ETC Group

ETC Group 2024 Outlook

Executive Summary

The "ETC Group 2024 Outlook" provides a forward-looking analysis of the cryptoasset market, with a particular focus on Bitcoin, as we head into a pivotal year. The report encompasses a comprehensive examination of the interplay between macroeconomic factors, on-chain developments, and their collective impact on the future trajectory of Bitcoin and other significant cryptoassets.

Institutional Adoption and Market Growth

The entrance of major players like BlackRock into the Bitcoin space has set the stage for increased institutional adoption. The report forecasts a continuous growth trajectory for Bitcoin, with potential all-time highs, surpassing 100k USD by the end of 2024. This optimism is fuelled by factors like the Bitcoin Halving event, increasing scarcity of Bitcoin supply, and growing mainstream interest.

On-Chain Developments

Significant attention is given to on-chain metrics and events, especially the upcoming Bitcoin Halving in April 2024. The Halving is expected to have a profound impact on Bitcoin's price, owing to the resulting supply scarcity. The report also discusses the potential for Bitcoin to decouple from traditional financial markets in the wake of the Halving.

Conclusion

Conclusion: Looking ahead, 2024 is poised to be a transformative year for cryptoassets. The ETC Group remains committed to providing deep market analysis and strategic guidance, helping investors navigate this complex and promising landscape.

Macroeconomic Influence

Global macroeconomic conditions, particularly the anticipated US recession and monetary policy changes, are identified as critical influencers for the performance of cryptoassets. The report analyses how these macro factors have historically impacted Bitcoin's price and how they might shape its future.

Ethereum and Altcoins Outlook

Ethereum's performance, especially in comparison to Bitcoin, is thoroughly examined. The report predicts a possible reversal in Ethereum's relative underperformance, driven by its technological advancements and unique position as a leading smart contract platform. The dynamics of other major altcoins are also explored in relation to market trends and Bitcoin's performance.

Strategic Recommendations

The report offers strategic insights for investors considering cryptoassets in their portfolio. It emphasizes the importance of understanding market cycles, the impact of macroeconomic factors, and the need for a balanced approach towards investment in this volatile and rapidly evolving market.

Introduction

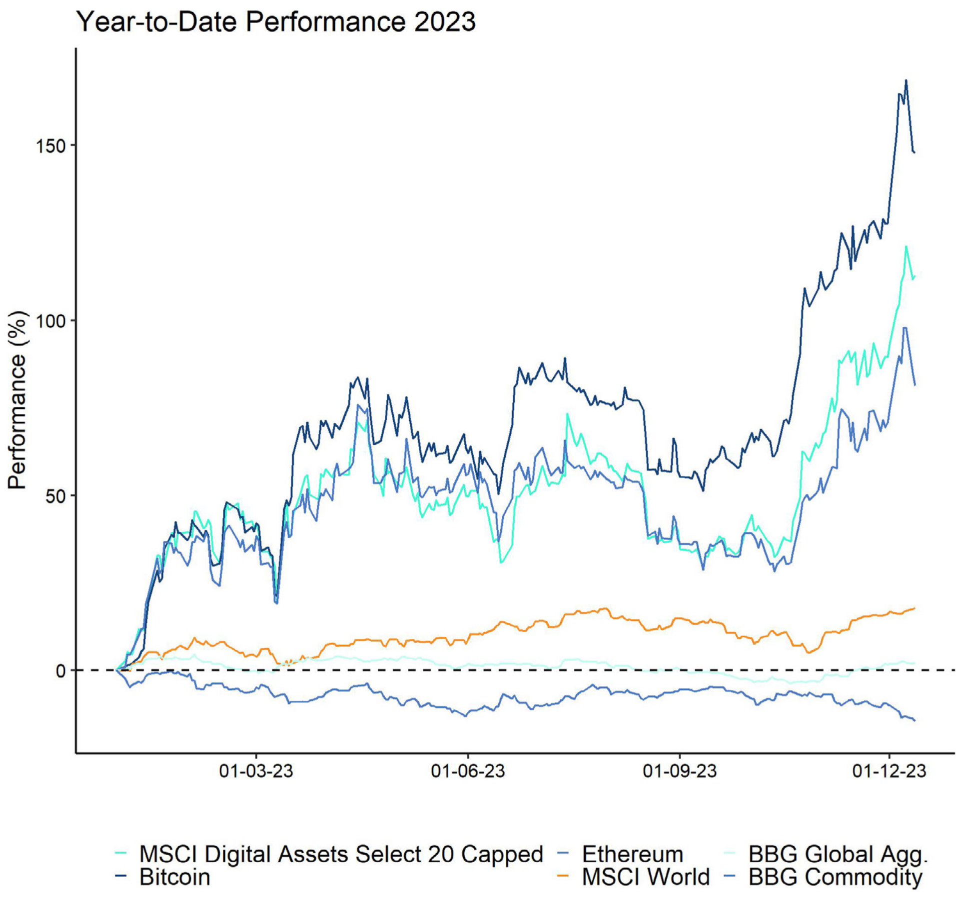
The year is ending and with it, we start reflecting upon the past, present and future.

2023 was mostly a recovery year for Bitcoin and cryptoassets with important catalysts that set the tone for next year as well. Most prominently, BlackRock's spot Bitcoin ETF filing in June 2023 already set the stage for increasing adoption of this still emerging asset class in 2024 and beyond.

Needless to say, the adoption of Bitcoin and other cryptoassets like Ethereum are still in its infancy in most developed countries. Most recent surveys for retail adoption in 2023 point to a global adoption rate of around 18%. So, approximately every 5th individual on earth currently holds some type of cryptoasset[1].

1 Source: Statista

Digital Assets outperformed traditional assets by a very wide margin in 2023



Source: Bloomberg, ETC Group

Adoption rates tend to be significantly higher in developing countries, sometimes already approaching 50%, especially in those regions that experience structurally higher rates of inflation such as Nigeria or Turkey[1].

However, as with most phenomena in social sciences and nature, cryptoasset adoption also evolves in cycles.

Although there is a structural increase in adoption over time, the pace at which this happens tends to be more pronounced in bull markets than during bear markets and may even accelerate depending on the phase of technological adoption.

Price appreciation plays an important role for adoption which was also a recent finding by the BIS[2] and therefore, it is quite likely that the next bull market will lead to a significant increase in new users and investors of cryptoassets again.

In fact, the bull market may lead to a significant acceleration in adoption as most developed countries are at the edge of what is commonly referred to as the "early majority" in the 5 stages of technological adoption famously put forth by Rogers (1962).

Based on this theory, growth tends to be highest in this very transition between "early adopters" and "early majority" which happens around 16% adoption rate.

In fact, the latest figures for the United States suggest a retail adoption rate of exactly 16%. Significant price appreciation will probably be the most important driver to fuel this transition.

After all, nothing changes investor sentiment like price

One of the most anticipated catalysts to lead to such a price appreciation is the Bitcoin Halving scheduled to happen at the end of April 2024.

While some pundits argue that, from a pure theoretical point-of-view, the Bitcoin Halving should already be priced in since it is public knowledge, we demonstrate empirically that these events were followed by significant price appreciations in the past.

> More specifically, we expect the price of Bitcoin to reach new all-time highs during 2024 and to break 100k USD by the end of 2024 as our base case

Although there is some talk about diminishing returns of the Halving in general, we believe that there is a confluence of macro and on-chain factors in 2024 that could lead to a more pronounced bull market next year than in 2020.

For instance, most on-chain metrics imply that Bitcoin's supply is significantly scarcer, and accumulation has been more pronounced this cycle than during the last cycle.

Consider the following on-chain metrics for **Bitcoin:**

- % of exchange supply is at a 5-year low
- % of supply last active 1+ years at all-time high
- Illiquid supply measure by Glassnode at all-time high
- 3-months + realized cap HODL wave is higher than the last cycle's top

These on-chain metrics imply that both liquid supply on exchanges is relatively scarce and that there is a lot of 'dry-powder' in terms of supply distribution during the next bull cycle.

In general, in bull markets, there tends to be a distribution of previously accumulated coins from long-term holders to new entrants at higher prices. Accumulation activity has been very strong during the last bear cycle which suggests that there is lots of room to distribute these coins to new investors.

Besides, Bitcoin's supply illiquidity could be amplified by the fact that many Bitcoin lending desks went down during the last bear market that provided extra liquidity via rehypothecated BTC such as BlockFi, Celsius, Genesis and Voyager.

1 Ibid.
2 Auer et al. (2022) „Crypto trading and Bitcoin prices: evidence from a new database of retail adoption" BIS Working Paper No 1049

Apart from these on-chain developments, other important macro factors include:

- A large cohort of new potential institutional investors that are waiting for the spot Bitcoin ETF in the US.
- A very likely US recession & reversal of monetary policy that potentially leads to a significant increase in macro liquidity.
- The gradual demise of the Treasury bond as a safe-haven asset and investors that are in search of a new counterparty risk-free asset.
- The dire situation in the US banking and financial system that appears to be bankrupt if current Hold-To-Maturity (HTM) bond losses would materialize.
- The rise in geopolitical risks & De-Dollarization that is begging for an apolitical alternative global reserve asset outside of the US Dollar, Euro or the Yuan.

These on-chain and macro factors combined could lead to a very interesting year 2024.

The next chapter analyses the most important macro factors for Bitcoin and cryptoassets in general. Chapter 3 takes a look at on-chain developments in Bitcoin, Ethereum and other cryptoassets. Chapter 4 concludes.

We hope that we can give you the needed clarity on what lies ahead with this ETC Group Outlook 2024 publication and, as always, hope that you will find the information herein illuminating and useful.

> We wish all our clients and readers a healthy and prosperous new year 2024

Stay humble and stack Sats,
André Dragosch, PhD

Macro

The development of the global macroeconomy plays an increasingly important role for the performance of cryptoassets and in particular Bitcoin as investors increasingly integrate this asset class into their broader asset allocation.

We tend to look at macroeconomic factors from the point-of-view of an investor, namely based on what is being priced in financial markets and compare this to the performance of cryptoassets such as Bitcoin.

In fact, the majority of fluctuations in the price of Bitcoin can historically be explained by 4 major macro factors which are global growth, monetary policy, US Dollar, and Eurozone risks.

By extracting these macro factors from traditional financial asset prices, we can try to analyse the impact of changes in macro factors on the price of Bitcoin.

A more detailed explanation of this approach can be found here.

From a statistical point-of-view, Bitcoin tends to be mainly influenced by changes in global growth expectations and, by association, changes in cross asset risk appetite in traditional financial markets.

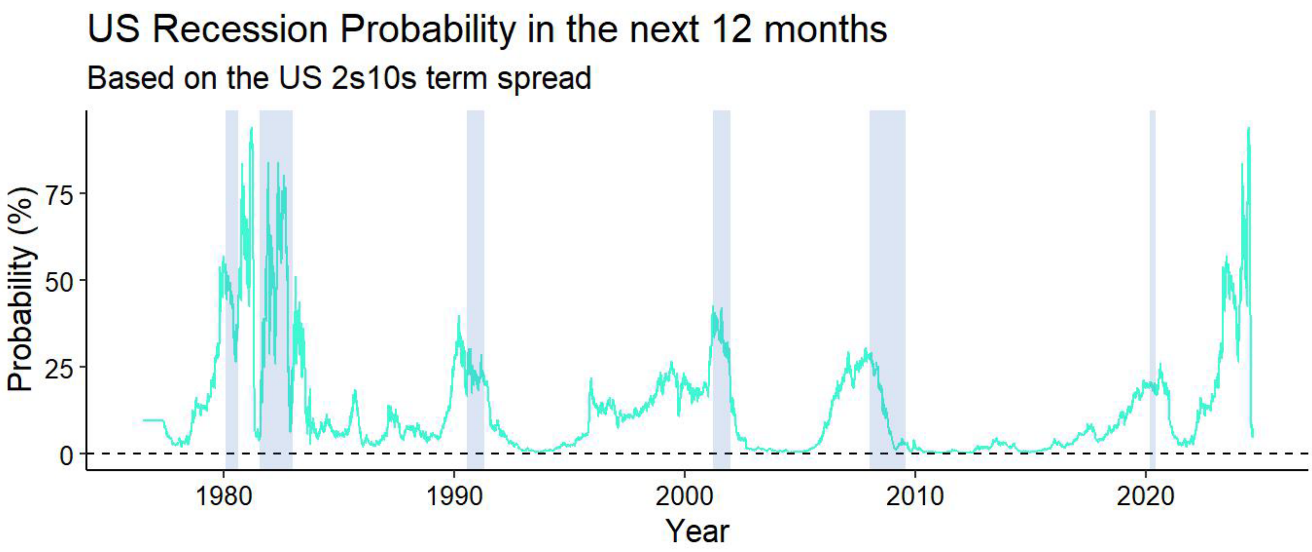
In this regard, the "soft landing" narrative, i. e. the expectation that the US economy would avoid an outright recession, combined with traditional financial markets ignoring the telegraphed tightening by the Fed have essentially fuelled a rallye in risky assets, including Bitcoin since October 2022 which has mostly continued this year.

One of the major reasons was the peak in CPI inflation rates in the US in October 2022 and the collapse of Silicon Valley Bank and other US regional banks in March 2023 that led to a stabilization in US liquidity and easier financial conditions.

In fact, the latest Bloomberg consensus estimates still assign a median 50% probability of US recession within the next 12 months. Our own model for a US recession over the next 12 months based on the US yield curve assigned a 93% probability of US recession in June 2024 but has collapsed recently as the yield curve has resteepened.

> However, the main macro risk in 2024 remains that Bitcoin and other cryptoassets could be caught up in the quagmire of underperforming risky assets if a US recession still materialized

Probability of a US recession in 2024 increased significantly



Source: Bloomberg, ETC Group; own calculations; gray areas denote actual NBER US recessions

Keep in mind though that a US recession is usually declared with significant delays by the NBER, sometimes even more than a year after the fact.

More recently, there has been a significant weakness in cyclically sensitive US employment such as truck transportation, temporary help services or durable goods manufacturing.

What is more is that the US unemployment rate has been rising gradually since the beginning of the year when it was at 3.4% — at the time of writing it is at 3.7% (and already was at 3.9% in October).

The reason why that is important is that the US economy has never avoided a recession when the 3-month moving average of the unemployment rate increased by 0.5%-points or more from its preceding 12-months low — this is also known as the “Sahm Rule”.

Thus, the US economy might already be sliding into a recession.

In fact, leading indicators like the NAHB Housing Market Index or regional Fed manufacturing surveys have recently rolled over again, implying an increasing risk for a repricing of still sanguine global growth expectations to the downside.

In the context of a potential US recession, it is important to note that the dominance of macro factors for Bitcoin’s performance has indeed increased during years when the US economy was either in outright recession (e. g. 2020) or when the US economy was at least in a growth rate cycle downturn (e. g. 2011, 2015, 2018, 2022).

During these years, the majority of Bitcoin’s performance (>50%) could be explained by changes in macro factors, predominantly global growth expectations.

