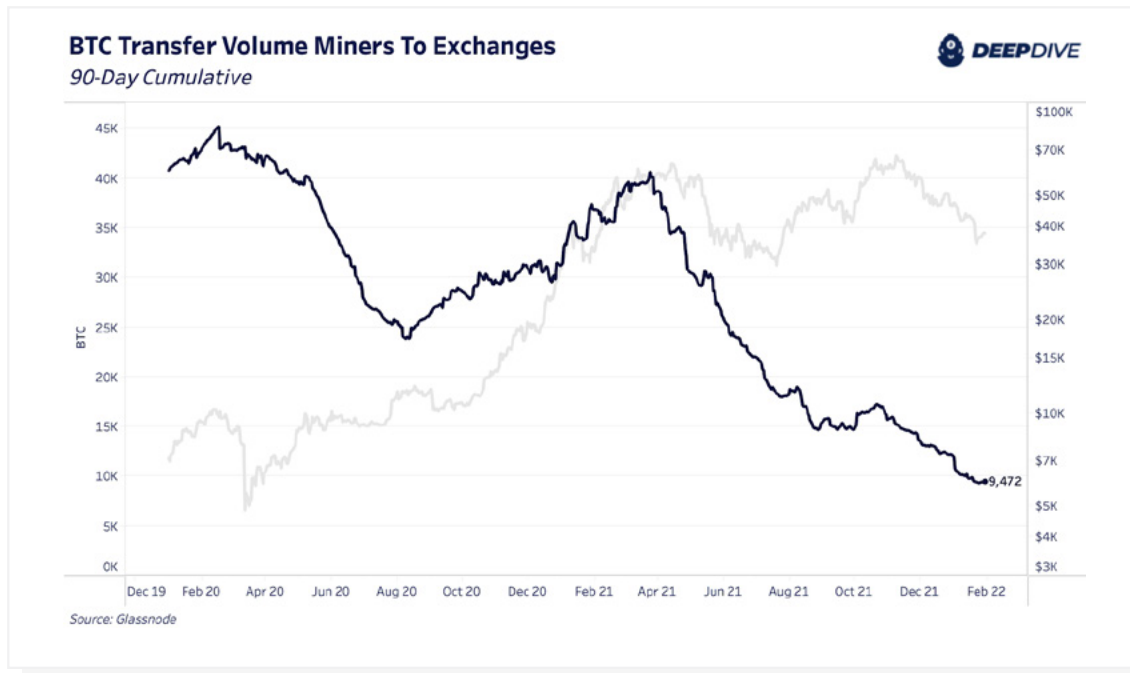
The Puell multiple, like many macro on-chain indicators, turned lower this month and is now right around its 25th percentile. The multiple measures the daily bitcoin issuance in USD relative to the 365-day moving average of daily issuance value. In aggregate, miner USD daily income is trending lower than the average miner income over the last year.

Typically when we see the Puell multiple reach bottoms, below the 15th percentile or at 50%, there's miner capitulation in the market with incomes and profitability dropping, which forces less competitive miners out of the market. We've yet to reach those levels of capitulation that we've seen in previous cycles.

