

The Structure of Cyclical Markets

The Macro forces driving market cycles in Bitcoin and Traditional Assets



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Abstract

All financial markets are driven by human behavioral dynamics, which is why similar patterns are repeated across markets, asset classes and time. These recurring patterns define the secular phases of the market cycle and create the foundation for examining the driving forces in every asset class through periods of expansion and contraction.

Utilizing the framework highlighted by this report, within the present macroeconomic context, can provide valuable signals to help investors more effectively allocate capital.

Key Points

- 1. In expansionary periods of the Short-Term Debt Cycle (STDC), low interest rates foster credit creation, causing liquidity growth for risk assets such as high-yield fixed-income securities, equities, and crypto-assets. These risk assets tend to outperform as incomes and debt levels rise alongside economic output.*
- 2. In recessionary periods, where interest rates rise, liquidity is removed from risk asset markets in favor of investments that tend to harbor wealth during retractions in economic activity, such as gold and Treasury securities. The give and take between capital allocations during the two primary periods of the STDC are what drive different investment vehicles in their secular phases.*
- 3. However, during highly inflationary recessions, future cash flows are devalued, causing a flight of capital away from many investment vehicles, including the “risk free” Treasury bond. While extremely rare, this cohort of recession historically ends with comparatively high interest rates and the wide scale destruction of aggregate demand.*
- 4. The main drivers of Bitcoin’s cyclicality are network adoption, the macroeconomic environment, and mining subsidy halvings. By examining these relationships, we can begin to understand how these forces drive Bitcoin’s price cycles.*
- 5. Like all other markets, the Bitcoin market cycle is driven by psychological dynamics. However, Bitcoin has a unique way of following these behavioral dynamics due to its full blockchain transparency; providing the ability to track market participants with more granularity than almost any other asset class. These effects have an amplified effect on the Bitcoin market because of the lack of agreed upon valuation methodology.*

Traditional Financial Market Cycles

The Short-Term Debt Cycle

The short-term debt cycle (STDC), popularized by Ray Dalio, is the primary series of human forces that drives the economy into periods of short-term expansion and retraction. This cycle is driven by fluctuations in borrowing behavior and causes assets and securities to see courses of positive or negative price growth.

The STDC, commonly referred to as the 5-10 year Business Cycle, is propelled into existence largely by monetary policy determined by central banks. As previously mentioned, borrowing and lending behavior is the key to understanding the STDC.

Productivity is what drives an economy's growth over the long-term, but because increasing productivity is a slow process, we use debt creation to propel it. Taking on debt allows Americans to spend more than they could without borrowing. The increase in aggregate demand is why we can say that credit creation drives the economy to above-natural growth in the short-term, compared to productivity.

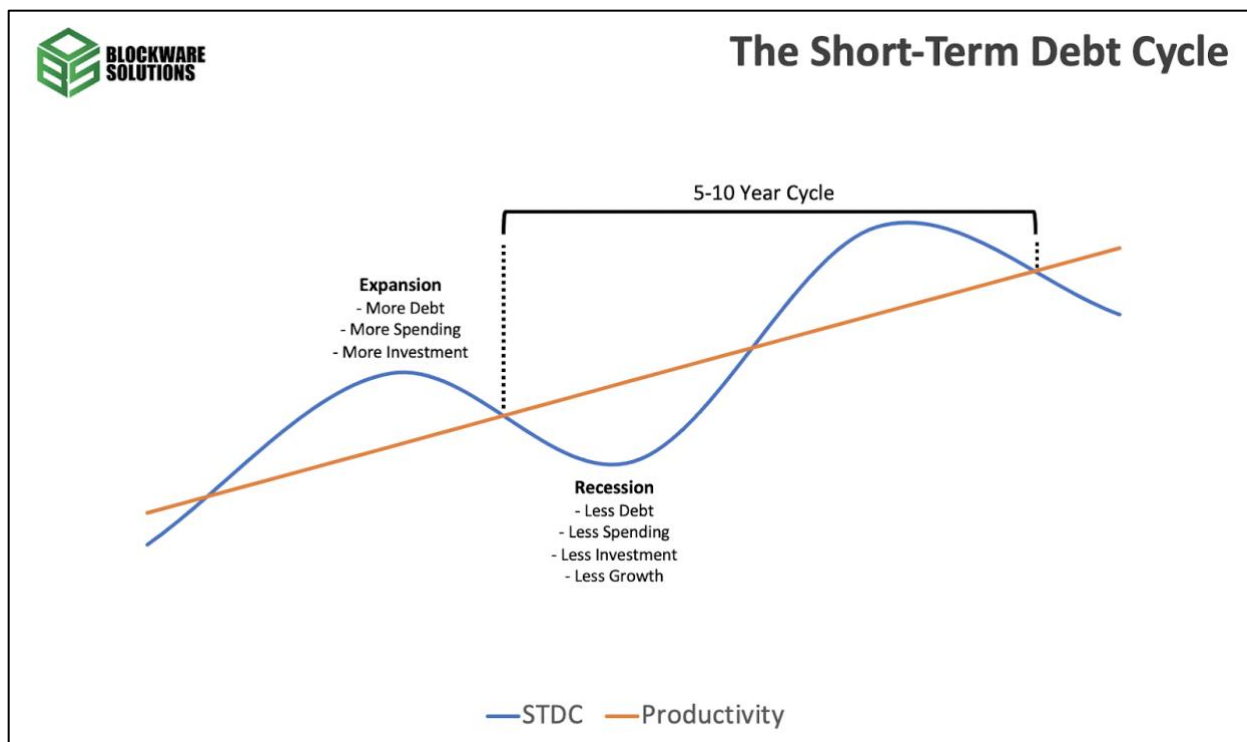
Without credit, the only ways to grow productivity are to work harder or work smarter. Of course, that's always the goal of human innovation, but it's a slower process that can be jump-started by taking on debt. But when taking on debt, you are not only borrowing capital from a lender, but you are also borrowing from your future self, creating a time in the future when you will have to repay your liabilities. This is the primary force that creates the STDC.

When monetary policy is expansionary, or favors economic growth, we see periods of lower interest rates, relative to the previous contractionary cycle. With a lower cost of debt, debt creation is incentivized due to the basic nature of humans. We generally want more: new shoes, a bigger TV, a nicer car, a bigger house, etc. By borrowing money, we're able to do this at a faster rate, and with low interest rates, it's even more attractive to take on debt.

So, with low interest rates comes more spending, and because spending turns into corporate earnings, more spending fosters higher wages. But when spending and incomes are growing faster than the production of goods, as they tend to do during low interest rate periods, we can see the prices of goods growing even faster than incomes, causing inflation.

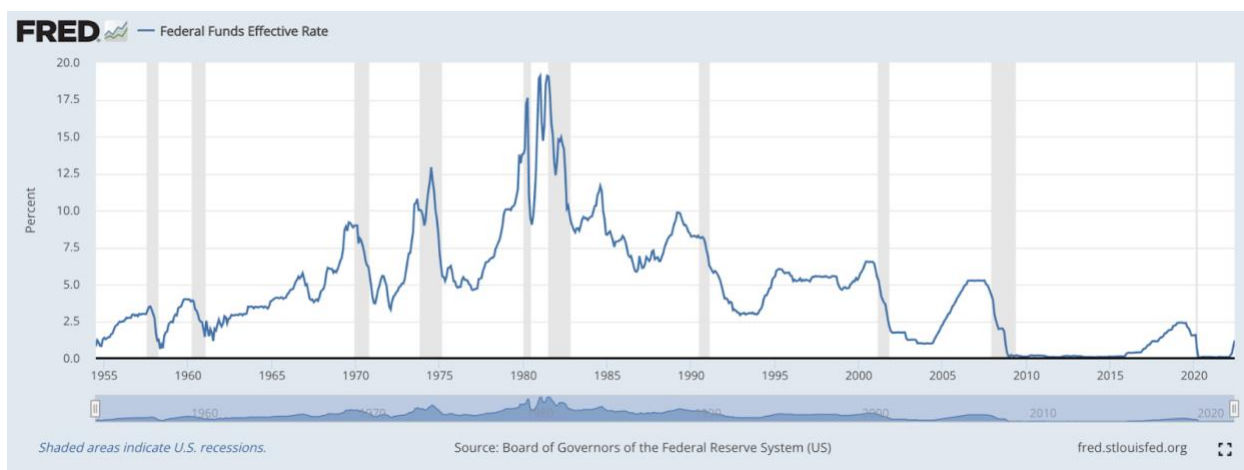
When inflation becomes too large of an economic burden on average Americans, the Fed then must raise interest rates to lower aggregate demand (spending). Because interest rates are higher, more money is being spent on servicing debt, and thus, less money is available to be spent on goods, services, and investments. Companies now earn less, which causes wages to fall, which then lowers spending even further. Falling prices can go far enough to cause a retraction in economic activity that, if widespread enough, can be labeled a recession.

Not all recessions are inherently inflationary in terms of the Consumer Price Index (CPI), but the increased wages and savings that comes alongside expansionary phases of the STDC can also cause inflation to asset or security prices. More earnings/savings allows for more investment, which adds liquidity to the financial markets. When these investment vehicles have risen to extreme multiples, deeply negative real yields perpetrated by prolonged low interest rates, or simply when demand vastly outweighs the asset's true value, it creates a bubble. When that bubble finally bursts, the effect is generally recession, where asset and security prices fall as liquidity dries up.



The Short-Term Debt Cycle

When prices or debt levels have fallen enough for the economy to find a base for a new period of growth, interest rates will again be lowered, and this cycle repeats itself. Due to the basic nature of humans that was previously explained, people tend to borrow and spend more over time, before repaying existing debts. This causes the economy to grow even more with each expansionary cycle, but existing debt levels to rise.