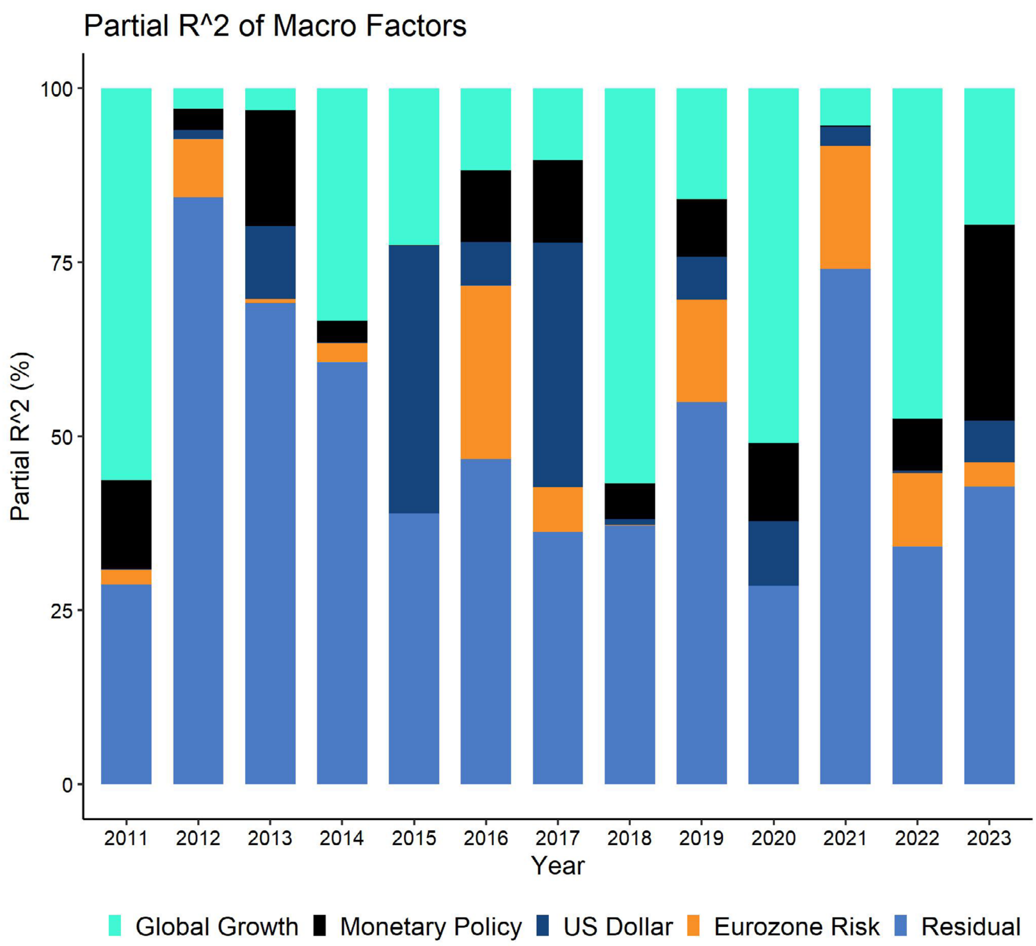
> The question for investors is whether Bitcoin and other cryptoassets can decouple from a potentially bad macro environment amid the upcoming Bitcoin Halving in 2024?

On a positive note, during Bitcoin Halving years, especially 2012 and 2016, Bitcoin was mostly dominated by unexplained/residual factors outside of the macro realm.

A clear exception is, of course, 2020 when the global economy was literally shut down due to the Covid-19 pandemic. Changes in global growth expectations (light green bar) were the most important factor for Bitcoin in 2020 while Bitcoin-specific factors such as the Halving (light blue bar) only played a subordinate role in 2020 based on this analysis.

> The key lesson from this analysis is that Bitcoin's performance can be dominated by macro factors amid US growth rate cycle downturns despite the Halving but most Halving years generally see a dominance in Bitcoin-specific factors which implies that Bitcoin could possibly decouple from traditional financial markets next year

How much of Bitcoin's performance can be explained by macro factors?



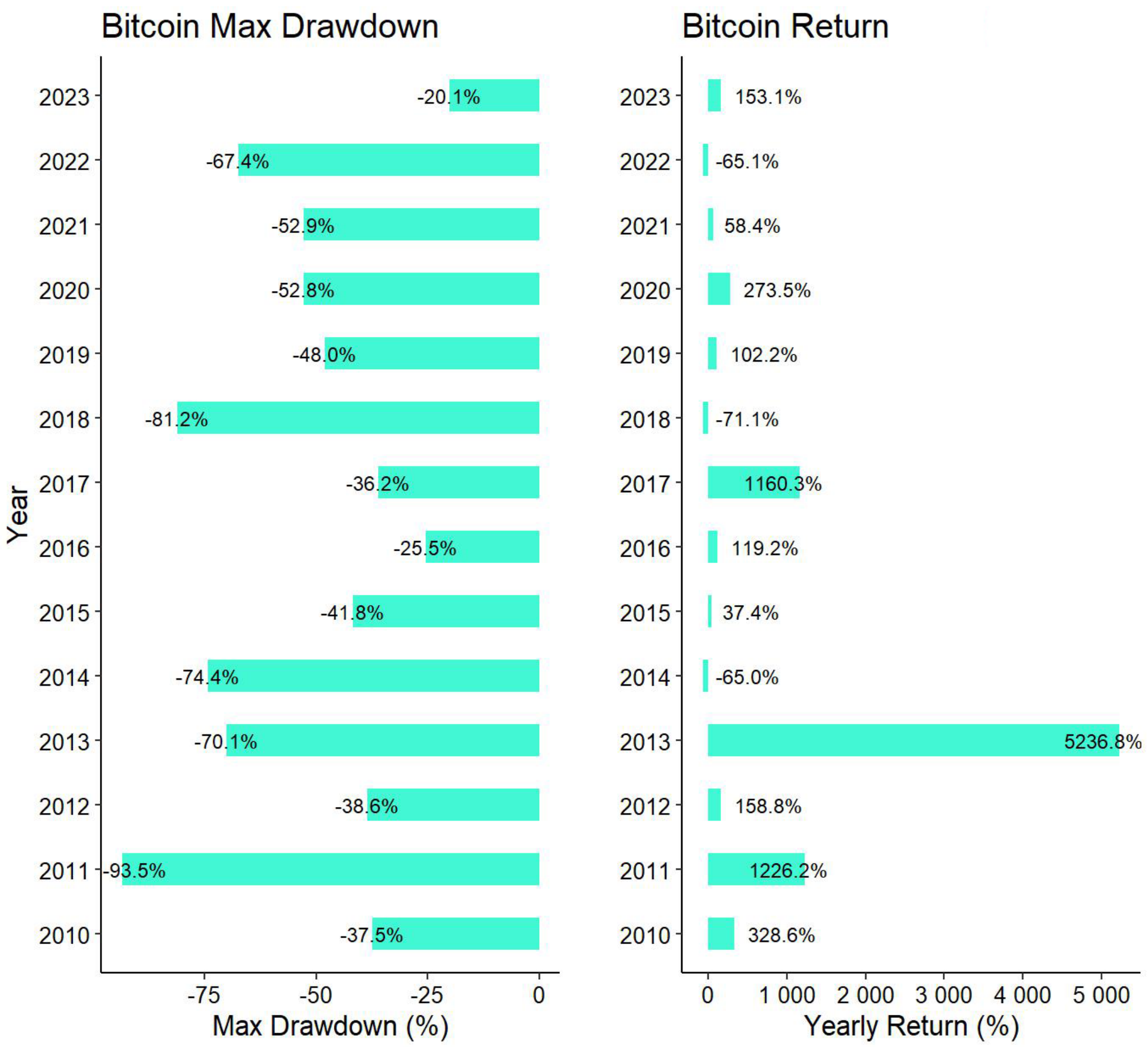
Source: Bloomberg, ETC Group; Results based on a regression between 3-months change in macro factors and Bitcoin performance

What is more is that even during the Covid-19 shock and recession in 2020, Bitcoin experienced a significant interim drawdown but was able to recover strongly due to the tailwind from the Halving and loose monetary policy in response to the economic weakness.

On the bright side, any material economic weakness, especially in US employment, is likely going to induce renewed monetary easing by the Fed.

Historically speaking, the announcement of easing monetary policy measures alone has already led to a significant repricing of US inflation expectations to the upside in the past.

Yearly performance in Bitcoin Halving years (2012, 2016, 2020) was still decent despite US recessions / slowdowns

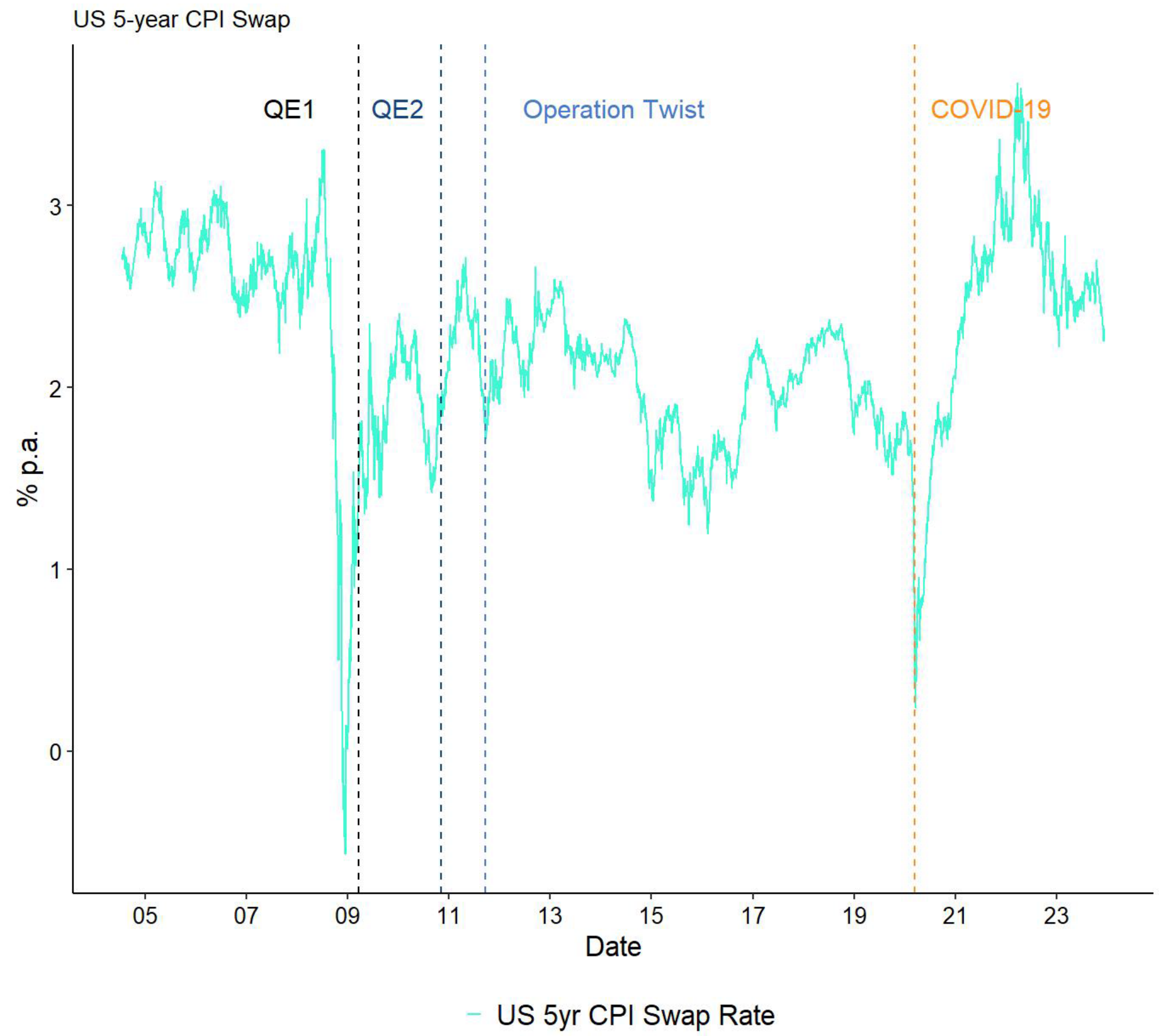


Source: Bloomberg, ETC Group

> Scarce digital assets like Bitcoin should potentially profit from such a reversal in monetary policy and renewed increase in inflation expectations

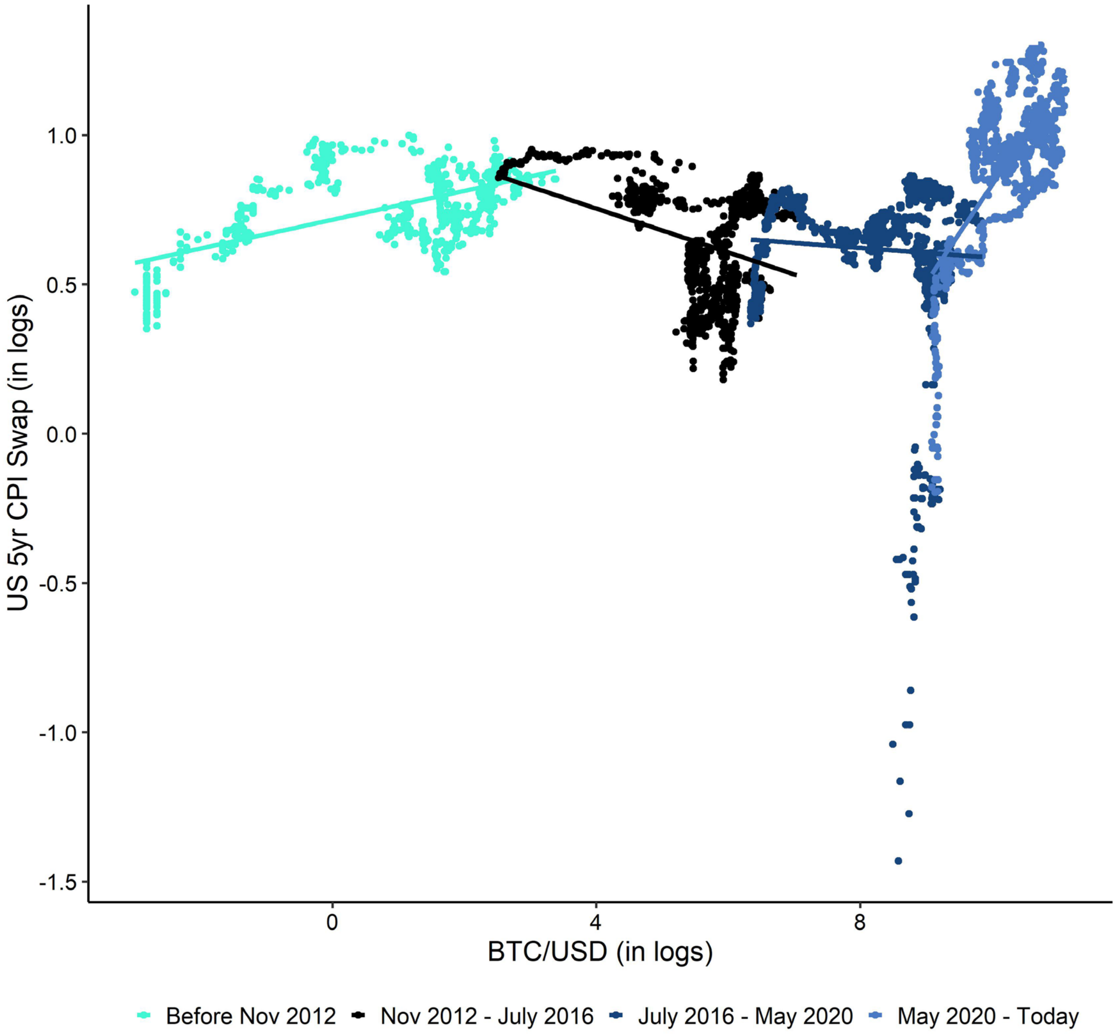
The reason is that Bitcoin has become increasingly sensitive to changes in market-based inflation expectations (5-year CPI Swaps), especially since 2020. We expect this sensitivity to increase even further as supply scarcity of Bitcoin is going to be exacerbated with the upcoming Halving in April 2024.