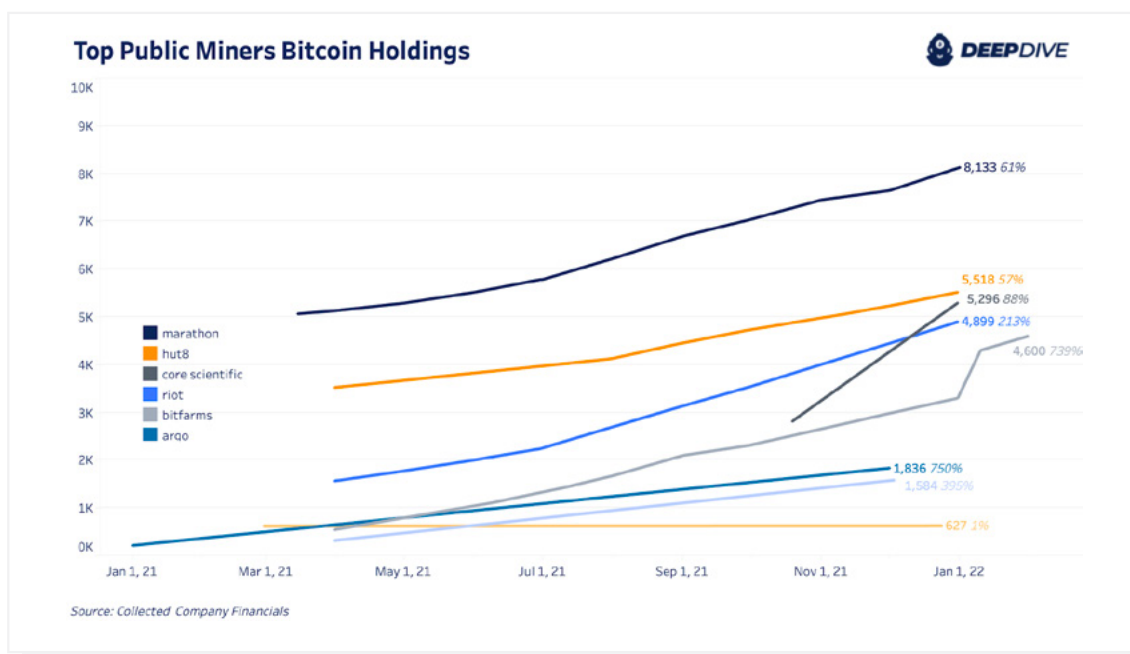


With profitability just falling over the last few months, miners have yet to revert to market sell pressure levels seen over the last two years. The estimated transfer volume from miners to exchanges continues its downward trajectory. With public miner bitcoin treasuries ramping up, armed with increasing exposure to debt and equity markets, miners in aggregate sell much less bitcoin than previous cycles.

As public miners continue their expansion plans taking up more total mining market share, this is a new trend that looks here to stay.



As for miner bitcoin accumulation, all of the top public miners are growing their treasuries. Over the next week, we will have February production updates for most of the market to confirm continued growth. The latest to report is Bitfarms which bought an additional 1,000 BTC this month while adding more to their treasury from their mining production.



RISK FACTORS

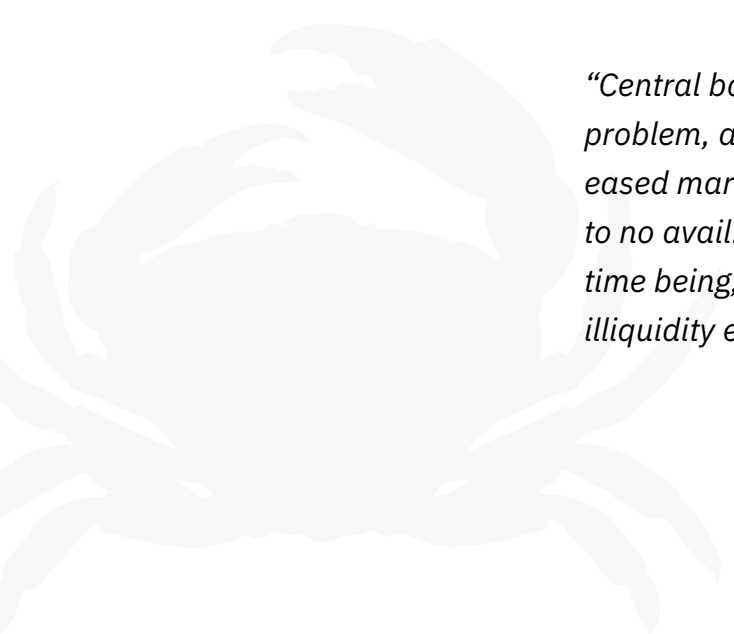


Risk factors over the short/medium term remain similar to those we highlighted in previous monthly reports.

In our [May 2021 monthly report](#) we wrote:

“While any talk of tapering may at this point very well be jawboning by central bank governors, who seemingly have been hitting the airwaves daily to dismiss inflation concerns, the eventual attempt by the Fed to wean the market off of quantitative easing programs and/or raise the Fed Funds Rate would very likely end up exactly like the last, an utter failure, as a rise in bond yields tightens financial conditions as liquidity dries up, causing volatility to explode and all risk assets sell off in tandem.

“Central bank liquidity injections cannot fix a solvency problem, and the very same central bank backstop that has eased markets for over three decades will one day work to no avail. Bitcoin is protection against both... but for the time being, it is still treated as a risk asset in a de-risking/illiquidity event, and allocators should plan accordingly.”



And in our [November 2021 monthly report](#), we stated:

“The most significant factor is bitcoin acting as a risk-on asset with high correlations to equities during an increased period of macroeconomic uncertainty and overextended equity valuations. Although we expect bitcoin to transition over time, acting as a more risk-off asset in the future, today it is highly subject to broader market equity moves as the market cap is only a fraction of a percentage relative to broader markets...”

“The continued strengthening of the U.S. dollar is a key trend to watch as a rising \$DXY comes with a rising risk-off market sentiment. A rising dollar index will negatively impact almost all asset classes, especially bitcoin. As global inflation runs hot and global fiat currencies relatively lose value, the demand for dollars increases especially in regions and industries with elevated U.S. dollar-denominated debt.

“Increased macroeconomic uncertainty largely depends on the latest United States Federal Reserve policy stance, which is now leaning more towards an accelerated tapering of their balance sheet.”

For those conducting their economic calculation with a long-term focus, the question you must continually ask yourself is how can you grow your purchasing power in a world of perpetual monetary expansion?

It’s extremely unlikely that many other opportunities offer the asymmetric opportunity of acquiring global money before it is widely adopted at the same time as the legacy system cannibalizes itself.



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