The Federal Funds Effective Rate (1955-2022)
 Data Source: [The St. Louis Fed Economics Data](#)

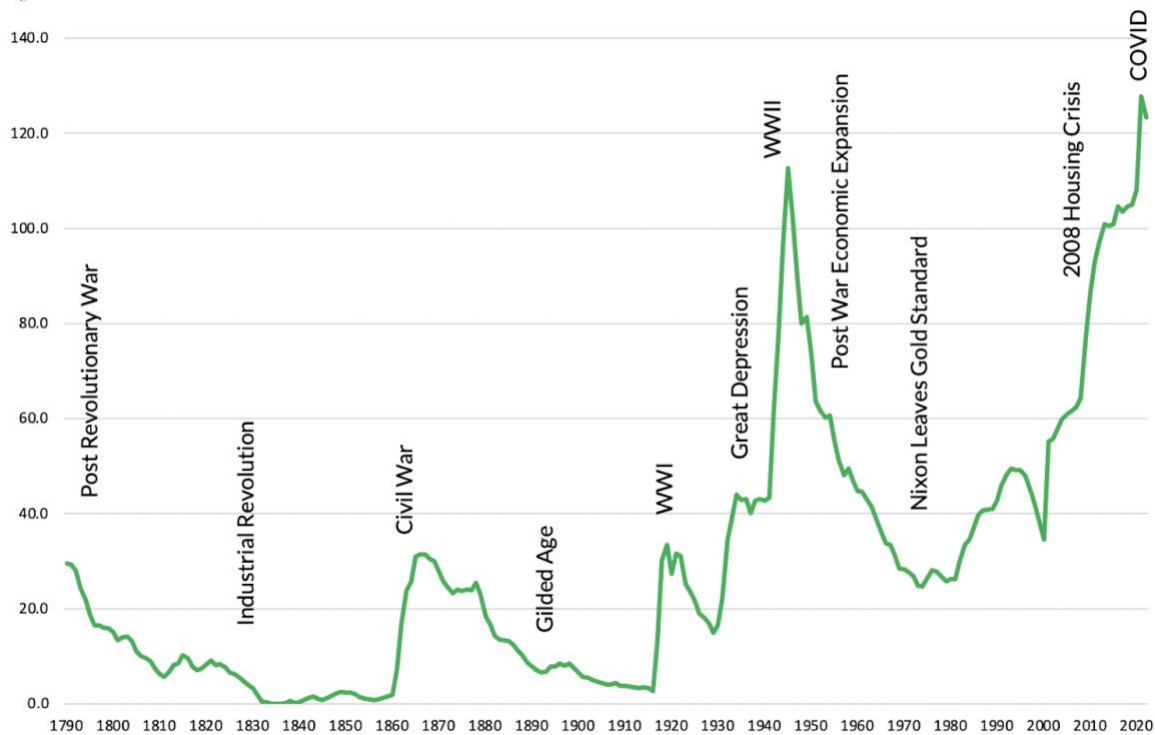
Overtime, as credit levels rise and the prices of goods and assets increase, interest rates are not raised higher than the previous cycle to avoid debt deleveraging and to continue the regime of lower rates to foster economic growth and credit creation. This creates a downward trend in

interest rates, as you can see above. The US has steadily lowered the Fed Funds Rate since Paul Volcker's infamous war on The Great Inflation of the 1960-80's.

With each short-term cycle of credit creation slowly expanding the debt burden, there will eventually reach a point where that burden is simply too large. This is the climax of the Long-Term Debt Cycle (LTDC), and it is arguably where the United States stands today.



Total US Public Debt as a Percentage of Gross Domestic Product



Data Sources: St. Louis Fed and the Congressional Budget Office

United States Debt-to-GDP Ratio

The debt burden will eventually reach a point where growth in debt levels vastly outweighs income growth. When debt payments are increasing faster than incomes, people are forced to spend less to repay their debts, which causes wages to fall as businesses cannot afford to maintain previous salaries. This causes borrowing to slow as there are less people deemed worthy of credit, which causes interest rates to rise to accommodate less bank revenue. This causes even higher debt repayments and less spending.

Long story short, this death spiral generally ends in economic depression as the destruction of credit causes a crash in asset prices and employment. The major difference between the Short-Term and Long-Term Debt Cycles is that at the peak of the LTDC, the level of debt in the system will be extreme and interest rates will be at or near zero. The central bank may try to raise interest rates to slow down the economy, but debt levels are so high that this is impossible without multiplying the aggressiveness of the deleveraging.

Now, while the LTDC is an extremely important cycle, it lasts 80-100 years, making it less relevant when trying to understand shorter-term asset price cycles. The beginning and end of

the LTDC don't come about very often, and when they do, their impact on asset prices is similar to the STDC, albeit to a much more extreme degree.

So, now that we have an understanding of the debt cycles, we can examine how the phases of this cycle impact the price action of different investment vehicles.

The Gold Cycle

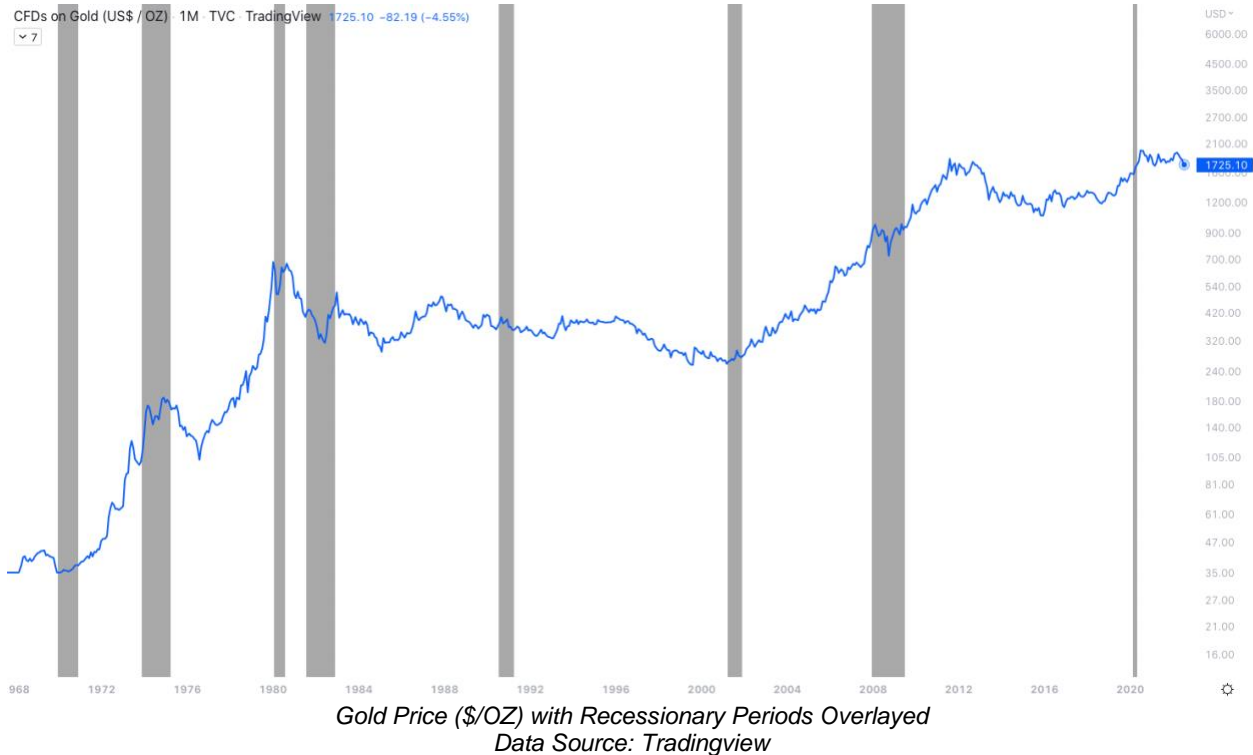
As the monetary and investment instrument with the most historically proven track record, gold operates in a cycle that is almost opposite to the booms and busts of the STDC. Due to the fact that gold is viewed as a safe haven, and one of the only ways to self-custody wealth, it tends to outperform in periods of credit deleveraging or economic recession.

Low interest rates foster inflation for a variety of reasons, but this inflation does take time before it becomes a large-scale problem. Over time, monetary inflation destroys purchasing power as the amount of dollars in circulation grows faster than the production of goods. Because gold is priced in dollars per ounce, when the purchasing power of the dollar is decreasing it means that more dollars are required to buy the same amount of gold. This causes the dollars per ounce price of gold to grow during inflationary periods.

When investors are confident in the short-term growth of the United States' economy, gold sees drawdowns in demand, such as we saw throughout the 1980's and 90's. If viewed as a safe haven asset, periods of economic prosperity incentivize investors to turn away from gold and towards investments with large cash flows. In these periods, investors tend to sell their gold in exchange for cash so that they can purchase assets that perform well in low interest rate environments, such as high yield fixed-income securities and equities.

This logic can also be applied to a few other precious metals and commodities, such as silver. But gold's Stock-to Flow ratio is comparatively high to most other monetary or investment mediums, meaning the amount of new supply that enters the market each year is low compared to the existing supply. This relative scarcity gives gold the edge over other commodities in the long-term and is the reason why it has been a favorite form of storing wealth for the last several millennia.

Comparing investments is all about relative performance in certain phases of the market cycle. There are times when holding one asset is more profitable than another and gold has historically been a strong performer in economic slowdowns, or rising interest rate environments.



Gold (\$/Oz) has begun many of its largest price increases during recessionary periods, as you can see above with recessions highlighted in gray.

The highly inflationary 1970's saw two separate recessions, in 1970 and from 1973-75, and was an extremely strong period for gold. One ounce of gold appreciated by 1,407.34% from 1970-79. This in comparison to the S&P 500, which returned 3.93%, the US Dollar Currency Index, which was down -29.51% and the US 10-year Treasury Bond whose yield rose 2.58%, from 7.75% to 10.33%, between Jan. '70 and Dec. '79.

Clearly, gold operates in the form of a recession hedge, but it's not alone in this category. US Treasury securities also can be viewed as a safe haven asset because their future cash flows are guaranteed by the world's dominant economic power.

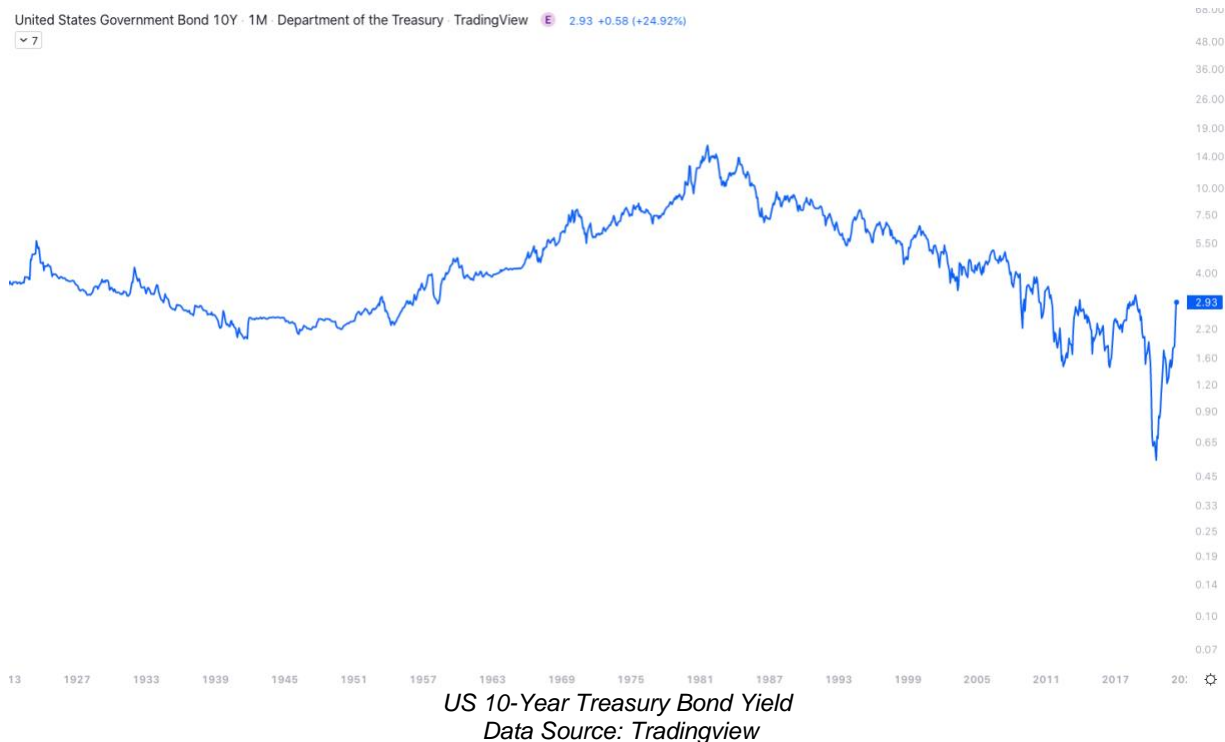
The Bond Cycle

The fixed-income market is vast, providing various tools for different investment preferences. This makes it hard to make blanket statements about bonds during the different periods of the STDC, but by examining different types of bonds, we can understand the similarities and differences as each are propelled through similar, yet very different, cycles.