Fed monetary policy easing announcements alone have led to significant increases in inflation expectations



Source: Bloomberg, ETC Group

Bitcoin is becoming increasingly sensitive to US inflation expectations



Source: Bloomberg, ETC Group

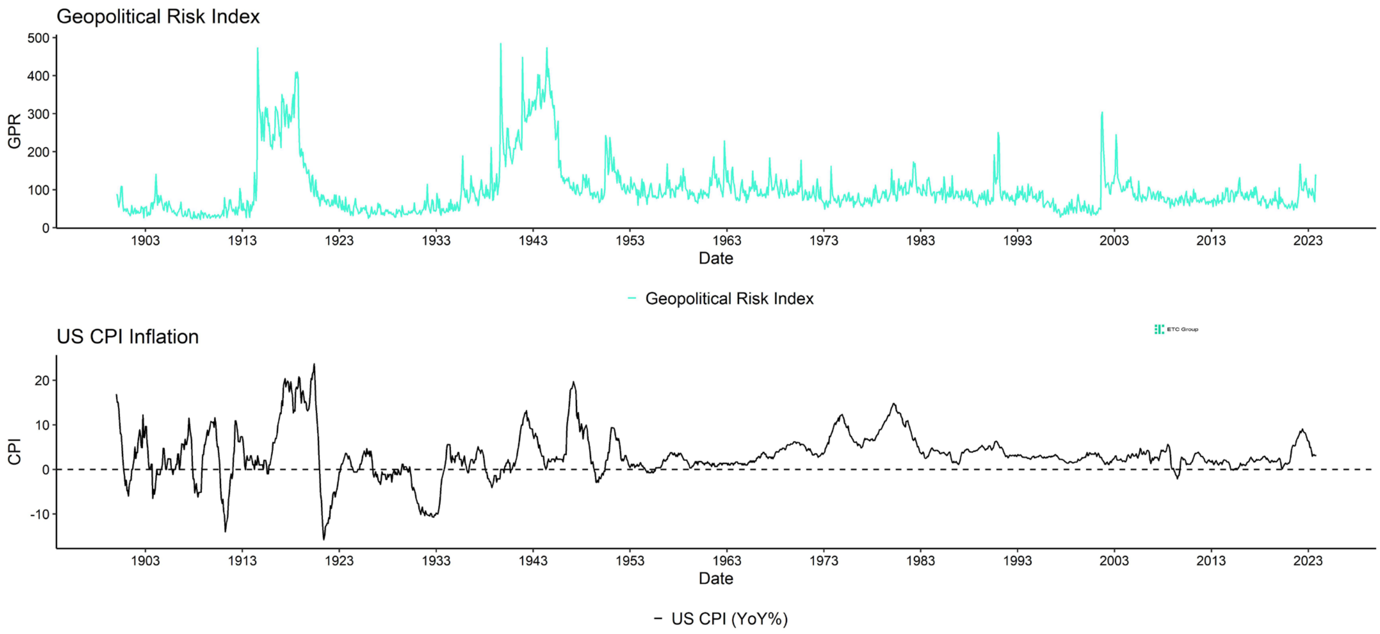
> A potential wild card for higher inflation expectations in 2024 is an increase in geopolitical risks

We do not expect the armed conflicts in Eastern Europe or in the Middle East to resolve any time soon, which is one of our assumptions for 2024.

Bitcoin will climb the proverbial "wall of worry" in 2024 on account of rising geopolitical risks. In 2024, more than 45% of the world's population will have cast ballots in both presidential and legislative elections, including the US. A high degree of volatility and the possibility of big changes are predicted by the high number of major elections.

Historically speaking, periods of heightened geopolitical tensions were associated with significantly high inflation rates in the US. Most notably the 1st and 2nd World War in the 20th century.

Periods of heightened geopolitical risks tend to be high inflation environments



Source: Robert Shiller, Caldara & Iacoviello 2022)

Increases in geopolitical risks are usually associated with an increase in commodity demand and supply chain disruption which tends to be inflationary[1].

As far as cryptoassets are concerned, Bitcoin tends to sell off on increases in geopolitical risks but tends to rebound to higher price levels than before the initial increase in geopolitical risks. So, any spikes in geopolitical risks should be used as potential tactical buying opportunities in cryptoassets as the analysis in the box below demonstrates.

1 Bouri et al. (2023)

Can Bitcoin provide a hedge against geopolitical risks?

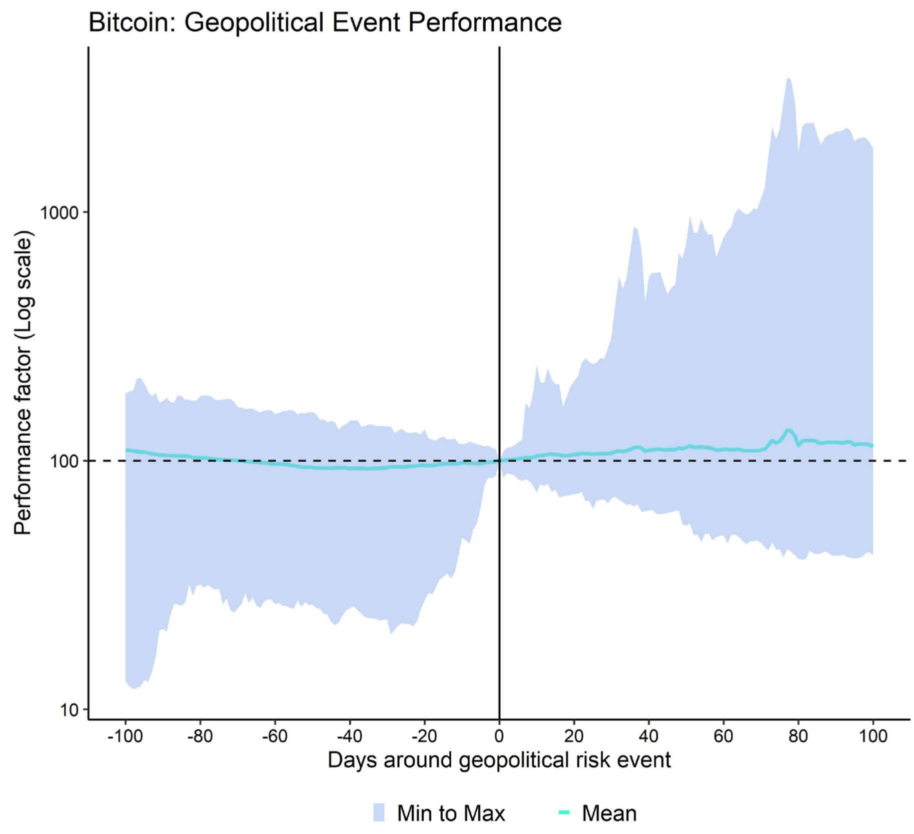
In order to answer that question, we performed an event study analysing Bitcoin's historical performance around significant spikes in geopolitical risks based on the Geopolitical Risk Index by Caldara and Iacoviello (2022).

The Geopolitical Risk Index is a gauge of unfavourable geopolitical events and related hazards derived from a count of newspaper stories discussing geopolitical tensions. More specifically, the Chicago Tribune, the Daily Telegraph, the Financial Times, The Globe and Mail, The Guardian, the Los Angeles Times, The New York Times, USA Today, The Wall Street Journal, and The Washington Post are among the ten newspapers whose electronic archives are reflected in the automatic text-search results.

In order to create the index, Caldara and Iacoviello count the number of articles (as a percentage of all news stories) in each newspaper for each month that discusses unfavourable geopolitical developments.

We defined a significant geopolitical risk event as the date when the Geopolitical Risk Index increased above 2 standard deviations. By doing so, we identified 101 dates since July 2010 when this was the case. Our sample size is constrained by the fact that reliable daily historical price data for the price of Bitcoin only start as late as July 2010.

Geopolitical events were followed by significant price appreciations in the past



Source: Glassnode, ETC Group; matteoiacoviello.com;
Results based on previous geopolitical risk events since July 2010 — today

Apart from that, one of the key reasons for an increase in inflation expectations through monetary policy easing is the fact that the US Dollar tends to weaken on any Fed guidance that implies declining interest rates in the US. This also tends to be a positive factor for Bitcoin.

Periods of US Dollar weakness are historically also periods of significant Bitcoin outperformance and vice versa.

The next table shows Bitcoin's performance subject to the performance of the Dollar Index (DXY). The 1st quintile represents the 1/5th of worst Dollar performances, while the 5th quintile represents the 1/5th of best Dollar performances.

Periods when the Dollar performs worst (1st quintile), i. e. depreciates the most, are also the best periods for Bitcoin.

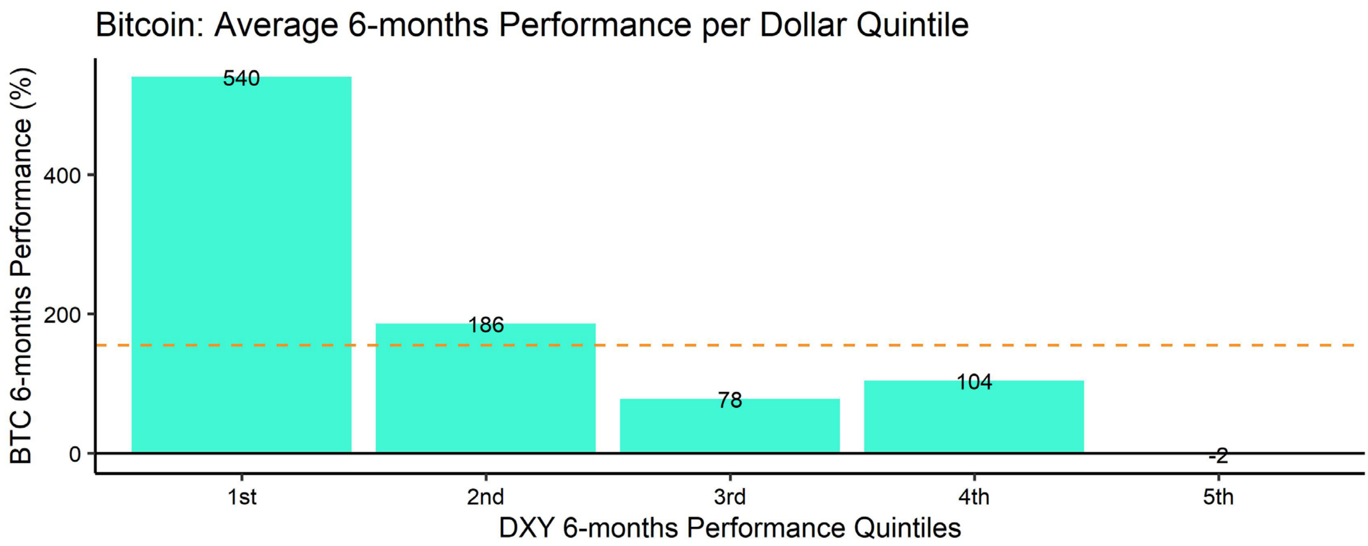
In that context, Bitcoin could provide a good hedge against a more structural depreciation of the US Dollar due to ongoing "De-Dollarization".

> Easing financial conditions in the US coupled with a significant depreciation of the US Dollar could therefore provide a significant tailwind for Bitcoin and cryptoassets in 2024

More generally, increases in the money supply tend to be associated with Bitcoin and cryptoasset bull markets as well. In this context, it is important to note that both global money supply growth and the aggregate balance sheet of major central banks have been increasing since late 2022 already — coinciding with the recovery in traditional financial markets like equities as well.

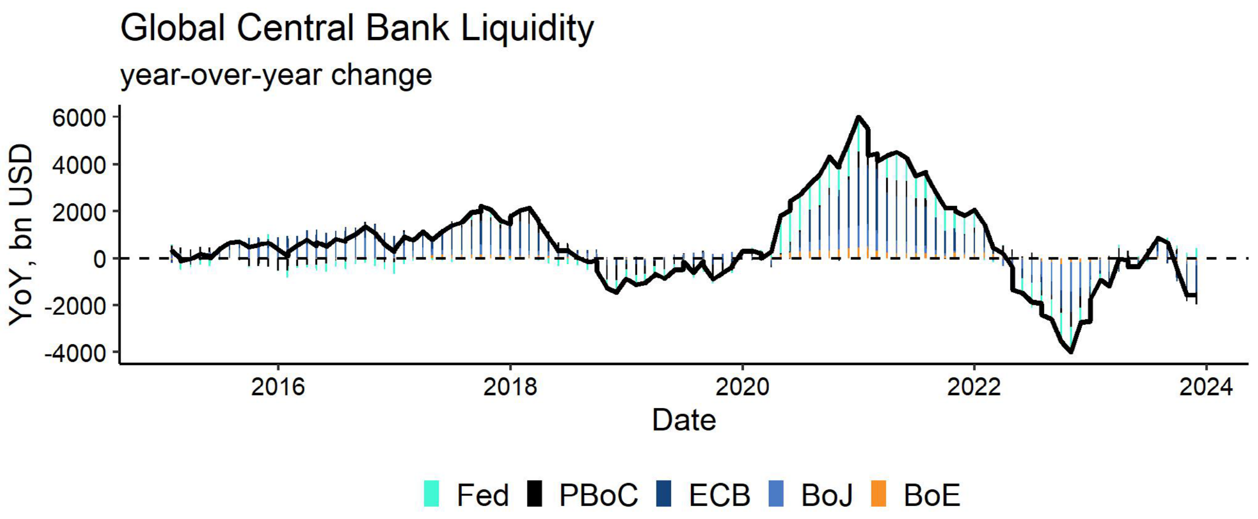
However, global central bank liquidity has recently declined again, predominantly led by declines of the ECB and PBoC while the Fed's liquidity has continued to increase.

Dollar weakness historically provides a significant tailwind for Bitcoin



Source: Bloomberg, ETC Group; Sample: Jan 2011 - Today;
Orange dashed line denotes mean BTC performance over a 6-months time period

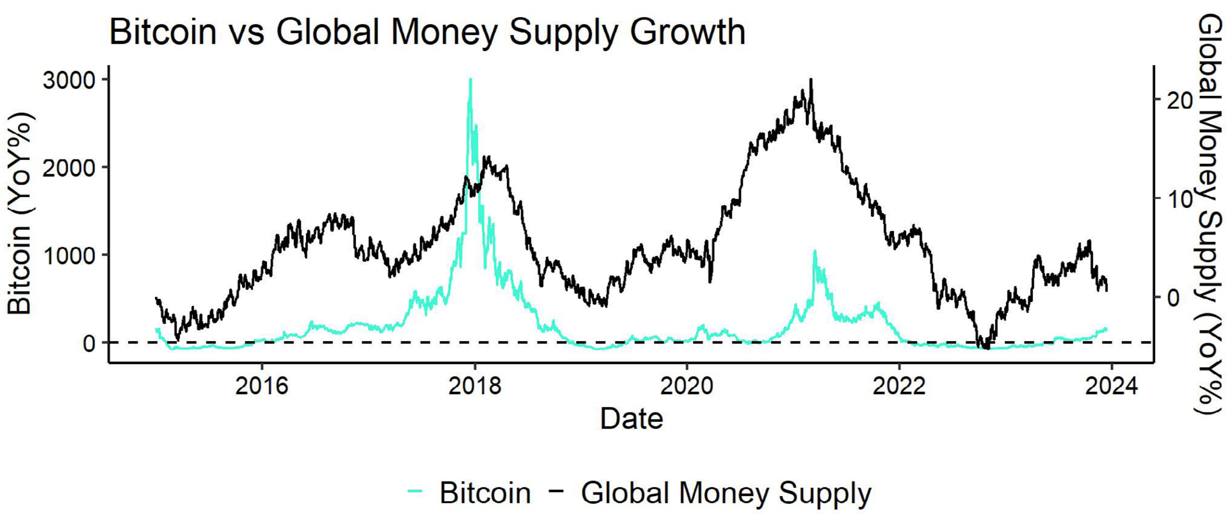
Central bank liquidity growth has stabilized but has recently decreased again



Source: Bloomberg, ETC Group

The reason why that is important is that Bitcoin's performance has historically been tightly correlated with changes in the global money supply. As a scarce digital asset, Bitcoin's price appears to fluctuate with the ebbs and flows of global liquidity. In a way, Bitcoin can be regarded as a good barometer for the degree of monetary debasement around the world.