One of the most fundamental relationships in finance is that bond prices and interest rates are inversely related. This is because when the market interest rate is lower, the yield produced by owning fixed-income securities is more attractive. During expansionary periods of the STDC, when interest rates are falling, it generally causes overall appreciation of fixed-income security prices. Because interest rates have been in an overall downtrend since the early 1980's, as we examined in the "Short-Term Debt Cycle" section, the trend in Treasury securities¹ has been higher prices (lower yields).

Treasury bonds are considered risk-free safe haven assets because they are issued by the US Government, and therefore they're the ones guaranteeing the coupon payments. The default-risk of the US Government is extremely low as the world economic power that takes in trillions of dollars in tax revenue each year. Default is a possibility for developed nation-states, as we saw during the European Sovereign Debt Crisis, but for the US it's quite unlikely.

That being said, investors generally view US Treasury securities as risk-free, and because of this, they have generally appreciated in value over time. In modern history, it's rare to see Treasury bonds enter bear markets. In fact, before 2022, there hadn't been a bear cycle in bonds of this magnitude in over 40 years.



¹ While there are several classifications for Treasury securities, such as bill, note and bond, we will refer to them all as bonds for the sake of simplicity.

The previous bond bear cycle began post-WWII and ended with the peak of interest rates in 1981. Following the war, there was an economic boom in the US as the Bretton Woods Agreement placed the US Dollar as the global reserve currency and the US cemented itself as the economic and military leader of the world.

When the war ended, Americans had dramatically increased their savings compared to the turmoil of the 1930's, and with millions of men and women returning to the workplace, a sharp rise in population, demand and production set the US on a path of economic expansion that lasted until the 1970's.

Like today, the US had an extremely large debt burden in the 1940's, as you can see on the "United States Debt-to-GDP" chart in the "Short-Term Debt Cycle" section above. There are essentially two ways to lower the debt burden. Either debt levels must fall through destruction of demand and higher interest rates, or economic output must rise drastically to catch up to debt levels. The post-WWII boom allowed GDP to catch up to public debt levels, but today this would be nearly impossible due to the law of diminishing marginal returns.

Due to rising economic output, incomes and demand grew following WWII, and interest rates were generally rising to keep prices in check, but massive budget deficits and expansion of the money supply ultimately led to the extremely high inflation of the 70s.

Rising interest rates caused a prolonged bear cycle for fixed-income securities. Then, as Volcker ushered in the era of the Fed-put in the early 80's, we saw an overall rise in bond prices until 2022. This year, with 40-year high inflation and the increase of interest rates at a historically aggressive pace, Treasury securities have entered their first true bear cycle in 40 years.

So clearly, Treasuries tend to underperform during environments of extreme inflation, which may come as a surprise if you think about Treasury bonds as risk-free assets.

The reason lies in the fact that during inflationary periods, the US Dollar's purchasing power is being stripped away. This means that the future cash flows that investors expect to receive from buying and holding a fixed-income security are being devalued, making the investment comparatively less profitable. Stocks also don't perform well during inflationary periods and as previously explained, these are the periods where gold shines as a protector of wealth.

In recessionary periods that have relatively lower inflation levels, we tend to see Treasuries absorb capital, as we saw in 1960, 1970, 1990, 2000, 2008 and 2020. Treasuries are viewed as a safe haven asset, as the default risk is extremely low, but that's only when their future cash flows aren't being aggressively devalued. The mid-1970's and early 80's were unique in that there was a period of economic recession accompanied by high inflation, and in response, Treasury bonds sold off. This could potentially be what we are seeing in 2022 and would explain why we've had rising Treasury yields alongside a decline in economic output.

But Treasury bonds are not the only type of fixed-income security, high-yield corporate bonds are also a common investment tool, but they do not perform the exact same as Treasuries. These securities have larger cash flows due to the higher default risk associated with them. In the case of high-yield debt, the issuer is not the US Government but instead companies, most of which are financially strained and in need of capital. Due to the larger likelihood of default, or

being unable to repay creditors, investors require a greater return on their investment to compensate for the risk. These securities are risk assets and perform fairly similarly to equities during the different phases of the STDC.

During inflationary periods, Treasury Inflation Protected Securities (TIPS) offer a solution for investors who prefer the lower volatility and fixed cash flow nature of bonds. These bonds are also issued by the US Government and their par values, and thus their interest rates, are adjusted semiannually to reflect changes in CPI inflation. When investors expect future inflationary periods, TIPS' demand will rise to accommodate expected increases in CPI.

At the end of the day, TIPS are bonds, so increases in market interest rates do cause lower prices. Even further, TIPS are forward looking investment vehicles, like other bonds and equities. When interest rates are rising, investors expect decreased aggregate demand to lower inflation in the future. Because TIPS are forward looking, rising interest rates cause lower prices despite higher CPI. This can make TIPS a poor investment once higher CPI values and interest rates have actually hit the markets, but as an allocation in an investment portfolio, they provide a level of security from inflation over the long-term.



If we examine the performance of TIPS and longer duration Treasury notes from March 2020 until the markets turned in December 2021, we saw drastic differences in price performance. The price of iShares' TIPS ETF appreciated by 9.56% as investors expected the Government's increasing budget deficit and the Fed's QE cycle to cause higher inflation. In this same period, an index of 7-10 Year Treasury note prices fell by -5.33%.

As the Fed ended QE and interest rates rose in 2022, we saw the prices of both ETF's fall, as expected. The difference being that those who had owned inflation protected securities had seen a profitable position in the 21 months prior. Therefore, during expansionary phases of the

STDC, where low interest rates foster growth, but also inflation, we tend to see TIPS outperform if market participants expect higher CPI values in the future. In other periods of declining economic output, such as 2008, investors wanted protection against recession, but extremely high CPI was less of a concern. In this period, we saw the relative outperformance of traditional Treasury bonds over TIPS.

The Stock Market Cycle

Equity price cycles are also correlated with the STDC in that low interest rate periods foster growth for stock prices. This largely has to do with the bond market and the direct effects it has on equity valuations. Financial institutions generally use discounted cash-flow (DCF) models to come up with the present value of an equity while considering the time value of money, or the idea that present cash flows are more valuable than future ones.

$$DCF = \frac{CF^1}{(1+r)^1} + \frac{CF^2}{(1+r)^2} + \dots + \frac{CF^n}{(1+r)^n}$$

CF = Cash Flow
r = Discount Rate

What's most important to note about the DCF model equation, in this context, is that it incorporates a discount rate (DR). The DR that analysts use is the yield of a Treasury bond (usually the 10Y or 13Wk) and is required to consider the opportunity cost of investing in a particular equity. Simply put, the discount rate considers, why invest in this stock when you could invest in a "risk-free" Treasury security? When bond yields (discount rates) are low, the denominator of the above equation is lower, which raises the present value of the discounted cash flow. If the perceived value of the equity is higher than before, it justifies purchasing stock. Rising bond prices, or falling yields, is what drives equities in secular bull markets as it gives grounds for increasing institutional long exposure.

With low interest rates, the cheap access to capital can drive bond and stock prices higher, but it also drives inflation, as we've previously explained. When the Fed decides it's time to lower prices and slow the economy by hiking rates, the immediate effect is on the bond market which then spills into equities for the same reasons as were explained in the previous paragraph. This, of course, is without mentioning the compressed margins and top-line earnings pressure that comes alongside rising interest payments for publicly traded companies.

While institutional capital accounts for an average of 70-90% of total daily trading volume, it's still important to understand the behavior of retail investors in different phases of the market cycle. The retail piece is also extremely tied to the STDC due to the fact that saving, and investment levels are extremely correlated. To invest, we must first earn money and then decide to not spend it, so that it can be invested. So, we tend to see a rollover of savings into investment.

When interest rates are low, borrowing is incentivized and we see increased aggregate demand, so we'll also tend to see higher top-line earnings for companies. Higher earnings create higher wages as they allow companies to spend more on increasing production and the pay of employees. This allows people to increase their savings, assuming they're not spending more than they make. With higher savings comes more capital available to invest which adds liquidity into the markets.

The price strength of nearly all cohorts of investment vehicles, whether that's stocks, bonds, commodities, real estate, etc. is driven primarily by liquidity. When there are less participants and capital bidding on these investment tools, it can become difficult to find a buyer. This means in order to sell your investment; you will have to settle for a price that is less than you would if buyers were proliferate. This has all been without mentioning that equities are classified as risk assets, or assets who hold inherent risk due to a variety of factors such as counterparty risk, market risk, liquidity risk, operational risk, event risk, etc.

To name a few; corporate bonds, real estate, commodities, currencies, and ETFs are all classified as risk assets, but equities and their derivatives generally take the cake in terms of volatility risk. This is why in periods of economic retraction; equities tend to get hit the hardest in terms of price drawdowns as a percentage. Furthermore, in recessionary periods, companies with large liabilities and decreased earnings stand the risk of bankruptcy. All in all, liquidity is sucked out of these markets during recessionary periods as investors would prefer to hold cash, gold, or Treasuries, rather than risk assets.

This is precisely why understanding the debt cycle is the key to grasping what drives the cyclical nature of financial assets. The Short-Term Debt Cycle determines most of the borrowing, saving, spending, and investing behavior of both institutional and retail investors alike. Therefore, the STDC provides the essential insights into what drives the cyclical nature of all previously discussed investment vehicles.

The first, and largest, asset in the newest class of investment tools is no different.

The Bitcoin Market Cycle

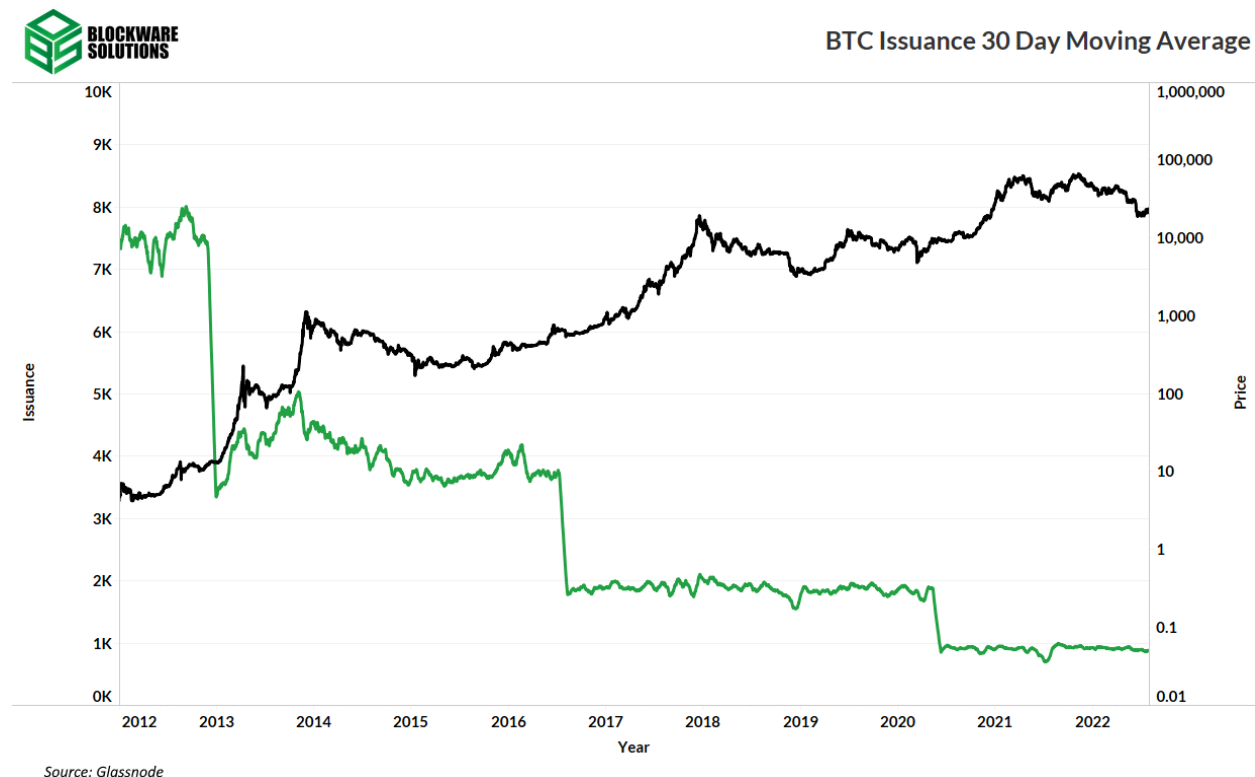
The Bitcoin Cycle

As with all other markets, the Bitcoin market cycle is driven by the psychological and economic dynamics mentioned above. However, Bitcoin has a unique way of following these behavioral dynamics due to its full blockchain transparency; providing the ability to track market participants with more granularity than almost any other asset class. In addition, there are Bitcoin-native market forces baked into the code of the protocol that drive the asset's cyclicity. The main three drivers that we believe form Bitcoin's cycles are the following:

- Network Adoption
- The Macroeconomic Environment
- Mining Subsidy Halvings

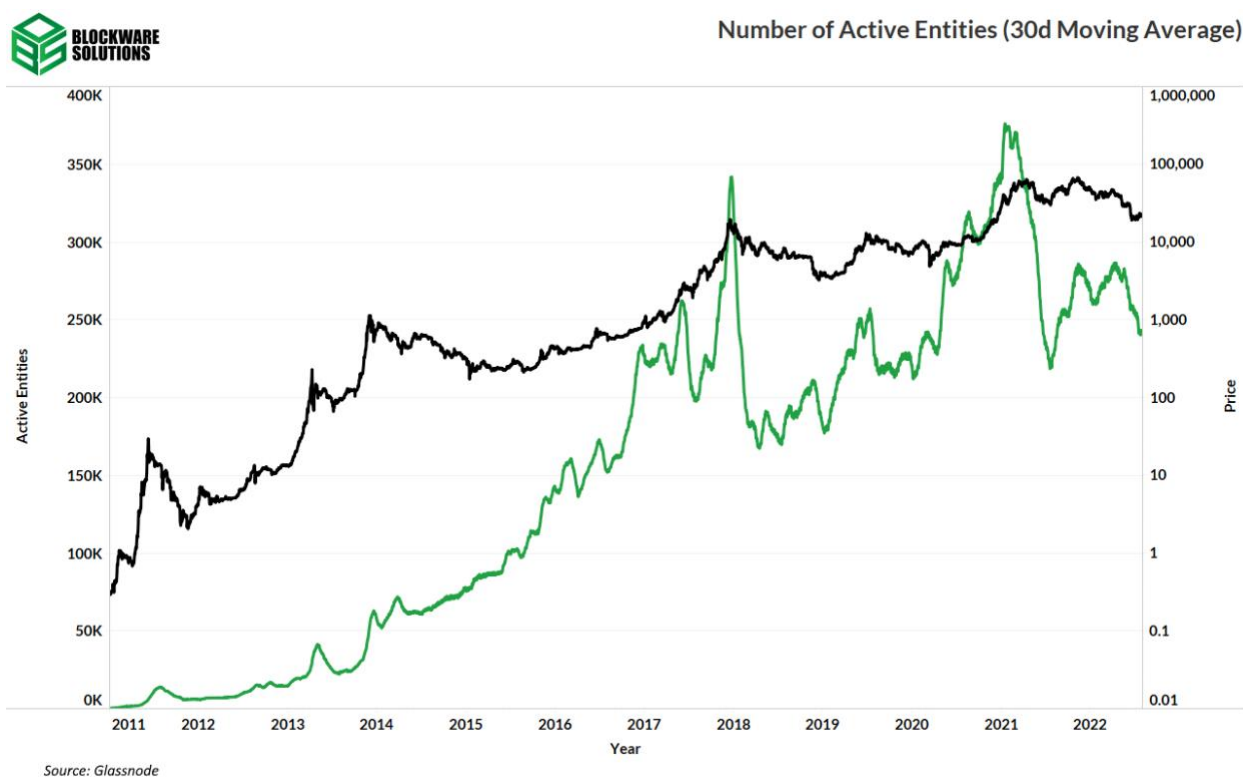
Although Bitcoin can be viewed as a debasement hedge, institutional investors classify it as a risk asset. For that reason, BTC's market cycles have generally followed the expansionary and recessionary phases of the STDC.

It is widely believed that Bitcoin's halving drives its "4-year cycles". This is when the amount of new supply issued by the Bitcoin protocol as a reward to miners for securing the network is cut in half. In theory, this causes a supply shock effect on the market and catalyzes a major run up in BTC price in the ensuing year. While this may have some effect, we find it difficult to conclude that this has solely driven the bull markets, as the other methodologies we will describe below have also aligned with these halving events. With just a sample size of three, we should be wary of confusing correlation with causation.



Bitcoin Network Adoption

At its core, the Bitcoin monetary network is a logarithmic adoption curve represented by a dollar value, with cyclical market forces driving price action along that curve. One of the primary forces that causes this cycle is the dynamics of network adoption that occurs in waves. To illustrate this, below we can look at growth in users on the Bitcoin network throughout its 12-year lifetime. Note that during every bull market there is a large increase in new individuals using the Bitcoin network, many of which are solely in the marketplace for the rapid price appreciation and may have no fundamental conviction in Bitcoin as a long-term investment. After the bull market, some of these participants leave, but the base of the number of those who stay grows higher every cycle, as you can see below.



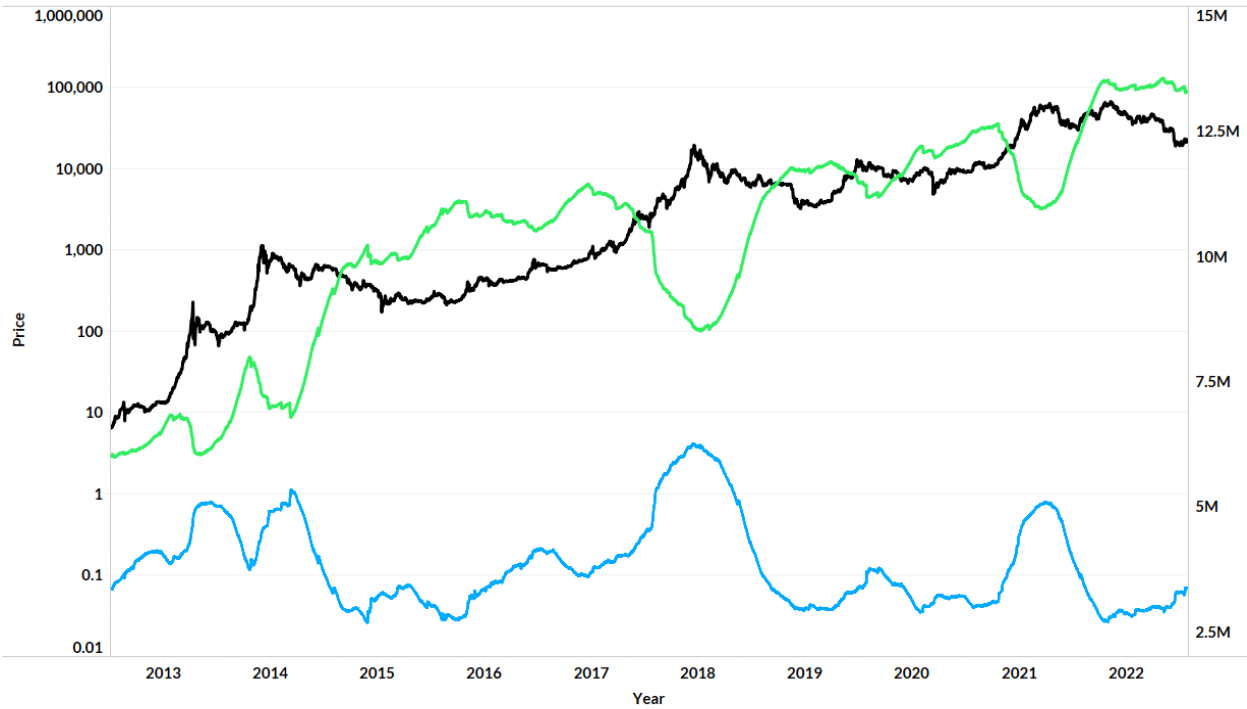
Another way to illustrate this is by examining the behavior between long and short-term holders. Short-term holders are defined as on-chain entities that have been in the market for less than 155 days (5 months), while long-term holders are on-chain entities that have been in the market for more than 155 days. During a bull market, long-term holders distribute their supply to new market participants. Then, heading back into a bear market, short-term holders capitulate, as well as age into the long-term holder cohort. This dynamic can be illustrated below.

New short-term holders generally flood into Bitcoin during expansionary phases of the STDC. These investors are hunting for vehicles that can provide outperforming cash flows while wages, debt levels and liquidity are rising. Bitcoin behaves similarly to high-yield corporate debt and equities in this phase of the market cycle, albeit with generally more volatility.