Bitcoin's performance tends to be tightly correlated with global money supply growth

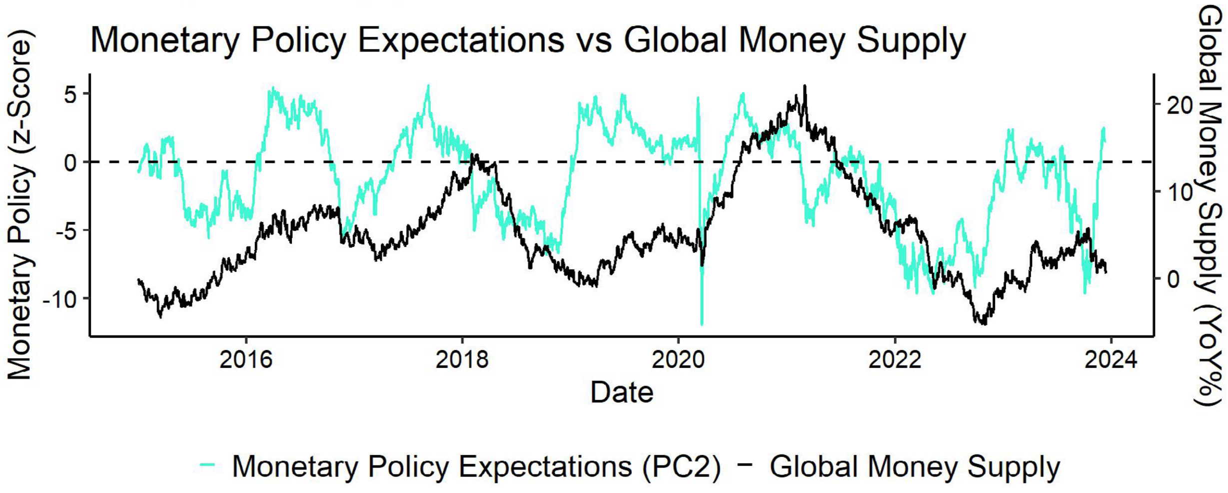


Source: Bloomberg, ETC Group

More recently, there has been a slight decline in global money supply growth. This suggests that there is a risk for a short-term pull-back in Bitcoin due to the decline in liquidity.

However, financial conditions and expectations for monetary policy as priced by financial markets have recently reversed again, suggesting a renewed reacceleration in global money supply growth.

Reversal in monetary policy expectations suggests renewed increase in global money growth



Source: Bloomberg, ETC Group

The above measure is derived from financial market prices which suggest that financial markets are expecting a looser stance of monetary policy.

> In fact, rates markets already suggest that the peak in the Fed interest rate hiking cycle is behind us and that the Fed will likely cut interest rates going forward.

More specifically, at the time of writing, Fed Funds Futures already price in almost 5 rate cuts of 25 basis points each with an implied policy rate of only 4.2% at the end of December 2024. This is probably due to ongoing expectations for declining inflation rates and increasing unemployment in 2024 which are bound to lead to a reversal in monetary policy.

Other factors that could potentially lead to a reversal in US monetary policy are Treasury market dysfunction (spikes in yields due to illiquidity) or a renewed increase in systemic banking stress.

US Treasury markets still exhibit the lowest liquidity since March 2020 based on the US Government Securities Liquidity Index provided by Bloomberg. One of the reasons is the ongoing tapering of the Fed's bond portfolio and the ongoing divestment of major foreign Treasury holders like China. Any material spike in yields could move the Fed to intervene in US Treasury markets by providing additional liquidity.

It is also an open secret that the US banking system is in a very dire shape. Unrealized losses on bank's balance sheets due to losses on securities have piled up to more than 684 bn USD per end of Q3 2023 according to data by the FDIC.

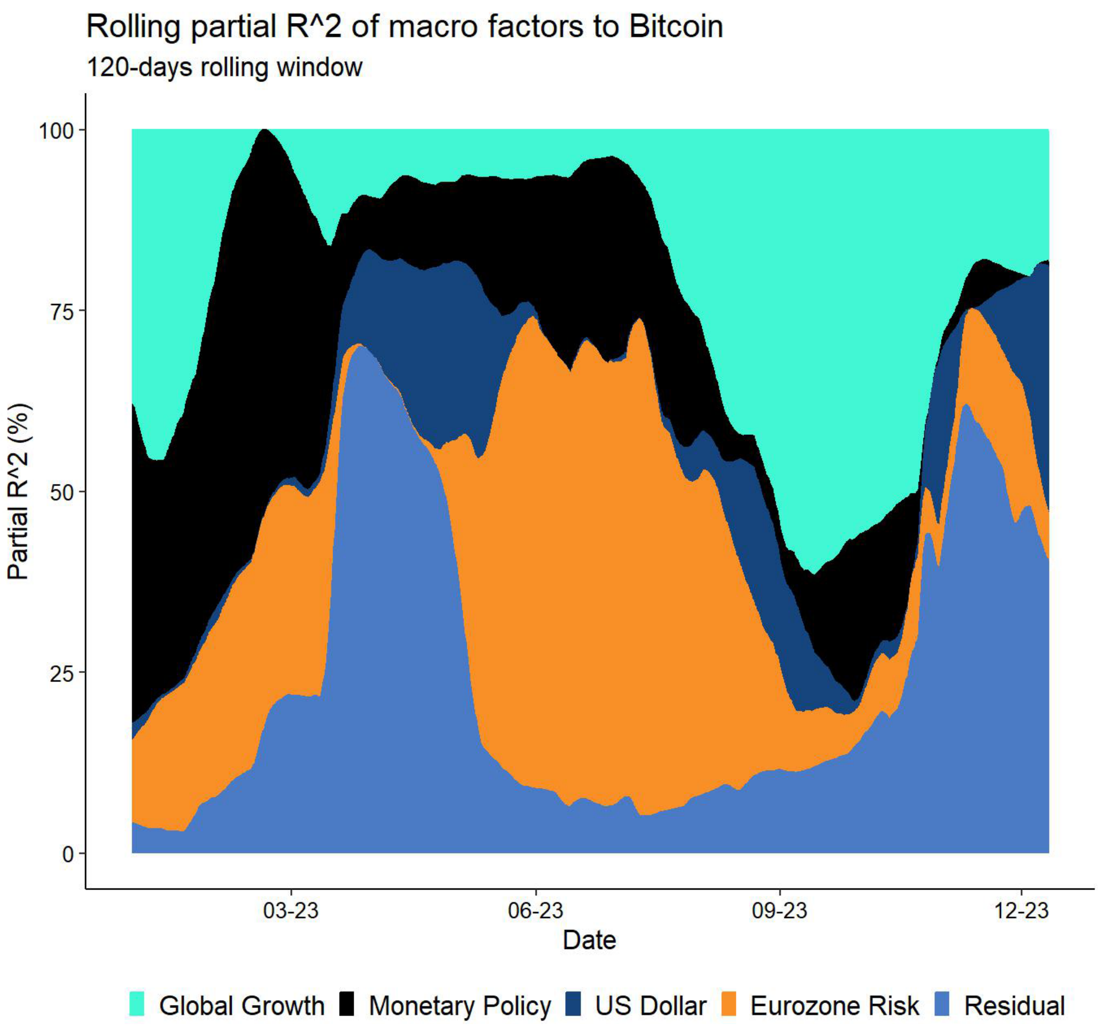
The Fed and other financial institutions like the Federal Home Loan Bank (FHLB) were thus far able to cover up these losses through significant liquidity provisions such as the Bank Term Funding Program (BTFP) by the Fed. The BTFP is planned to expire in March 2024 with more than 100 bn USD in short-term loans to troubled financial institutions coming due. This will be a key event to watch early next year.

> It is important to note that any increase in systemic sovereign or banking risks would most likely be bullish for counterparty risk-free assets like Bitcoin as was the case during March 2023 when Silicon Valley Bank collapsed

During that period, Bitcoin and other cryptoassets significantly outperformed traditional assets like equities.

Apart from that, 2023 has already shown frequent episodes when Bitcoin-specific factors ("Residual" — light blue area) were more important than macro factors. Highlights are at the beginning of the year (rise of inscriptions & SVB collapse) and in Q4 2023 (likely US spot Bitcoin ETF approval):

How much of Bitcoin's performance can be explained by macro factors?



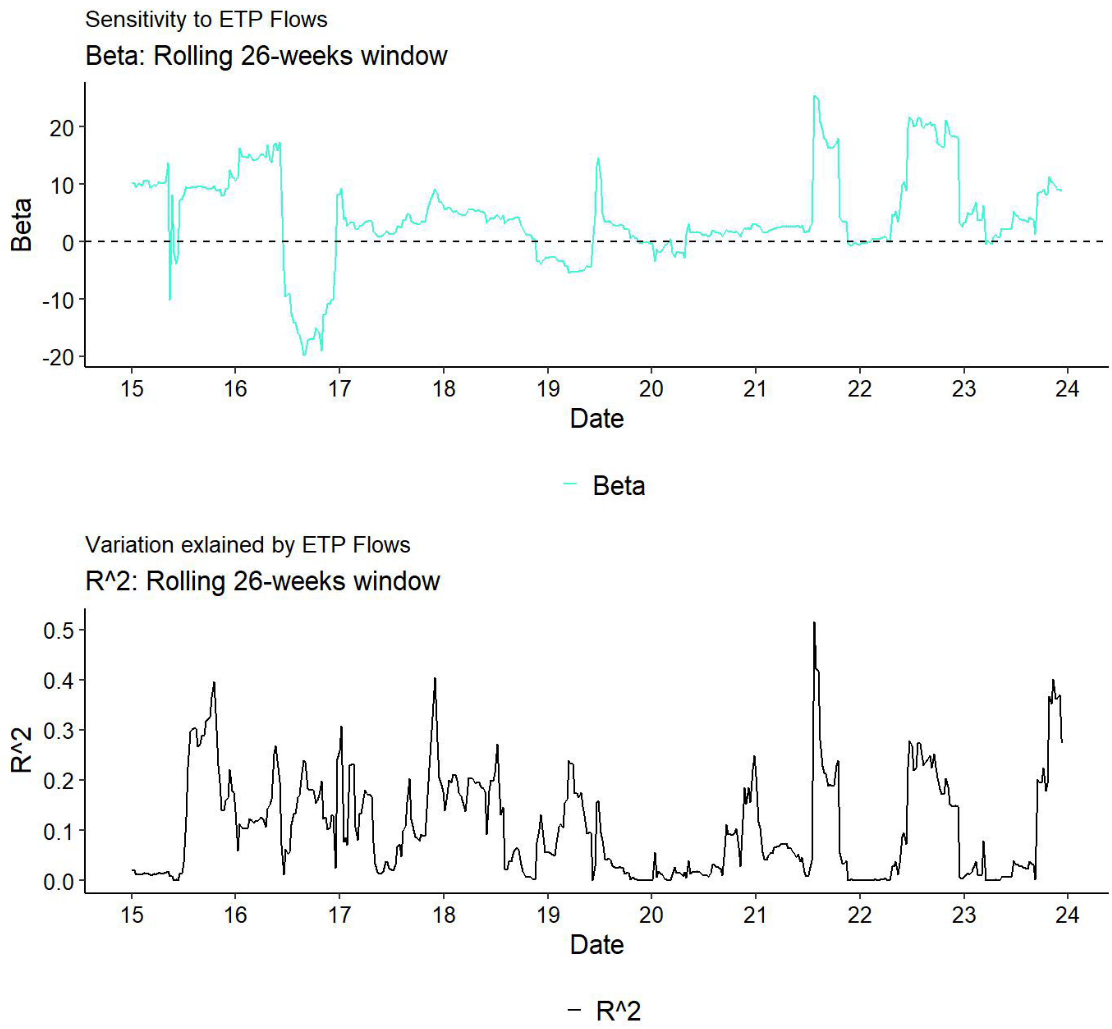
Source: Bloomberg, ETC Group

This is probably one of the major reasons why Bitcoin was able to decouple from the recent performance observed in traditional financial markets throughout 2023.

In the context of a potential US spot Bitcoin ETF approval, it is quite striking that the performance sensitivity of Bitcoin to changes in global Bitcoin ETP flows has indeed increased significantly over the course of 2023.

Over the past 6 months alone, changes in global Bitcoin ETP flows were able to explain around 30%–40% of Bitcoin's price variation. In fact, BlackRock's spot Bitcoin ETF filing in June 2023 has served as a very significant catalyst for global cryptoasset ETP flows in general.

Bitcoin: The importance of ETP flows recently increased significantly



Source: Bloomberg, ETC Group

Since an approval is already mostly priced in judging by the narrow NAV discount of Grayscale's Bitcoin Trust (GBTC), the potential price impact is more a medium- to longer-term topic rather than a short-term spike in prices which is most-likely going to be limited.

What is the price effect of a potential US spot Bitcoin ETF approval?

A major talking point among investors is the potential price impact on Bitcoin if a spot Bitcoin ETF is ultimately approved in the US.

In general, a good starting point to answer this question is Bitcoin's performance sensitivity to global ETP flows. As the chart above suggests, both the sensitivity (Beta) and the importance (R^2) of the flows for the performance of Bitcoin can vary significantly over time.

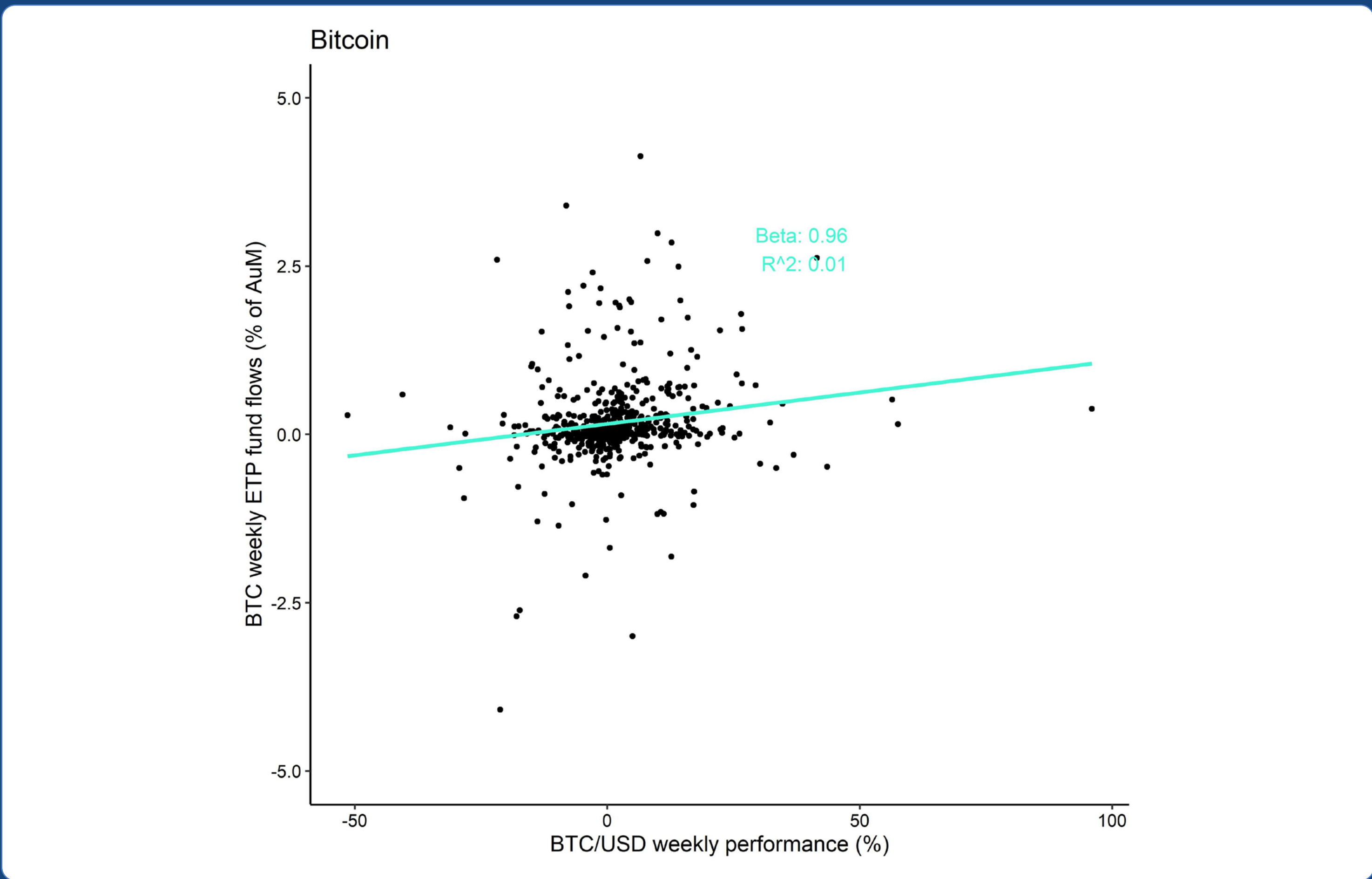
The most recent numbers over the past 6 months suggest that variations in global Bitcoin ETP flows were able to explain around 40% of the variation in the price of Bitcoin.