Supply held by Short-Term Holders
 Supply held by Long-Term Holders
 Price

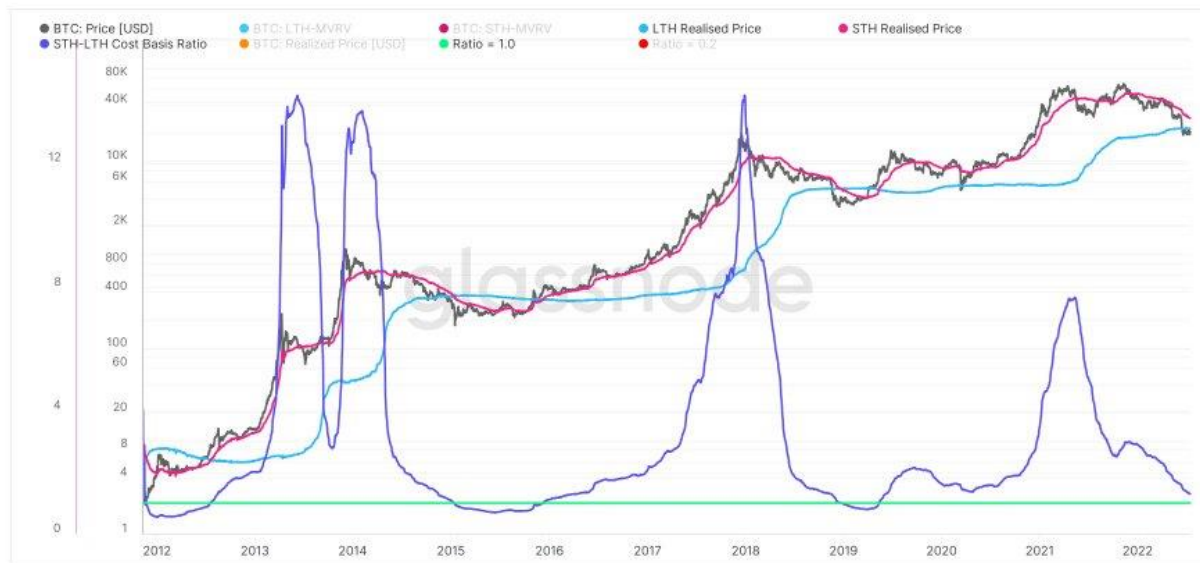
Bitcoin Supply Distribution



Source: Glassnode

As you can see below, whenever long term holders cost basis breaches below short-term holders', it has been a tremendous buying opportunity for BTC.

On-chain Cost Basis



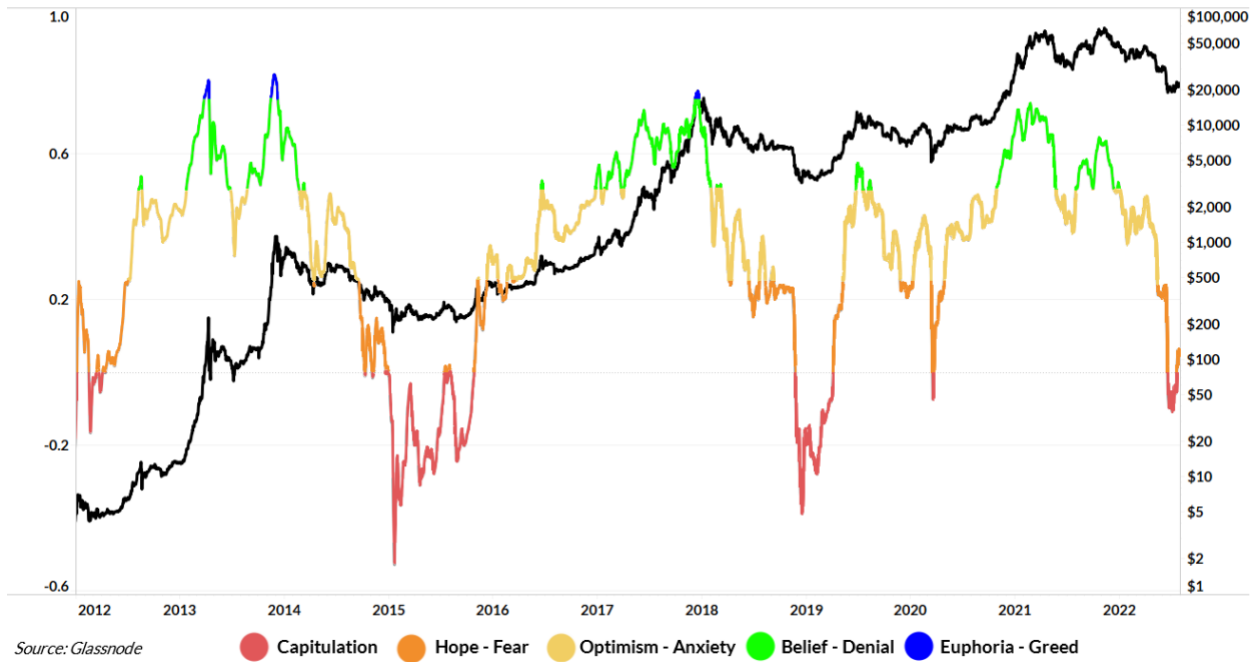
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Similar observations can be made by looking at the profitability of addresses on-chain in terms of both realized and unrealized profits/losses. High amounts of unrealized profits lead to further capitulation on the downside. Large amounts of realized losses at the bottom of a bear market creates entry liquidity for large participants. Due to the lack of consensus on how to value Bitcoin and other crypto assets, the market is incredibly reflexive. This means that narratives are often tied to price movements, which then cause new participants to jump in, thus reinforcing the viability of said narrative and causing a feedback loop of market participant behavior.



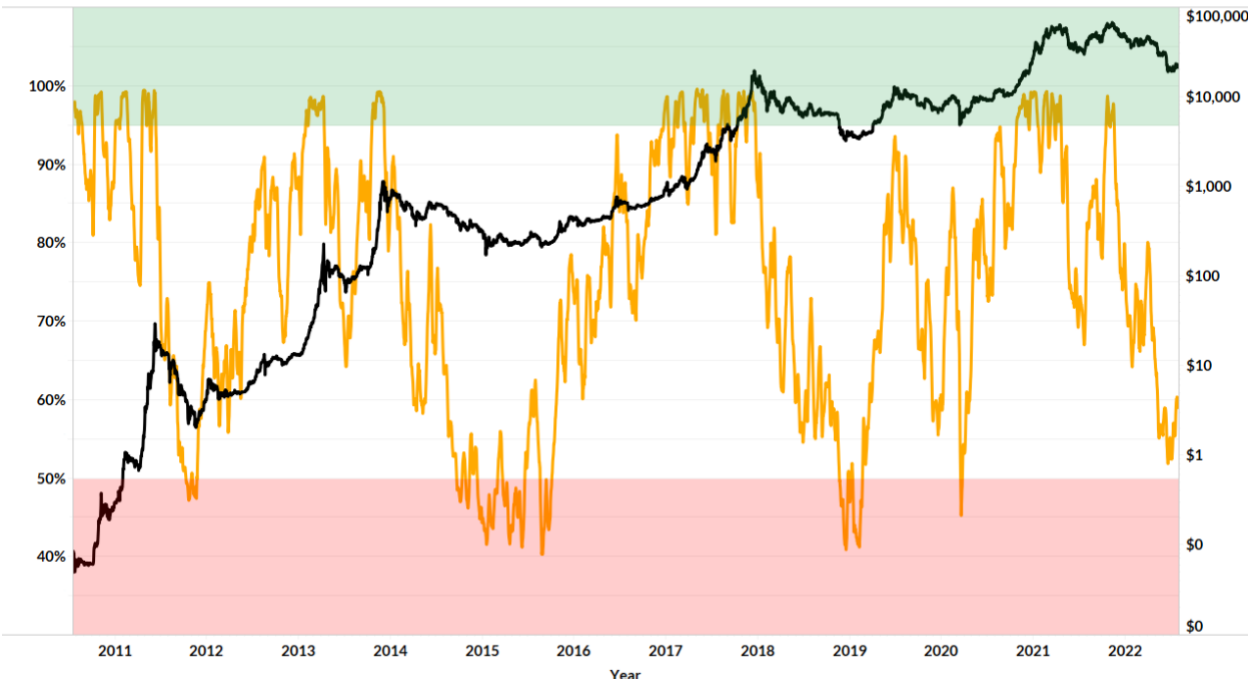
Bitcoin: Entity-Adjusted NUPL (7d Moving Average)





■ % Supply in Profit
■ Price

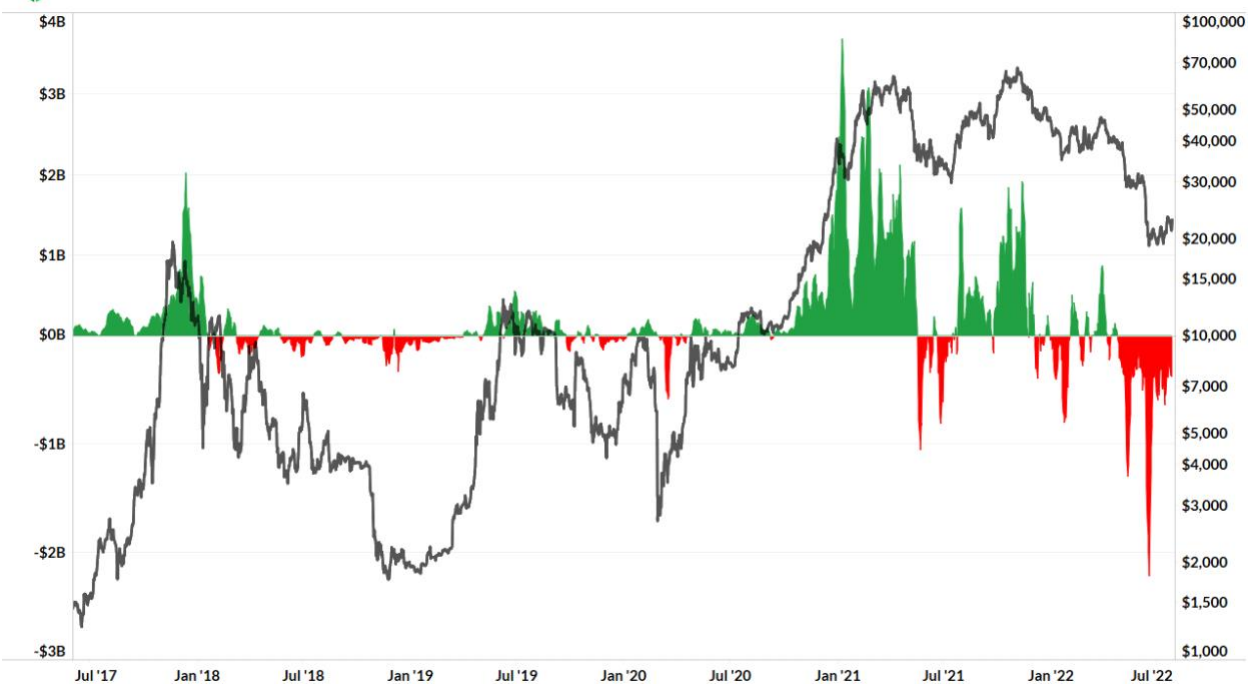
Bitcoin: Percent Supply in Profit (7d Moving Average)



Source: Glassnode



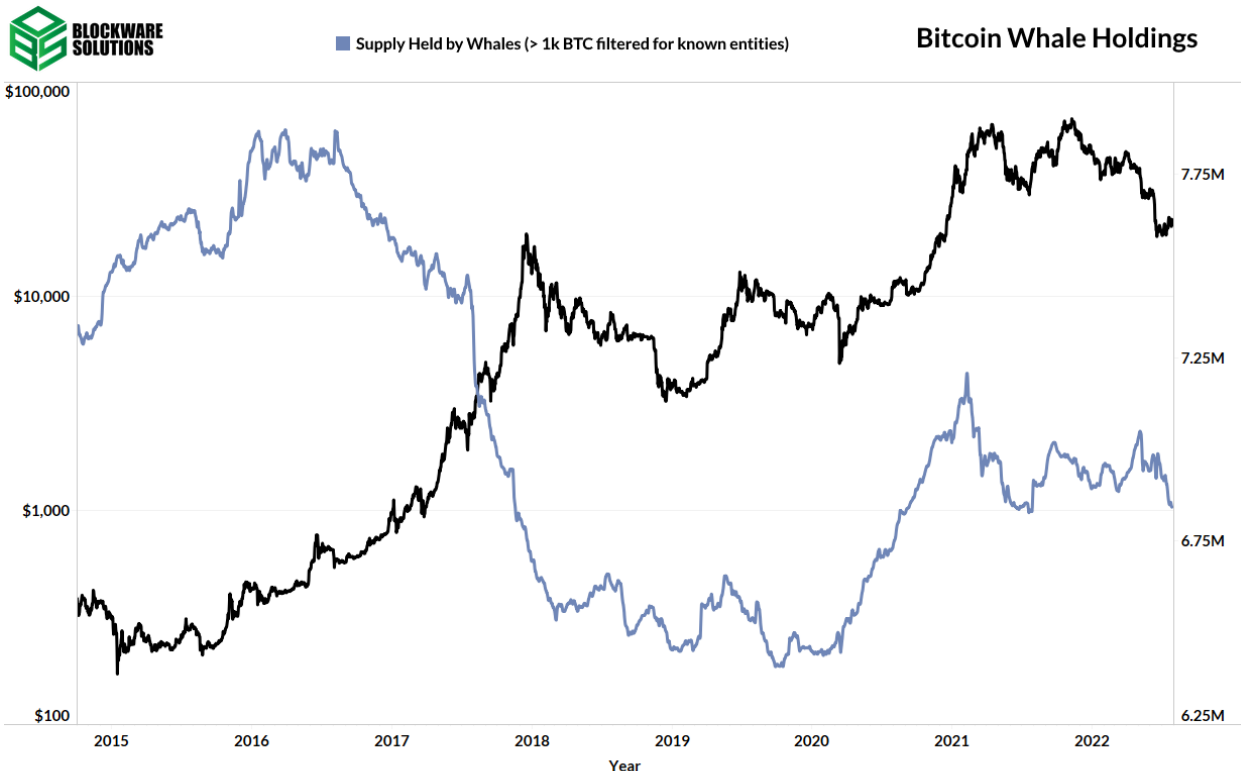
Bitcoin: Net Realized Profit/Loss [USD] (7d Moving Average)



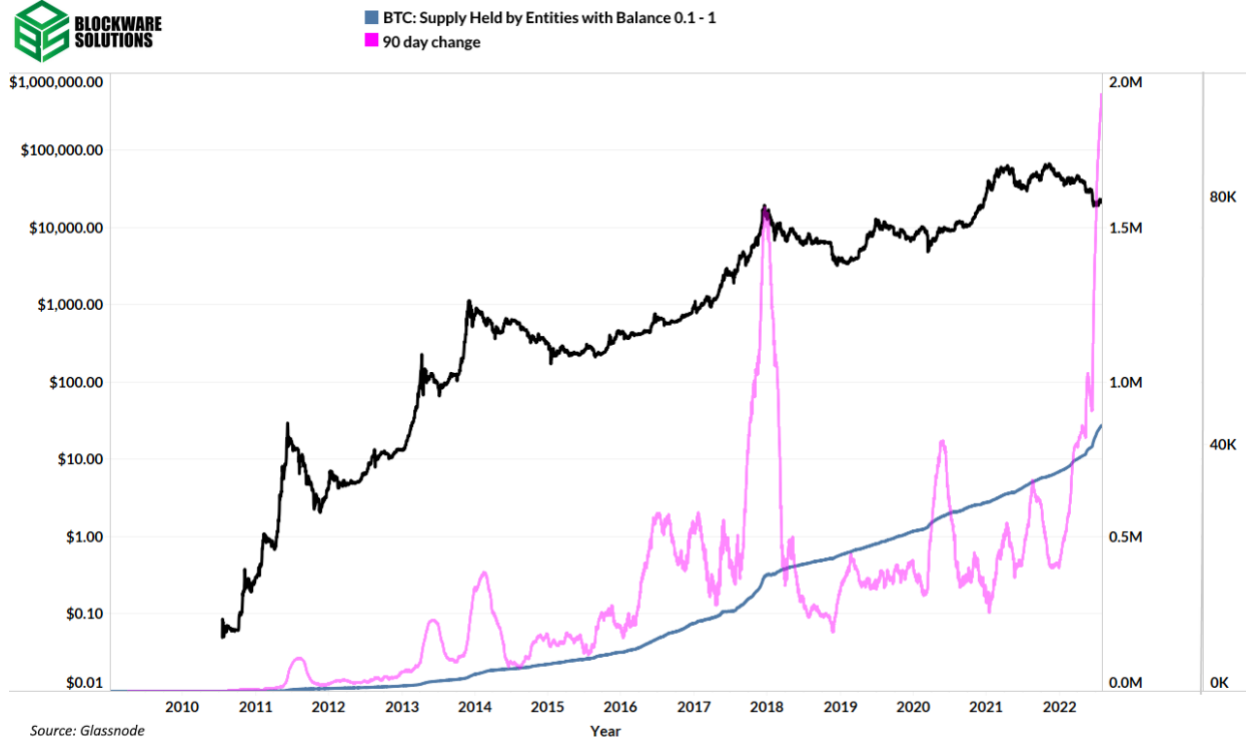
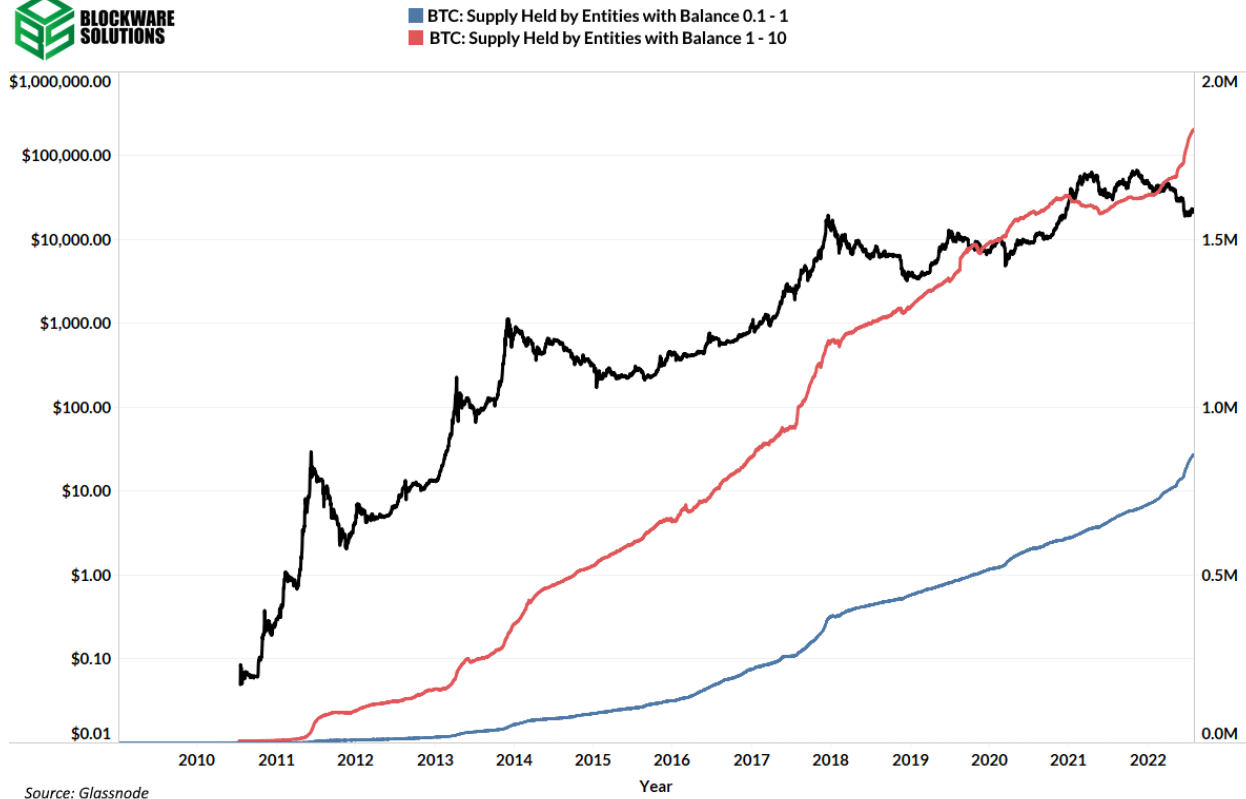
Source: Glassnode

Another cohort dichotomy to watch is the relationship between participants with large pools of capital versus participants with small pools of capital. Historically, looking at whales' holdings, being defined as on-chain entities with more than 1,000 BTC, has been a good indication for

momentum. Being the largest market participants, whales naturally drive large movements in Bitcoin's price. The blue line below reflects their holdings. Very similar to the long and short-term holder dynamic, whales buy into weakness, create the market momentum, and distribute into strength. Conversely, holdings of small on-chain entities (retail) only go up over time. However, they do increase at a more rapid pace during periods of price appreciation. The third chart below will visualize the 90-day change in retail's BTC holdings. You'll notice the ramp up at the back half of 2017, but we have seen retail buy during the 2020 COVID crash, the summer consolidation of 2021, and most recently, in 2022, as Bitcoin is down 70%. So sure, seeing whales buying and retail selling is generally bullish and whales selling but retail buying is generally bearish, but there have been a few times in this market where retail has made prudent capital allocation decisions based on this data.