Moreover, the sensitivity of Bitcoin to these ETP flows was around 10 suggesting that a +1% increase in global Bitcoin ETP AuMs was on average associated with a +10% weekly performance of Bitcoin — a very significant number.

That being said, this "multiplier" can sometimes even be negative as was the case in 2016 — negative inflows being associated with positive price performance and vice versa.

However, the average numbers suggest that 1% of global Bitcoin ETP inflows were on average associated with a 0.96%-points weekly performance of Bitcoin.

Bitcoin's Performance Sensitivity to ETP Fund Flows



Source: Bloomberg, ETC Group

So, almost a 1-to-1 relationship.

Now, the aggregate amount of AuM of ETFs in the US around 6,982 bn USD of which 5,585 bn USD are invested into risk assets like equities according to data by ICI.

Under the assumption that 20% of investors would consider such an investment and allocate 3% of their AuMs into Bitcoin, the potential amount of new capital entering the market would be around 33.5 bn USD (5.585 trn USD * 20% * 3%). In comparison, the global Bitcoin ETP market currently amounts to only 34 bn USD. Hence, an inflow of around 33.5 bn USD would imply an increase of around 98% in AuM — almost a doubling in global Bitcoin ETP AuMs.

If you assumed the abovementioned almost 1-to-1 price sensitivity on average, we would be talking about a potential price impact of approximately +98% (!).

Keep in mind that this is possibly a conservative number since the Beta ("multiplier") of Bitcoin's performance to these fund flows has sometimes increased up to a factor of 20 as happened during the bull market in 2021.

Caveat: Other unobserved factors might be more important at times. As always, correlation is not causation.

But this amount of capital won't enter Bitcoin overnight. It will take many months before investors start migrating into these newly issued ETFs.

Gradually, then suddenly as they say.

Bottom Line

We still assume a US recession, most-likely in June 2024, as a base case macro scenario next year. Bitcoin's annual performance in past Halving years was still decent despite US recessions or slowdowns albeit with large interim drawdowns.

Bitcoin-specific factors were generally more relevant than macro factors during past Halving years. Bitcoin-specific factors have recently become more relevant as well, most likely related to ETP inflows. We expect a significant price impact from a potential spot Bitcoin ETF approval in the US.

The reversal in monetary policy with a weak Dollar and rising inflation expectations should provide a tailwind for Bitcoin and Cryptoassets in 2024. Recent reversal in monetary policy expectations already foretells an increase in global money supply growth again.

Rising geopolitical risks represent a wild card in 2024, but we expect only a short-term negative impact with above-average returns thereafter.

On-Chain

Bitcoin

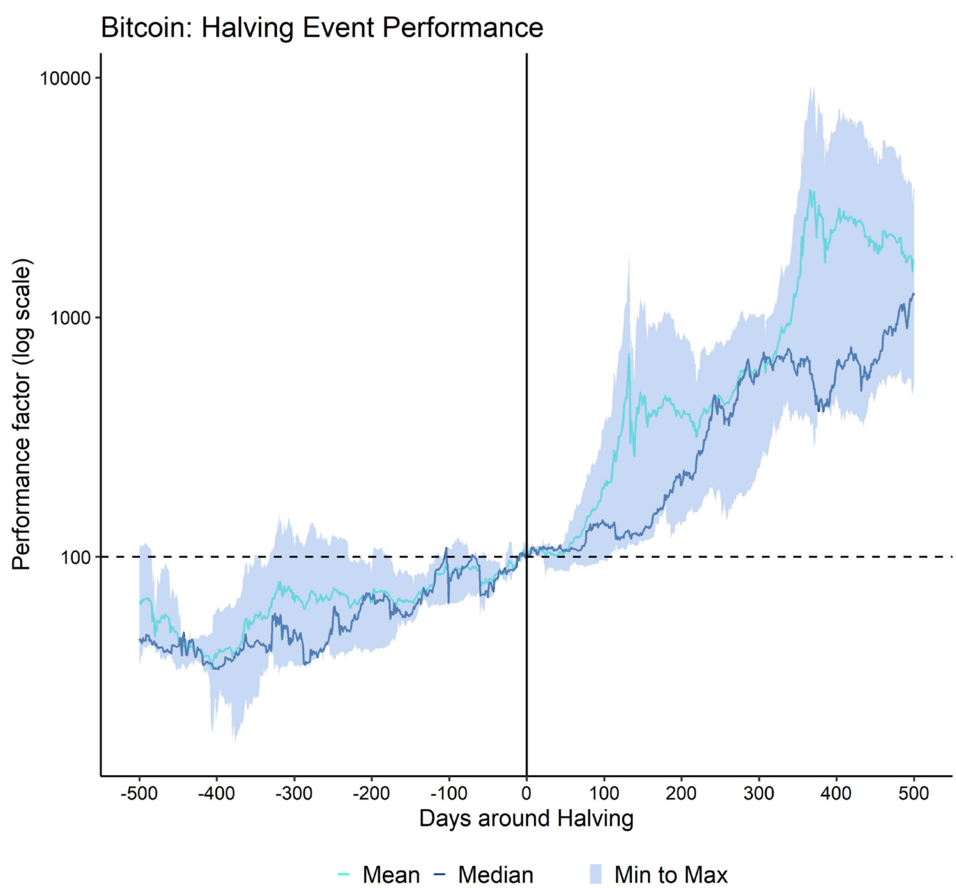
Probably the most anticipated on-chain event in 2024 by far is the upcoming Bitcoin Halving. Bitcoin's algorithm dictates a –50% reduction in the block subsidy which is the reward paid to miners when a valid hash is found. This reduction is dictated every 210000 blocks while one block is mined slightly less than every 10 minutes on average. This block subsidy currently stands at 6.25 BTC and will halve to 3.125 BTC in April 2024. This will be the fourth Halving event since Bitcoin's genesis block in January 2009.

What is relevant for Bitcoin and cryptoasset investors is the fact that these Halving events were followed by very significant price appreciations in the past.

> On average, the post-Halving performance was approximately a 17-fold increase in the price of Bitcoin 500 days after the Halving (34-fold peak increase)

The chart below shows the respective mean, median, minimum, and maximum performance around the past 3 Bitcoin Halving events that happened in 2012, 2016, and 2020 so far:

Halving events have led to significant price appreciations in the past



Source: Glassnode, ETC Group; Results based on the previous Halvings in 2012, 2016, and 2020

As one can see from the chart above, the halving already tends to be anticipated around 400 days before the Halving date itself. However, the large majority of performance on average accrues after the Halving date.

There are frequent discussions within the Bitcoin community about whether these Halving events are priced in ahead of time since they are public information which, we think, is neither supported by theory nor the statistical evidence that is provided in the following box.

Is the Halving priced in?

There are frequent discussions within the Bitcoin community about whether Halving events can be priced in ahead of time since they are public information.

The Efficient Market Hypothesis assumes that there is perfect information among homogenous market participants at all times and that, therefore, any public information is instantly reflected in price.

Based on this theory, only new information can lead to changes in the price and performance is therefore a non-predictable statistical "random walk".

However, the empirical evidence for Bitcoin suggests that, although being publicly available information, Halving events do not seem to be priced in ahead of time.

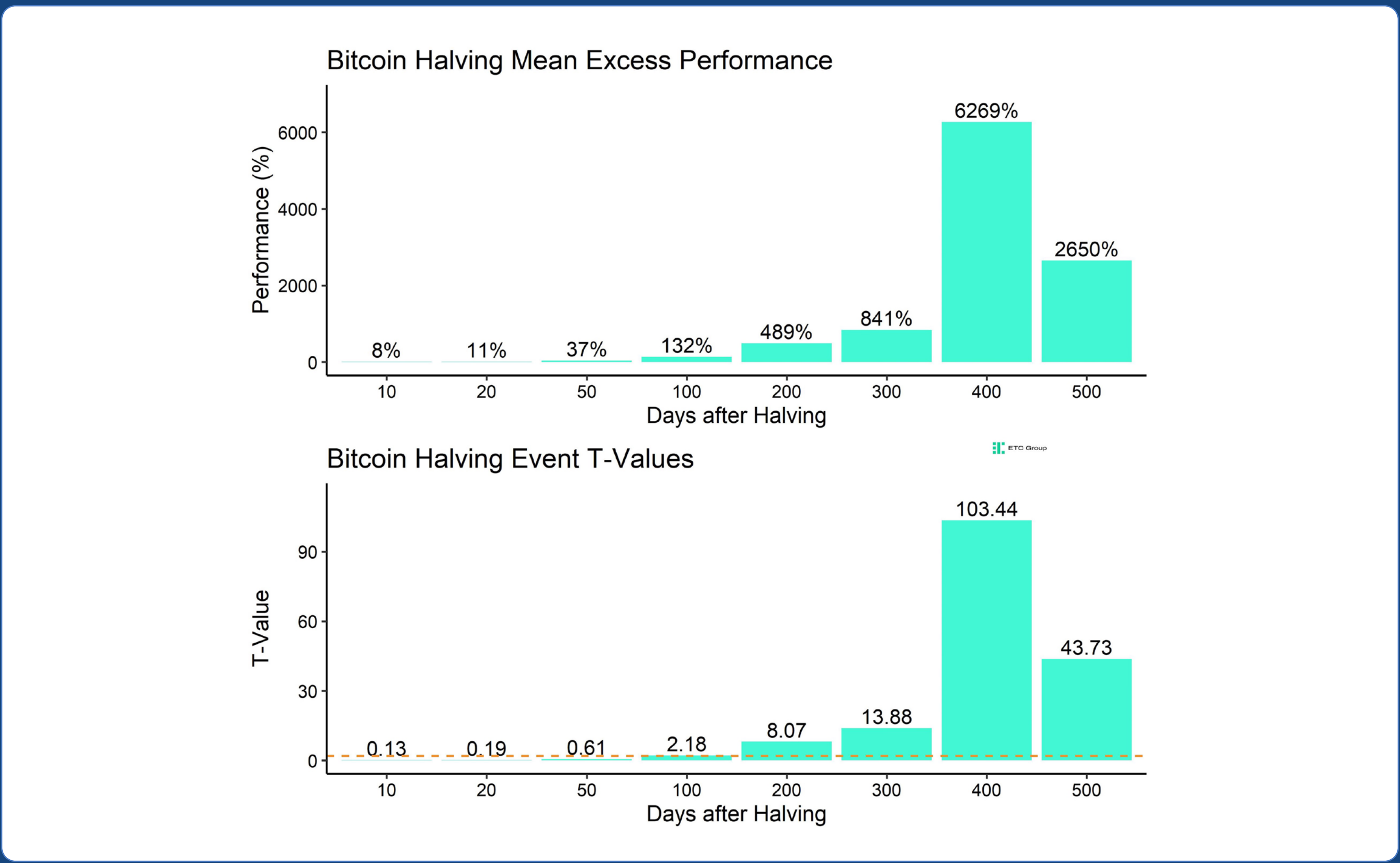
In order to test the hypothesis that there is no significant effect of the Halving on the performance of Bitcoin, we compared the respective performances X days after the Halving with the performance X days before the Halving.

The rationale: If there was no statistical significance in the Halving, post-Halving performances should not be significantly higher than pre-Halving performances for any given identical time period.

The results are quite staggering: although there does not seem to be a significant performance effect until 100 days after the Halving (performances are only weakly statistically significant), the performance differences become highly significant after that.

All in all, the results suggest that the Halving effect starts to become significant only as late as 100 days after the Halving date but then becomes highly significant which suggests that it was not being priced in ahead of time historically.

Is the Bitcoin Halving priced in? History suggests it isn't...



Source: Glassnode, ETC Group; Results based on the previous Halvings in 2012, 2016, and 2020
Mean Excess Performance = difference between performance X days after minus X days before the Halving
Orange dashed line denotes 95% level of confidence

For one thing, if this event was being priced in ahead of time and the price of Bitcoin would be bid up in anticipation of these events, Bitcoin miners would still be able to offload their BTC revenues and possibly even more before the Halving.

The data suggests that Bitcoin reserves in miner wallets stay relatively flat over time and that Bitcoin miners tend to sell most of their daily mining revenues.

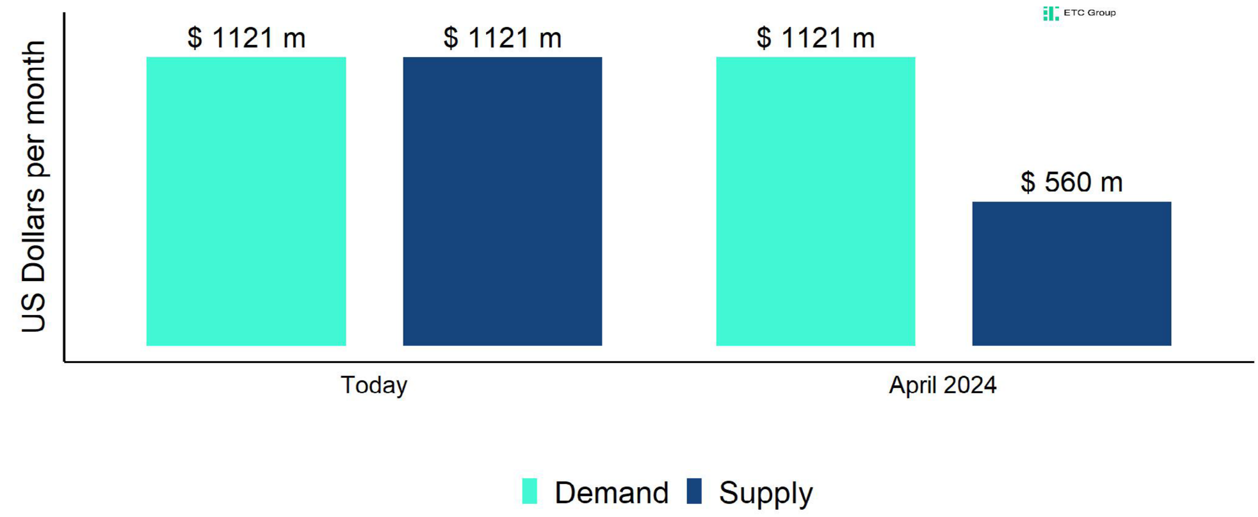
In fact, in 2023 Bitcoin miners have sold around 100.4% of their daily mining revenues so far according to data provided by Glassnode as aggregate miner BTC balances have even decreased a bit compared to the beginning of the year.

In essence, there is a certain amount of rather constant selling pressure exerted by daily selling of miner revenues. Under the assumption that Bitcoin miners mine around 900 BTC per day, after the Halving has taken place, this daily potential selling pressure will fall to ~450 BTC per day.

Although this amount is miniscule compared to the average amount of exchange in- and outflows on a daily basis, this decline in selling pressure tends to accumulate over time.

For instance, over a 1-month time period, Bitcoin miners will potentially sell 13500 BTC (30 days * 450 BTC) less than before the Halving. At the time of writing, this is equivalent to a US Dollar value of 560 mn USD per month (see chart below).

Bitcoin Halving event is best understood as a supply shock



Source: Glassnode, ETC Group; Chart for illustrative purposes only; Data available as of close 2023-12-12

With every block mined, this decline in selling pressure should therefore lead to higher prices, even if demand flow stays constant.

Given the cumulative nature of this effect, it is therefore not surprising to see that the price effect only tends to be seen as late as 100 days after the Halving date, as described in the abovementioned box.

Given this increase in supply scarcity, we think that Bitcoin will reach a higher "equilibrium price" over the course of 2024.

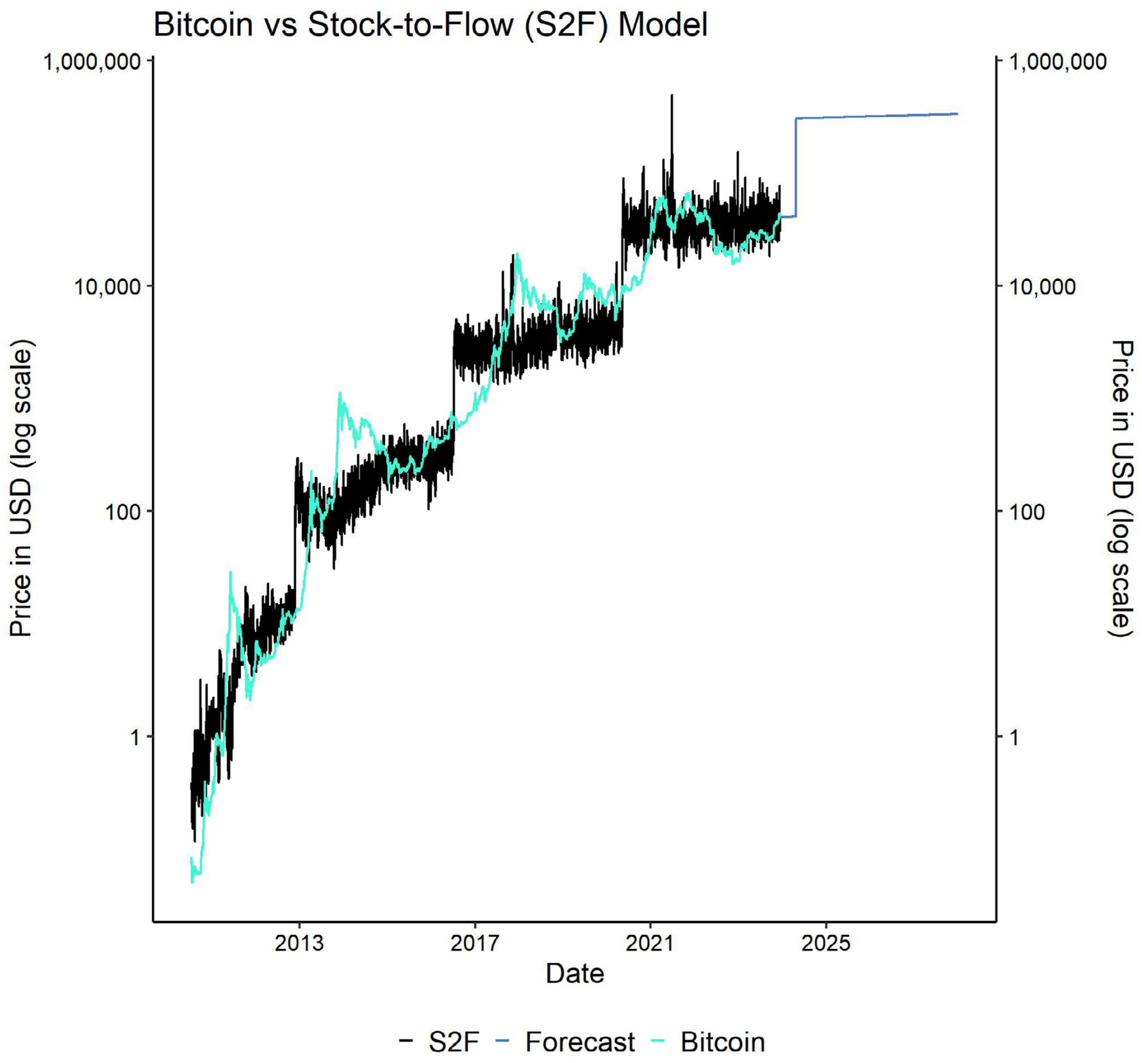
The "short-side principle" in disequilibrium economics states that whichever side of either supply or demand is shortest ultimately determines the quantity transacted and therefore the price[1].

Since the Bitcoin market will most likely be in a significant disequilibrium after the supply shock in April 2024, we think it is sufficient to model Bitcoin's price trajectory with supply only.

A famous model to do so is the stock-to-flow model. Although this model is statistically flawed (Kripfganz, 2020) it is still one of the most-widely followed models in terms of price predictions for Bitcoin. We will use it here as a benchmark for our subsequent forecast.

1 Van Aarle (2017)

The infamous stock-to-flow model is predicting above 300k USD at the end of 2024



Source: Coinmetrics, ETC Group; Past performance not indicative of future returns.

The original stock-to-flow model assumes that there is a log-linear cointegration relationship between the stock-to-flow ratio and price of Bitcoin or the market cap.

Cointegration implies that there is at least a long-term relationship between two variables over time, even when these variables can diverge over shorter time periods.

In this context, the stock-to-flow ratio is the ratio between the current circulating supply of bitcoins and the annual production rate which is a concept originating from the commodity space. Thus, Bitcoin is seen as a “digital commodity” in that model.

As the production rate of bitcoins tends to decrease over time due to the effect of the Halvings, this ratio tends to increase over time, signalling an increasing supply scarcity.

However, the stock-to-flow ratio is dependent on block height and therefore, ultimately, time. The model itself suffers from omitted variable bias since block height is the relevant variable that determines the stock-to-flow ratio itself.

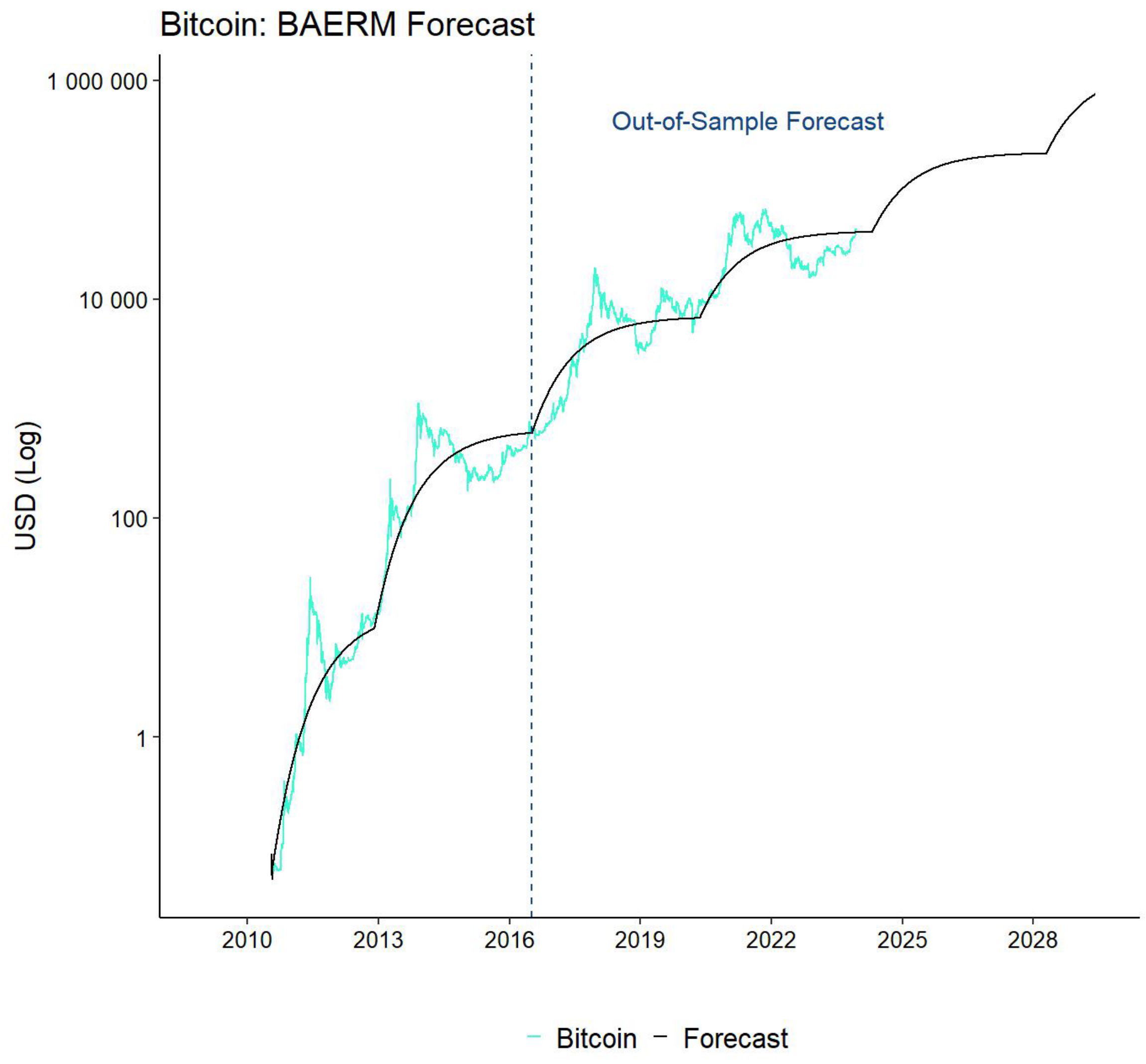
For this reason, we prefer a more robust model which accounts for the fact that Bitcoin is highly autocorrelated, i. e. shows strong performance momentum.

In addition, that model accounts for the increasing supply scarcity of Bitcoin based on the block reward halvings but also accounts for the fact that there are diminishing returns of those halvings[1].

The following chart presents the forecast of this model:

1 btconometrics (2023)

We expect Bitcoin to reach slightly more than 100k USD by the end of 2024



Source: Coinmetrics, ETC Group

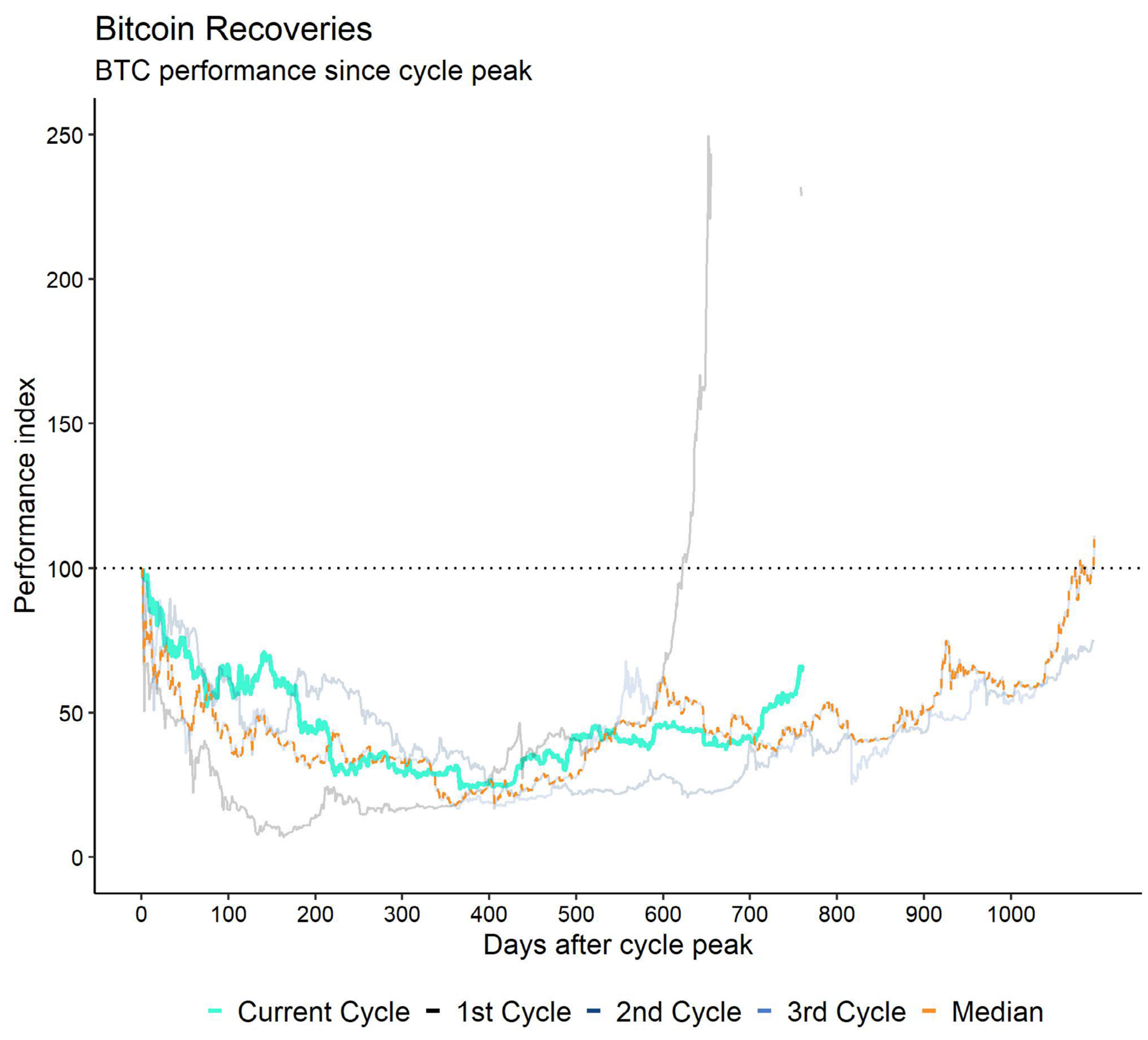
As a robustness check, we have only used the first two epochs (until the 2nd Halving in 2012) as estimation/training sample for the model. Nonetheless, the model shows an out-of-sample “goodness of fit” (R^2) of 83% which is relatively high.

Based on this more robust model, we expect Bitcoin to make new all-time highs during next year and reach slightly more than 100k USD by the end of 2024.

This prediction also appears to be more consistent with past recovery cycles of Bitcoin which are depicted below. Based on the median path of the past recovery cycles, it is sensible to assume for Bitcoin to reach fresh all-time highs during October next year and then continue rallying (towards 100k USD).

This is also shown in the following chart:

Based on past bitcoin cycle recoveries, we expect bitcoin to reach new all-time highs in October 2024



Past performance not indicative of future returns. Source: Coinmetrics, ETC Group

There is currently a debate about diminishing returns of Bitcoin Halvings which would be accounted for by the abovementioned model. That being said, it is quite likely that bitcoin's supply scarcity could be exacerbated in the next bull market cycle.

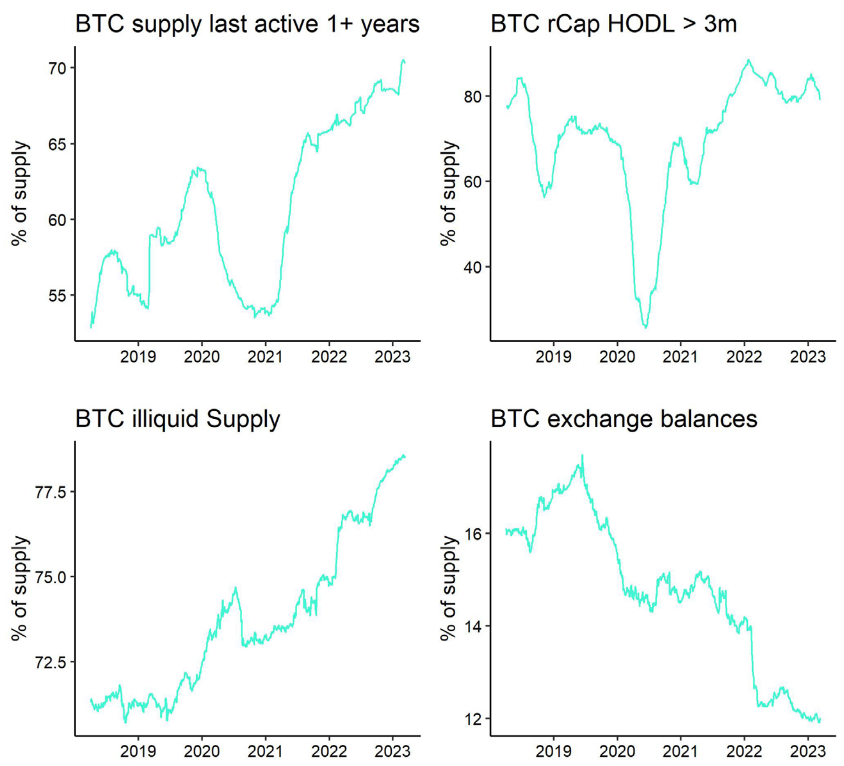
For example, the majority of on-chain measures suggest that there is far less bitcoin in circulation than there was in the previous cycle, and that accumulation has been more pronounced this time around.