Source: Glassnode



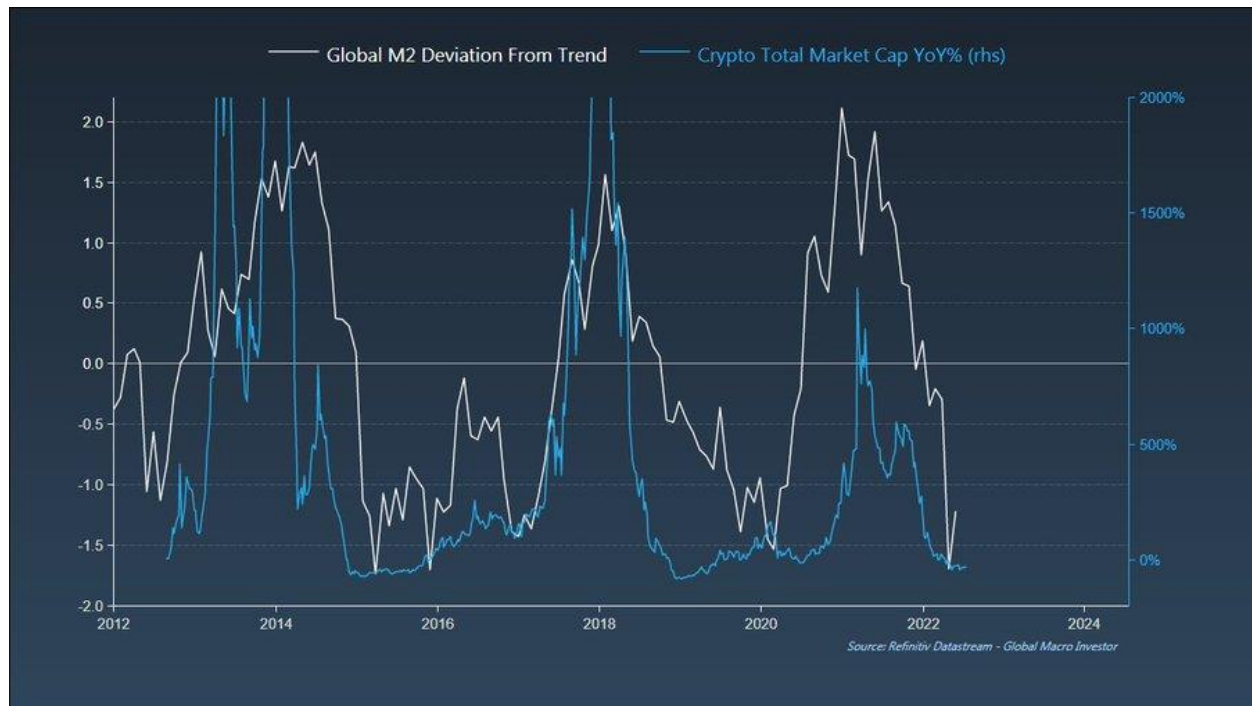
The Macroeconomic Environment

Another driver of Bitcoin's cyclicity is the macroeconomic environment. It is our view that Bitcoin is a debasement hedge, not a CPI inflation hedge. Bitcoin performs well in times of expansionary monetary conditions and performs poorly in times of tightening monetary conditions. In other words, as previously mentioned, when societal debt levels, liquidity, and incomes are rising due to the monetary policy that accompanies expansionary phases of the STDC, Bitcoin generally sees extreme increases in demand.

Expansionary monetary policy fosters increases in the M2 money supply, or the amount of currency in circulation as counted by physical cash, checking deposits, and highly liquid cash equivalents. Due to fractional reserve banking, where banks must maintain reserve levels while issuing credit, debt creation increases the amount of fiat currency in circulation. By issuing a loan, and not providing capital from deposited funds, banks effectively create freshly minted currency. Therefore, low interest rates environments, which encourage credit creation, increase M2 money supply over time.

This additional fiscal liquidity generates demand for risk assets, such as certain fixed-income securities, equities, and crypto-assets.

To illustrate this relationship between liquidity and crypto-assets, here's a chart juxtaposed with crypto's total market cap (YoY) with M2 money supply's deviation from its trend.



The blue metric below is the correlation coefficient (CC) which provides a number from -1 to 1 indicating the level of correlation. The chart below shows the negative correlation between Bitcoin and the Federal Funds Rate. This further emphasizes the relationship between low interest rates and price increases in Bitcoin.



Below we can also see Bitcoin has sustained a high correlation to the Nasdaq throughout its lifetime.



Bitcoin Mining

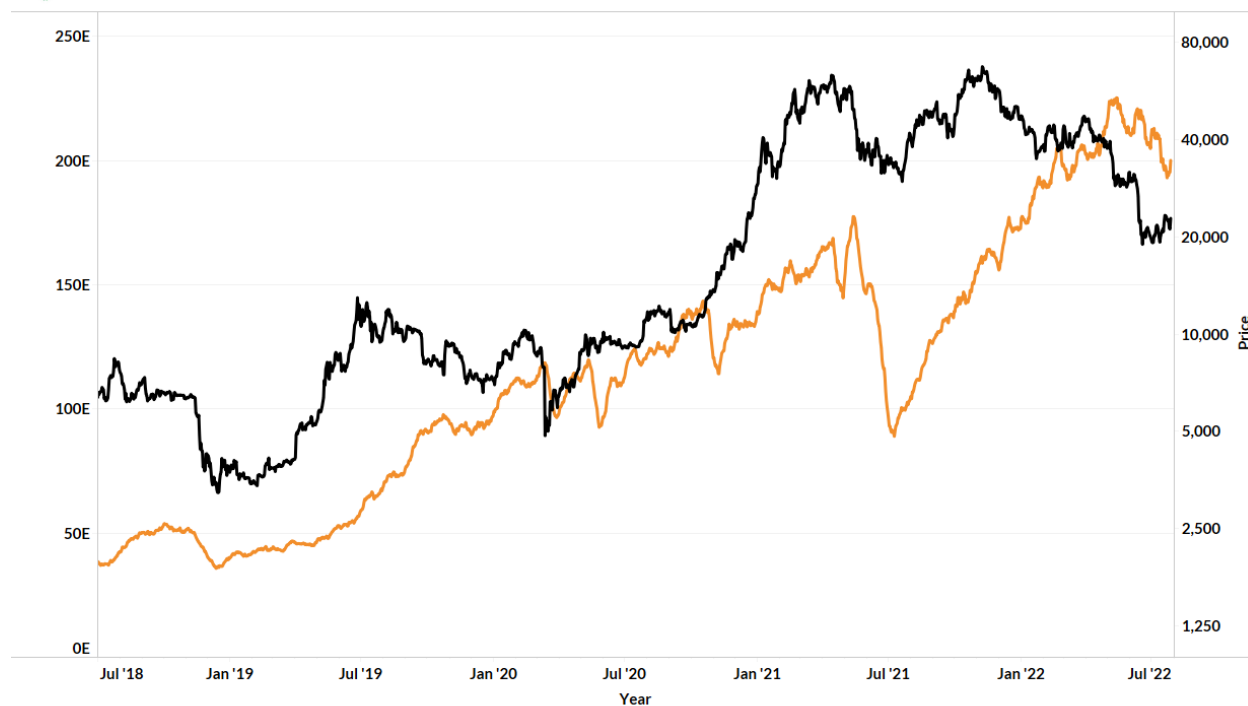
Bitcoin miners are very pro-cyclical forces for the Bitcoin market. In a bull market, they place orders for more machines, which have a delay from when they're bought to when they're plugged in for a variety of reasons including manufacturing/shipping times and building out shelf capacity for the machines to operate. Due to this, hash rate's cyclical peak has historically lagged the cycle's peak spot price.

You can think of miners as being short hash, difficulty (as a byproduct of hash), and energy costs (as mining becomes more profitable when operating costs and mining difficulty fall); while being long Bitcoin's price. As this ramp-up of new machines being plugged in takes place and Bitcoin's price draws down, miners' margins (especially those who are the least efficient) get compressed.

This same effect is taking place now, as machines continued to be plugged in at an aggressive rate throughout late 2021 and into early 2022, but Bitcoin spot price has declined by roughly 70%. On top of that, there's a new variable adding to the compression, which is the increased energy costs driven by supply-side issues.



Bitcoin: Mean Hash Rate (14d Moving Average)



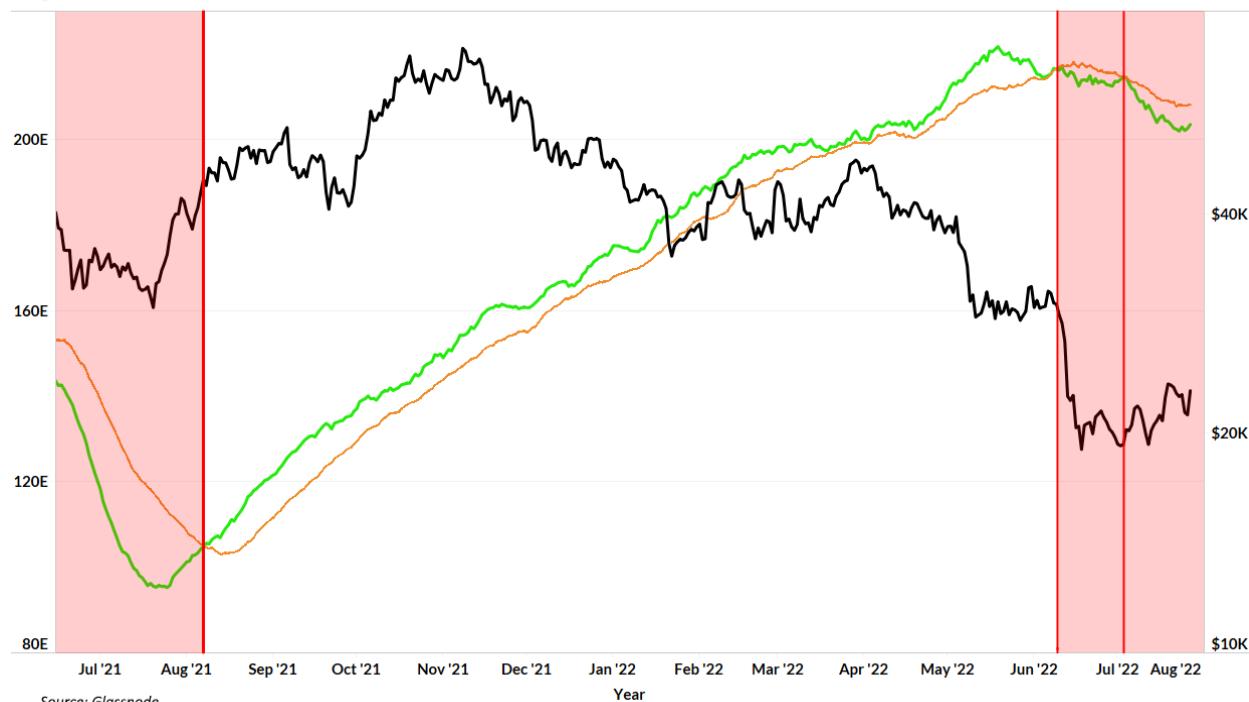
Source: Glassnode

One way to look at hash rate in an actionable manner is by looking at hash ribbons. Hash ribbons juxtapose the 30-day and 60-day moving average of hash rate to create a proxy for momentum moves in miner dynamics. When the 30DMA crosses below the 60DMA it's considered a bearish cross; indicating machines being unplugged at a rapid rate (AKA miner capitulation), thus also reducing the energy cost to mine 1 BTC. A bullish cross is a cross of the 30DMA back above the 60DMA (look at late summer 2021 as an example). Recently, we have seen a bearish cross take place, indicating we are indeed in a period of miner capitulation.



■ 30 Day Average Hash Rate
■ 60 Day Average Hash Rate
■ Price

Bitcoin Hash Ribbon

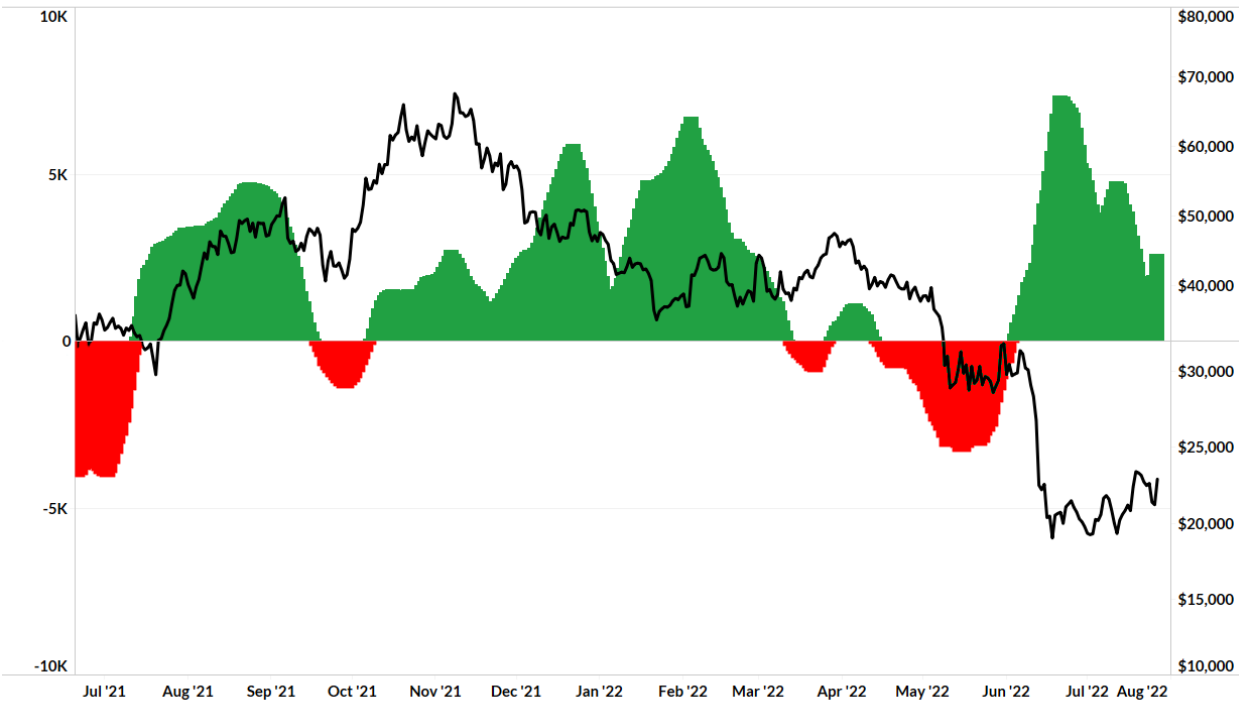


In an event of margin compression, miners may first shut off their rigs that are no longer operating profitably, and then as a last resort sell some of their rigs or even their Bitcoin holdings, depending on their individual situation and strategy.

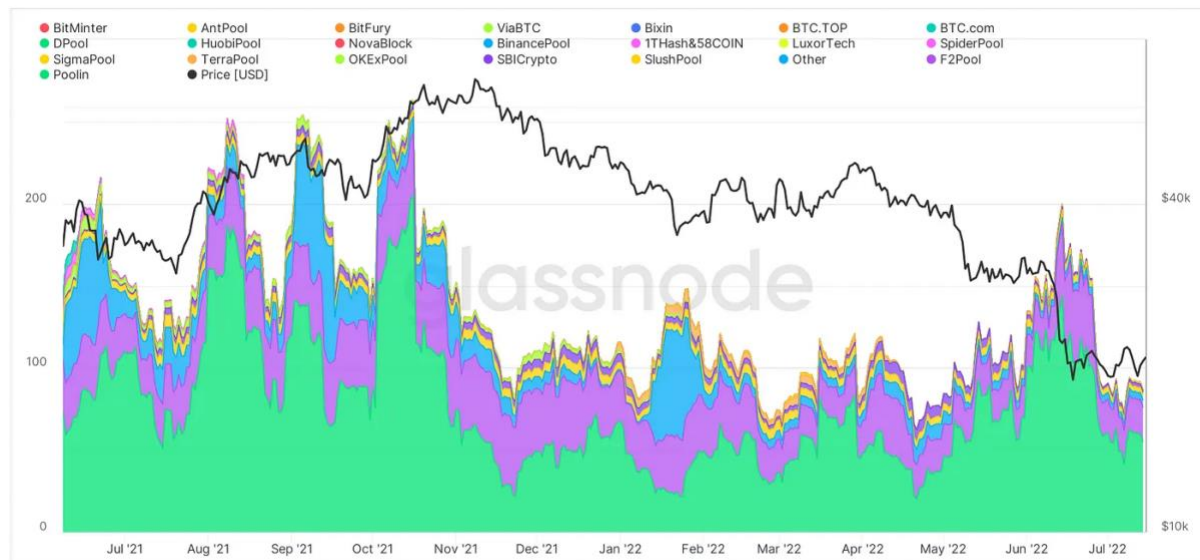
Applying that again to current conditions; in addition to the hash rate decline, we have in fact seen some miners selling from an on-chain perspective, as well as inflows of BTC from miners to exchanges. This behavior has cooled off a bit since, but this doesn't mean they still aren't under stress and could potentially have to trim off more; especially if BTC price either goes significantly lower or stays at these price levels for significantly longer.



Bitcoin: Miner Net Position Change (14d Moving Average)



Bitcoin: Transfer Volume from Miners to Exchanges [BTC] - All Exchanges (14d Moving Average)



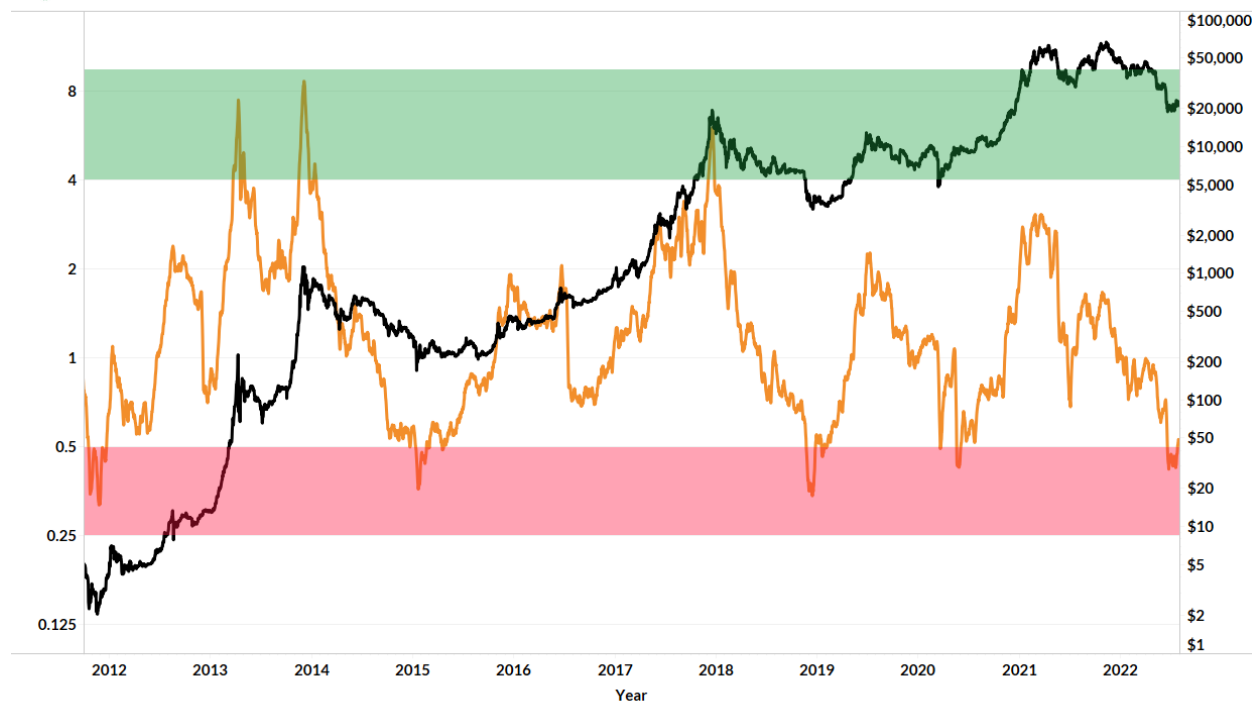
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The Puell Multiple is a great visual to represent how miner dynamics and Bitcoin’s cyclicity are intertwined. This indicator represents the current USD value of miner revenue / the 365-day moving average of the USD value of miner revenue. Thus, this metric essentially serves as a gauge for miner profitability.



Bitcoin: Puell Multiple (7d Moving Average)



Source: Glassnode

From a technical perspective, one of the better indications for momentum is the 180-day Exponential Hull Moving Average. This is a moving average with more weighing to recent price action and its slope, and relationship to spot price, are a solid indication of the trend in price.



Conclusion

To conclude, financial markets and individual asset classes are clearly of cyclical nature. Whether they tend to outperform in expansionary times, or are safe havens in recessionary periods, investors can learn to spot the different stages of the market cycle to more effectively allocate capital.

“The whole reason that our capitalist system works the way it does is because there are cycles, and the cycles self-correct.” - Seth Klarman

Finance capitalism provides investors with a vast array of securities and assets to choose from to store or grow their wealth. The cyclical nature of these tools allows investors to diversify away risk and pick investments that have the tailwinds of the secular macroeconomic cycle. Understanding the cyclical nature of markets is a major pillar of prudent investment.

As you’ve just read, market cycles are driven by numerous factors and self-correct due to common behavioral factors shared by all humans. But predicting precisely when an individual cycle will reverse course is not possible. Even with sophisticated financial modeling, and some of the brightest minds in the world, institutions like bulge bracket banks and hedge funds cannot predict exactly when asset or security prices will turn the corner. As Mark Twain said, ***“History doesn’t repeat itself, but it rhymes.”***

What investors can do is learn to understand which type of cyclical period we are in. With an understanding of the financial education provided by this report, and effective risk management, investors can be better positioned to capitalize on secular movements in the financial markets.

About Blockware Solutions

As this report explained, holding Bitcoin is generally extremely profitable during periods of economic expansion. But during recessionary periods, investors can maintain net positive cash flows by mining Bitcoin.

While the mining case is compelling, it's difficult to procure ASICs, build large mining facilities, and source cheap scalable electricity all on your own. As an institution, hedge fund, or high net worth individual, it makes sense to purchase and host ASICs with a trusted partner like Blockware Solutions.

With Bitcoin mining experience dating back to 2013, Blockware Solutions has sold over 300,000 ASICs, hosted 400+ MW of clients, and mined thousands of BTC from the Blockware Mining Pool.

If you are looking for a trusted partner to assist you in deploying capital to the Bitcoin mining space, [Request a Quote from Blockware Solutions](#).

The Blockware Intelligence Research Team

Blake Davis, Equity Analyst; **Will Clemente**, Lead Insights Analyst; **Joe Burnett**, Analyst; **Mitchell Askew**, Graphics; **Warren Rogers**, Chief Financial Officer; **Sam Chwarzynski**, CIO & Head of Research; **Mason Jappa**, Chief Executive Officer

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