Consider the following on-chain metrics for Bitcoin:

- % of exchange supply is at a 5-year low
- % of supply last active 1+ years at all-time high
- Illiquid supply measure by Glassnode at all-time high
- 3-months + realized cap HODL wave is higher than the last cycle's high

According to these on-chain indicators, there will be a lot of "dry powder" in terms of supply distribution throughout the upcoming bull cycle, and liquid supply on exchanges is likely to be rather sparse.

Bitcoin's supply scarcity is more pronounced than during the last cycle



Source: Glassnode, ETC Group

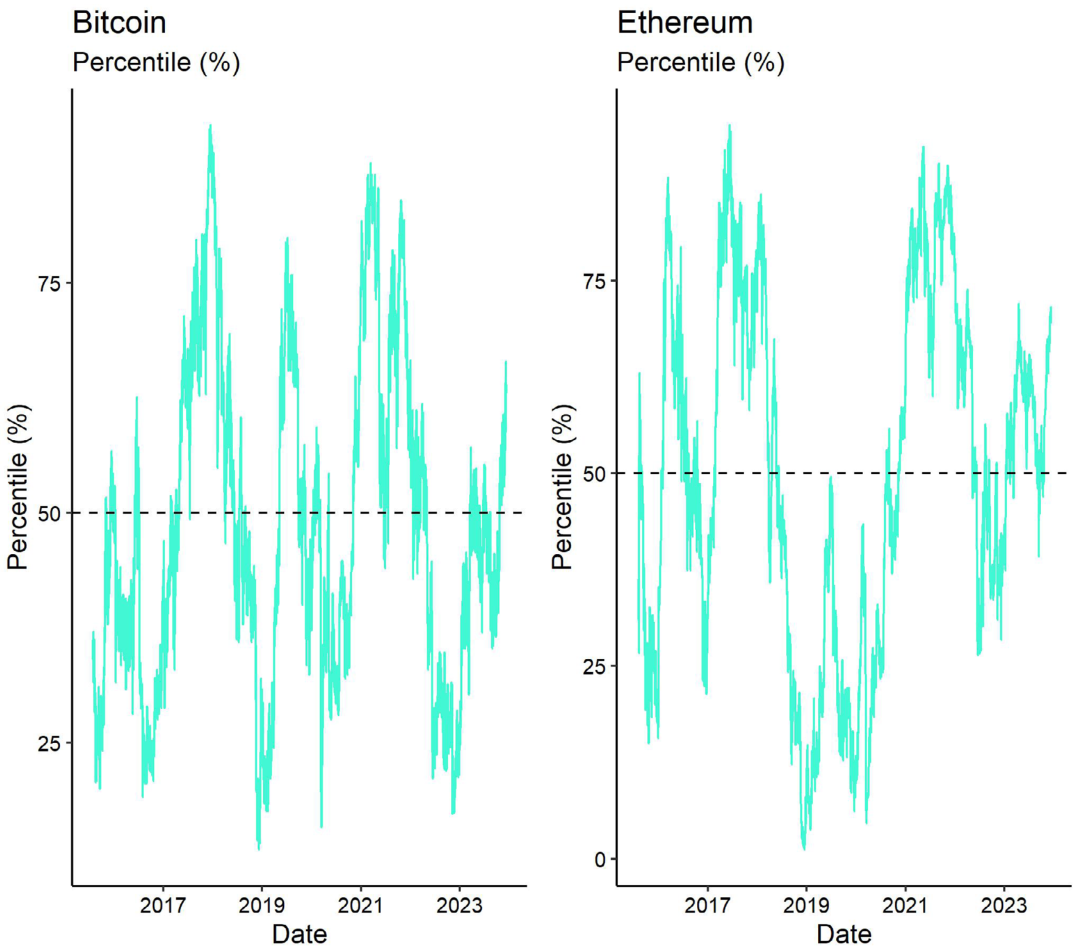
> All in all, this would suggest that the abovementioned bitcoin price prediction of slightly above 100k USD by the end of 2024 is rather a conservative base case estimate.

The reason for staying conservative is the fact that prices have already rallied to the extent that valuations are not cheap anymore and are rather trading on the expensive side already. For Bitcoin, this is likely going to improve with the Halving in April 2024.

However, moderately expensive valuations already imply that markets have probably discounted a lot of the positive developments that are shaping up for 2024. This appears to be the case for both Bitcoin and Ethereum.

Based on a composite measure of valuations that combines multiple valuation approaches, we measure a historical percentile of 62% for Bitcoin and 69% for Ethereum. The 50% percentile can be considered as 'fair value' within this indicator.

Both Bitcoin's and Ethereum's valuations are trading slightly above 'fair value'



Source: Glassnode, Coinmetrics, ETC Group;
Composite Valuation Indicators combine multiple valuation approaches

Bottom Line

The Halving is the most anticipated on-chain event by far in 2024. We still expect a significant post-Halving performance based on historical patterns and show that it was not priced in ahead of time in the past. The Halving effect historically becomes statistically significant after 100 days after the Halving date.

We expect Bitcoin to make new all-time highs in October next year and reach slightly more than 100k USD by the end of 2024. This bull cycle could perform better than the past cycle due to more pronounced supply scarcity, but valuations already appear to be moderately above 'fair value'.

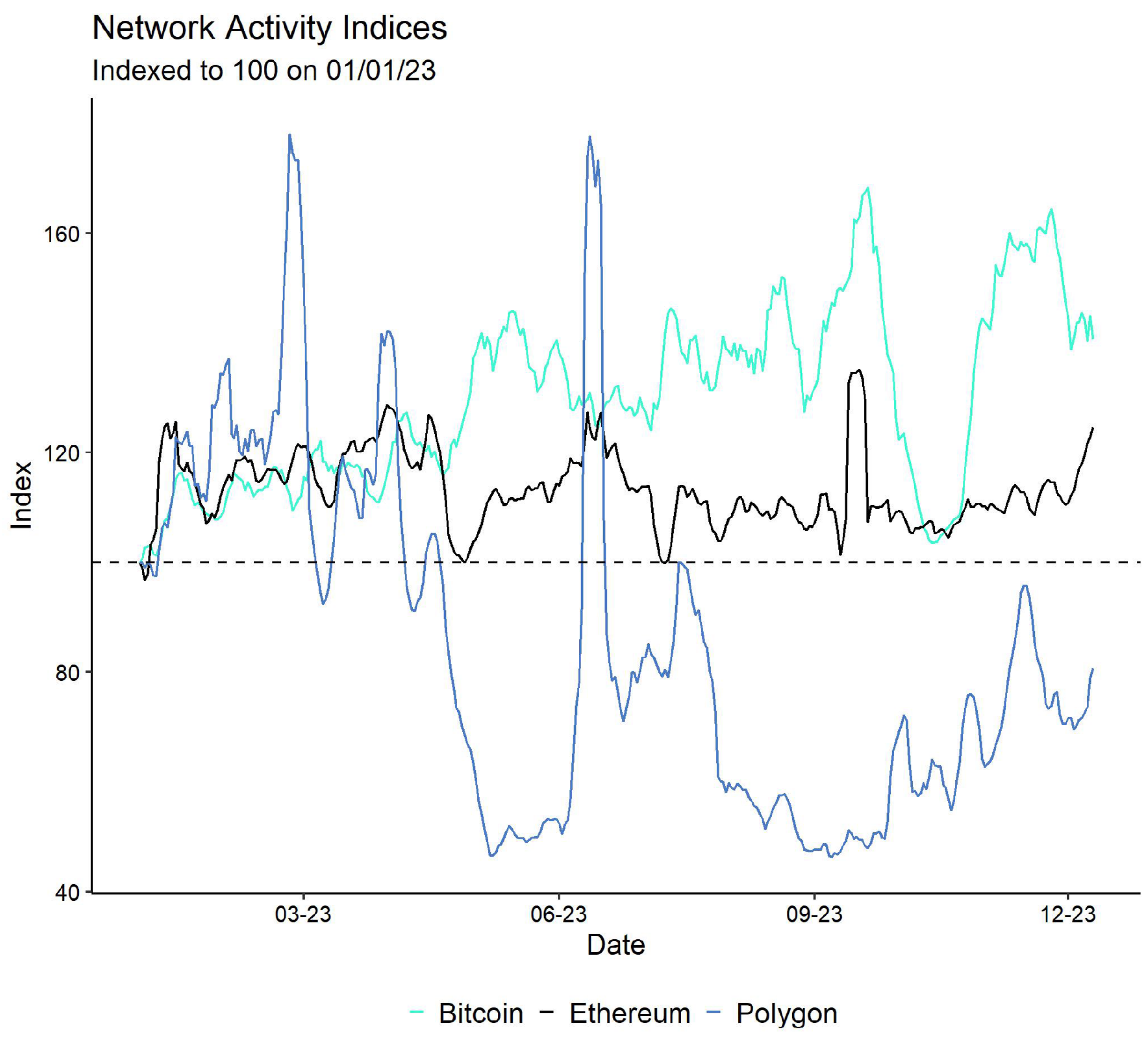
Ethereum and Altcoins

One of the big topics for cryptoasset investors in 2024 is whether the significant underperformance of Ethereum (and other major altcoins) vis-à-vis Bitcoin is likely going to reverse.

Ethereum saw a significant underperformance throughout 2023, mostly related to the uncertainty surrounding the possibility of staking withdrawals at the beginning of the year, while Bitcoin's network activity was increasingly buoyed by the rise in inscription demand.

As a result, Bitcoin's network activity significantly outperformed both ETH and even major ETH Layer 2s such as Polygon in 2023.

Bitcoin's stronger network activity was one of the reasons for ETH's underperformance



Source: Glassnode, ETC Group; Based on daily active addresses and transfer count

In fact, inscriptions on Bitcoin already account for approximately 60% of transactions. So, every 3 out of 5 transactions on average contains an inscription according to data provided by Glassnode.

Bitcoin inscriptions have certainly made Bitcoin more "Ethereum-like" in the way that non-fungible tokens (NFTs) like the Taproot Wizard collection of pictures are now inscribed into Bitcoin and also BRC-20 tokens such as ORDI have been issued on the Bitcoin block-chain.

Although the core Bitcoin community is deeply divided on the usefulness of these predominantly non-monetary transactions, they have clearly contributed to a significant rise in overall network activity in 2023.

So, competition in the realm of NFTs and secondary tokens has certainly increased for Ethereum. In fact, Bitcoin NFT trading volumes have even recently surpassed Ethereum NFT volumes in November 2023 according to data provided by CryptoSlam.

A key risk for Ethereum represents the BitVM paper recently presented by Robin Linus that could render Bitcoin a Turing complete blockchain[1]. The consequence of that would be that any kind of computation could be performed on Bitcoin. This remains a key risk for Ethereum over the long term and was also seen as one of the major catalysts for its most recent under-performance.

That being said, Ethereum's ecosystem still enjoys the first-mover advantage as the first major smart contract platform.

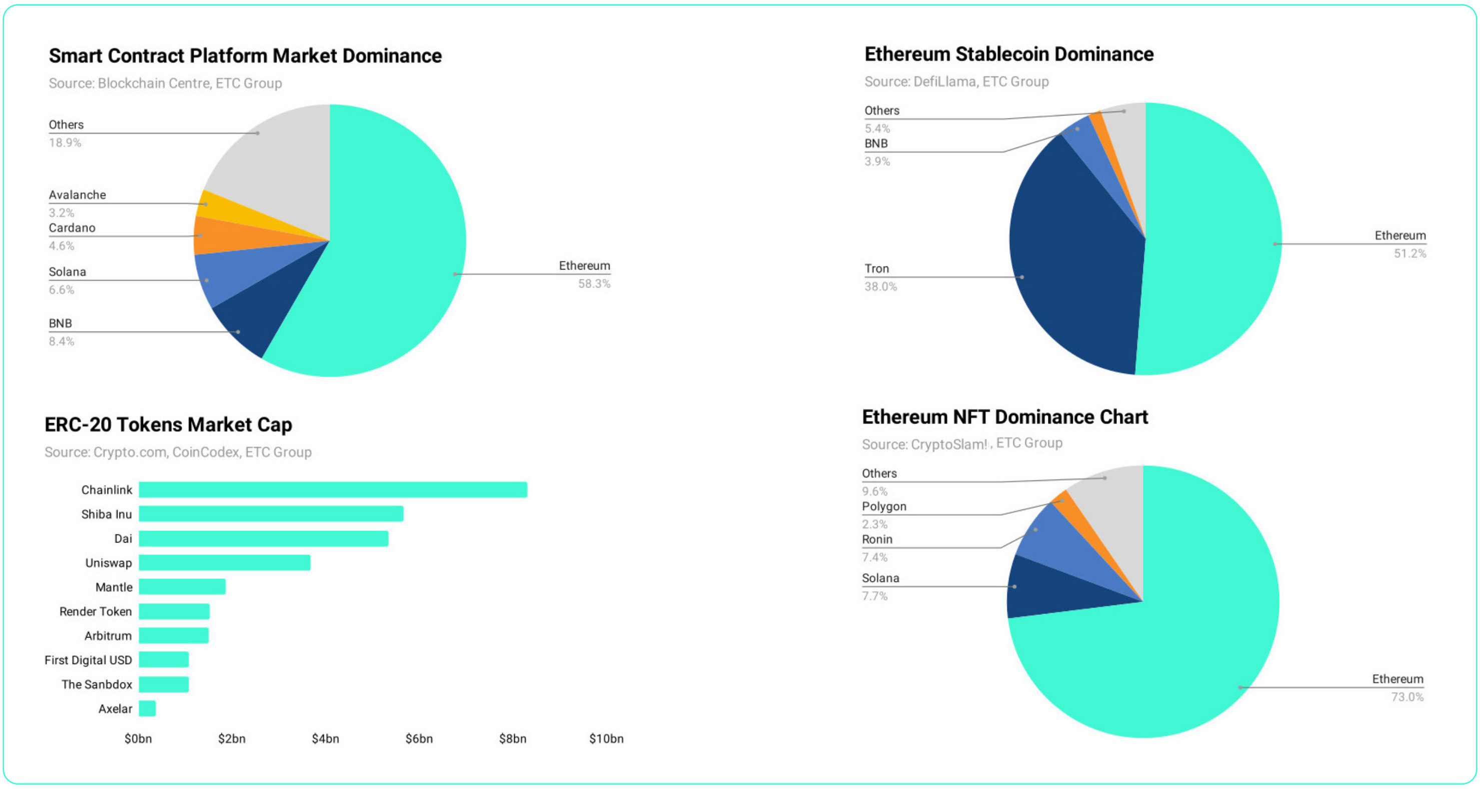
Consider the following statistics for Ethereum:

- According to data provided by blockchaincenter.net, Ethereum is still the most dominant smart contract platform by far commanding 58.5% of the market cap, followed by Binance's BNB token and Solana which only account for 8.5% and 6.6% of the total market cap, respectively[2].
- Moreover, thousands of ERC-20 tokens have already been issued on the Ethereum blockchain since its inception in July 2015. The top 10 ERC-20 tokens alone which include Shiba Inu, Dai, Sandbox, or Arbitrum already account for around 21 bn USD while the whole universe of BRC-20 tokens on Bitcoin only accounts for 1.6 bn USD[3].
- The value of stablecoins which include Tether (USDT), USD Coin (USDC) or Dai (DAI) issued on Ethereum accounts of 51% of the total stablecoin market cap. Second is Tron which accounts for 37.9% of the total[4].
- Furthermore, the all-time value of NFTs traded on Ethereum is already 10 times bigger than the second platform Solana[5].

1 https://bitvm.org/bitvm.pdf
2 https://www.blockchaincenter.net/market-cap-dominance/?include=35%3B&exclude=36%3B&limit=5
3 Sources: coinmarketcap.com and brc-20.io
4 Source: https://defillama.com/stablecoins
5 Source: https://www.cryptoslam.io/blockchains

These statistics highlight the ongoing dominance of Ethereum within secondary tokens issued, NFTs, and smart contracts in general.

Ethereum is still very dominant in many segments of the market

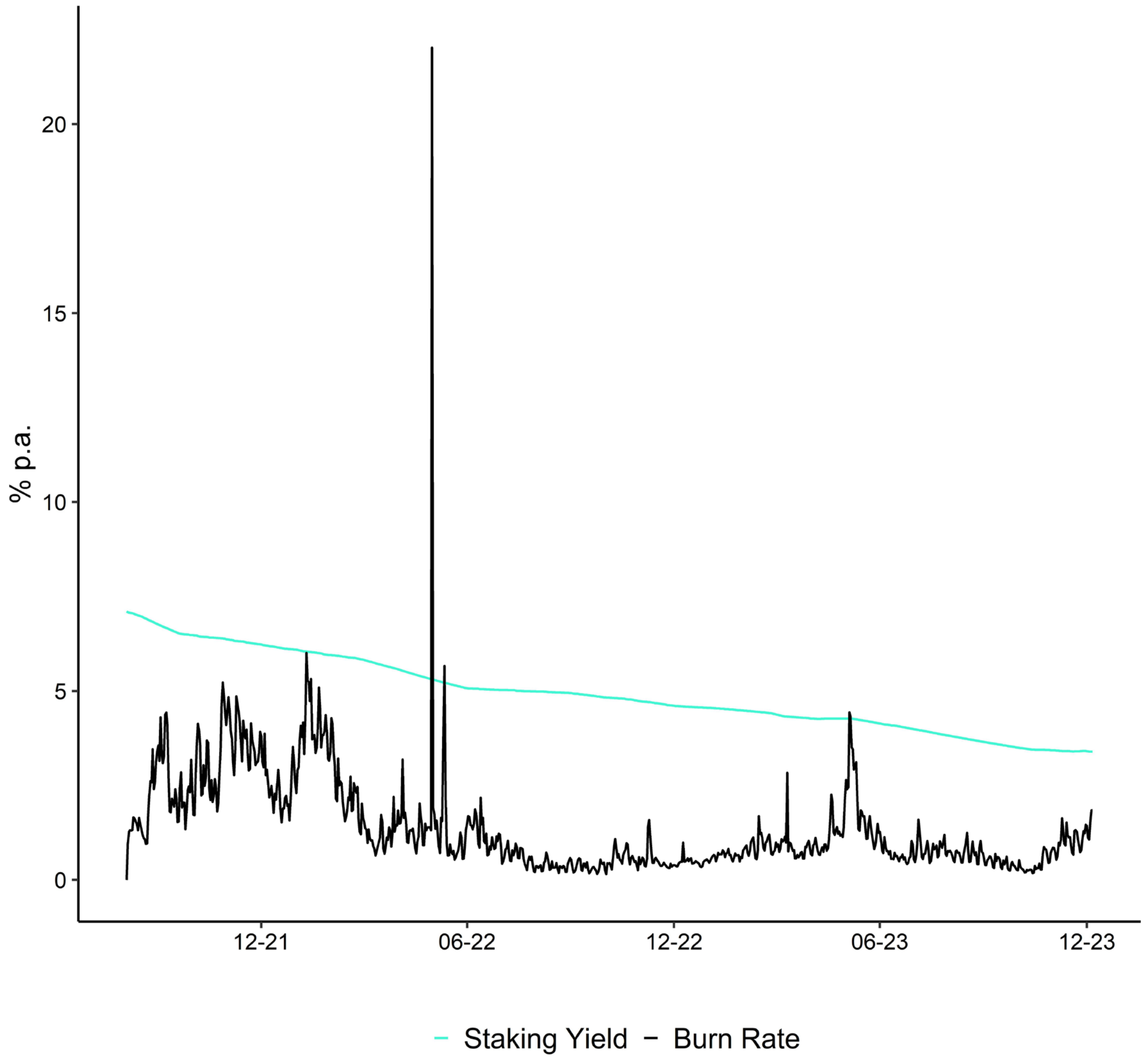


Data is correct as of 13 December 2023

Furthermore, Ethereum's transition to proof-of-stake algorithm (aka "The Merge") in September 2022 allows investors to earn a (staking) yield on a protocol level — something which is not possible with Bitcoin at the moment. Thus, Ethereum investors can earn an additional uncorrelated source of yield as well.

All in all, cryptoasset investors should be cognizant of the fact that, despite the recent developments surrounding inscriptions on Bitcoin, Ethereum and Bitcoin are still different types of cryptoassets, especially since The Merge. While the former is the unchallenged store-of-value, the latter is the dominant smart contract platform for building decentralized applications and tokenizing assets.

Ethereum (ETH): Staking Yield and Burn Rate



Source: Glassnode, ETC Group

In addition to the abovementioned staking yield that is earned as reward for validating transactions on Ethereum, investors are positively affected by the supply deflation due to the burn mechanism introduced with the Ethereum Improvement Proposal EIP-1559 in August 2021.

At the time of writing, Ethereum's net supply issuance amounts to –1.1% p. a. as approximately 1.84% p. a. are currently being burnt, i. e. ETH supply put out of circulation.

Traditional investors can think of the staking yield as some kind of equity dividend, while the burn rate can be considered as an equity buyback yield.

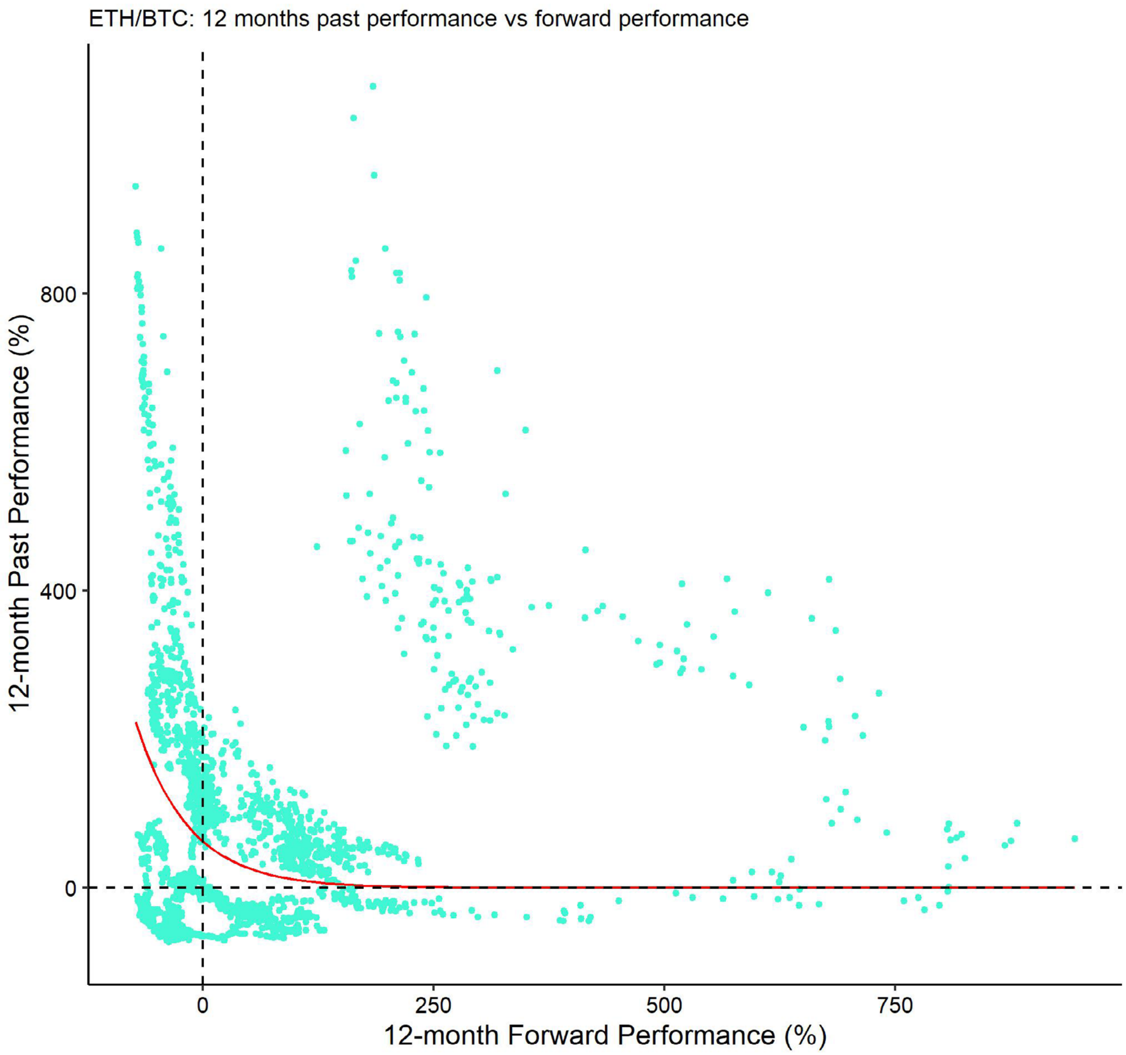
At the time of writing, Ethereum's staking yield is at around 3.4% p. a. while the burn rate amounts to 1.8% p. a. putting Ethereum's total yield at approximately 5.2% p. a.

So, the strong dominance of Ethereum in terms of smart contract platforms and the possibility to earn an additional source of yield imply that it should also be a core holding in a diversified cryptoasset portfolio as well.

In other words, when ETH underperformed BTC over the past 12 months, ETH tended to outperform BTC over the following subsequent 12 months:

> We therefore think that it is quite likely for the relative performance of ETH/BTC to reverse itself in 2024. In fact, ETH/BTC's 12-months relative performance has historically shown a strong tendency to mean revert.

ETH/BTC relative performance exhibits mean reversion



Source: Glassnode, ETC Group; Sample: August 2016 - December 2022

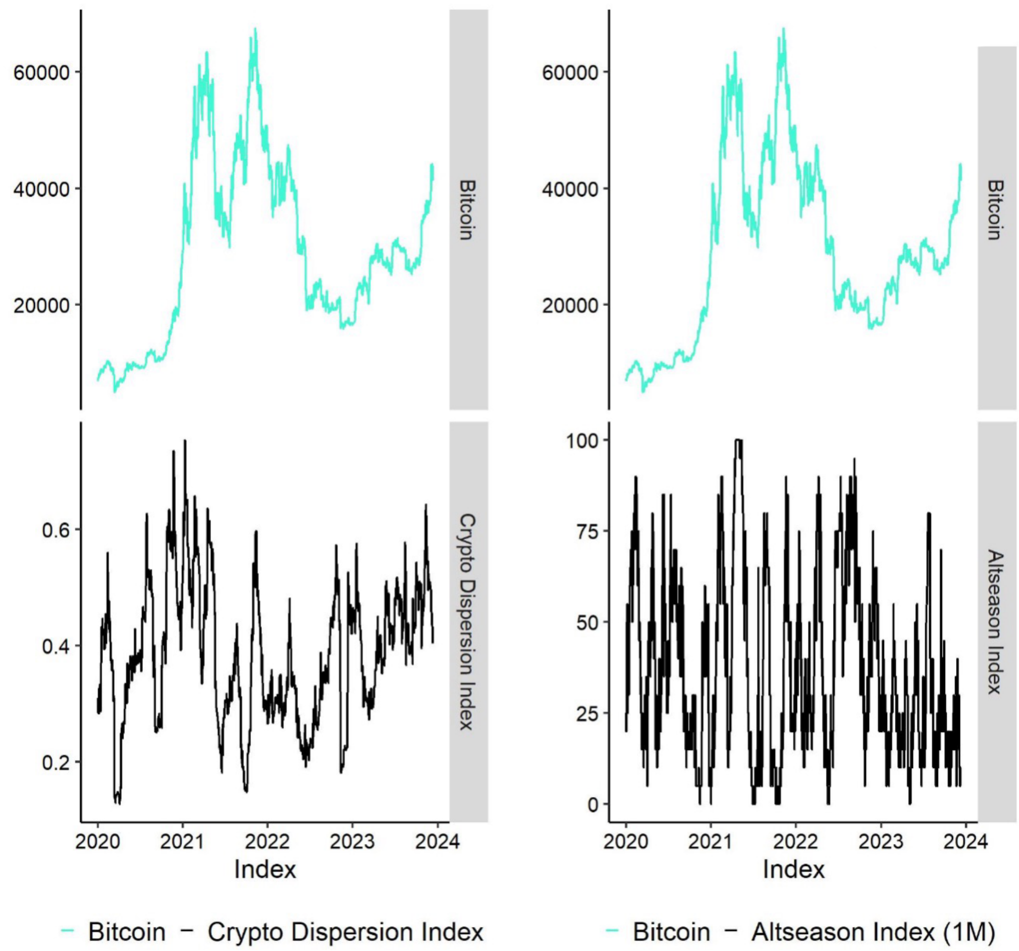
More specifically, at the time of writing, ETH has underperformed BTC by –27% over the past 12 months. Based on historical performance patterns, such a stark underperformance was historically associated with a subsequent 12-months forward outperformance of approximately +100% over the following 12 months. This would imply new cycle highs in ETH/BTC but not new all-time highs in the relative performance ratio next year.

Moreover, ETH's outperformance against Bitcoin tends to correlate strongly with the general degree of altcoin outperformance vis-à-vis Bitcoin as well.

Generally speaking, there is a rising outperformance of altcoins during Bitcoin bull markets and vice versa. In addition, there is also a rising performance dispersion among altcoins vis-à-vis Bitcoin during bull markets as well.

> Thus, both in terms of outperformance vis-à-vis Bitcoin and portfolio diversification there are clear benefits of diversifying some of the Bitcoin exposure into altcoins next year

Benefits of diversifying into altcoins are greatest during Bitcoin bull markets



Source: Coinmarketcap, ETC Group; Dispersion = (1 - Average Altcoin Correlation with Bitcoin)
Altseason Index = % of 20 major altcoins outperforming Bitcoin

In the context of Ethereum, Proto-danksharding, or EIP-4844, will be implemented by Ethereum. This would lower transaction costs and increase scalability for layer 2 chains like Optimism, Polygon, and Arbitrum, among others. Our expectation is that Ethereum L2s will concentrate into two or three major players based on usage and value within a year following the upgrade.

Both the percentage of Ethereum users using ETH L2s relative to Ethereum and the TVL just hit a new all-time high in early December according to data provided by Dune and L2BEAT — we expect this trend to continue well into 2024 and reinforce itself with EIP-4844.

Diversification into major ETH L2s altcoins like Polygon could therefore be beneficial in 2024.

That being said, it should be highlighted that the majority of altcoins are high beta but negative theta “derivatives” of Bitcoin.

In other words, most altcoins tend to outperform Bitcoin in bull markets but tend to exhibit a structural underperformance against Bitcoin over the long run as well. This means that cryptoasset investors need to exercise high selectivity with regards to the right set of altcoins next year.

The following table shows the respective performance Beta (sensitivity) and Theta (relative time trend) to Bitcoin of the current 20 constituents of the **MSCI Global Digital Assets Select Top 20 Capped Index:**

Beta and Theta of MSCI Global Digital Assets Select Top 20 Capped Index Constituents

	Rank	Beta	Theta
Bitcoin	1	1	0
Ethereum	2	1.47	-0.00016
XRP	3	1.24	-0.00043
Solana	4	2.05	0.00131
Cardano	5	1.69	-0.00045
Avalanche	6	1.6	0.00037
TRON	7	0.58	0.00031
Polkadot	8	1.43	-0.001
Polygon	9	1.55	0.00204
Chainlink	10	1.25	0.00074

	Rank	Beta	Theta
Litecoin	11	1.27	-0.00093
Bitcoin Cash	12	0.99	-0.00153
Cosmos	13	0.98	-5e-05
Uniswap	14	1.28	-7e-04
Stellar	15	1.5	-0.00095
Ethereum Classic	16	0.95	-0.00048
Internet Computer	17	1.15	-0.00282
Hedera	18	1.38	-0.00068
Filecoin	19	1.71	-0.00149
Lido DAO	20	0.82	0.00047

Source: Coinmarketcap, ETC Group; Differing sample sizes;
Results based on linear regression, Beta = sensitivity to BTC: Theta = relative time trend against BC

A beta value above 1 implies that, on average, if bitcoin increased by 1%, the respective altcoin outperformed by 1% * beta in the past.

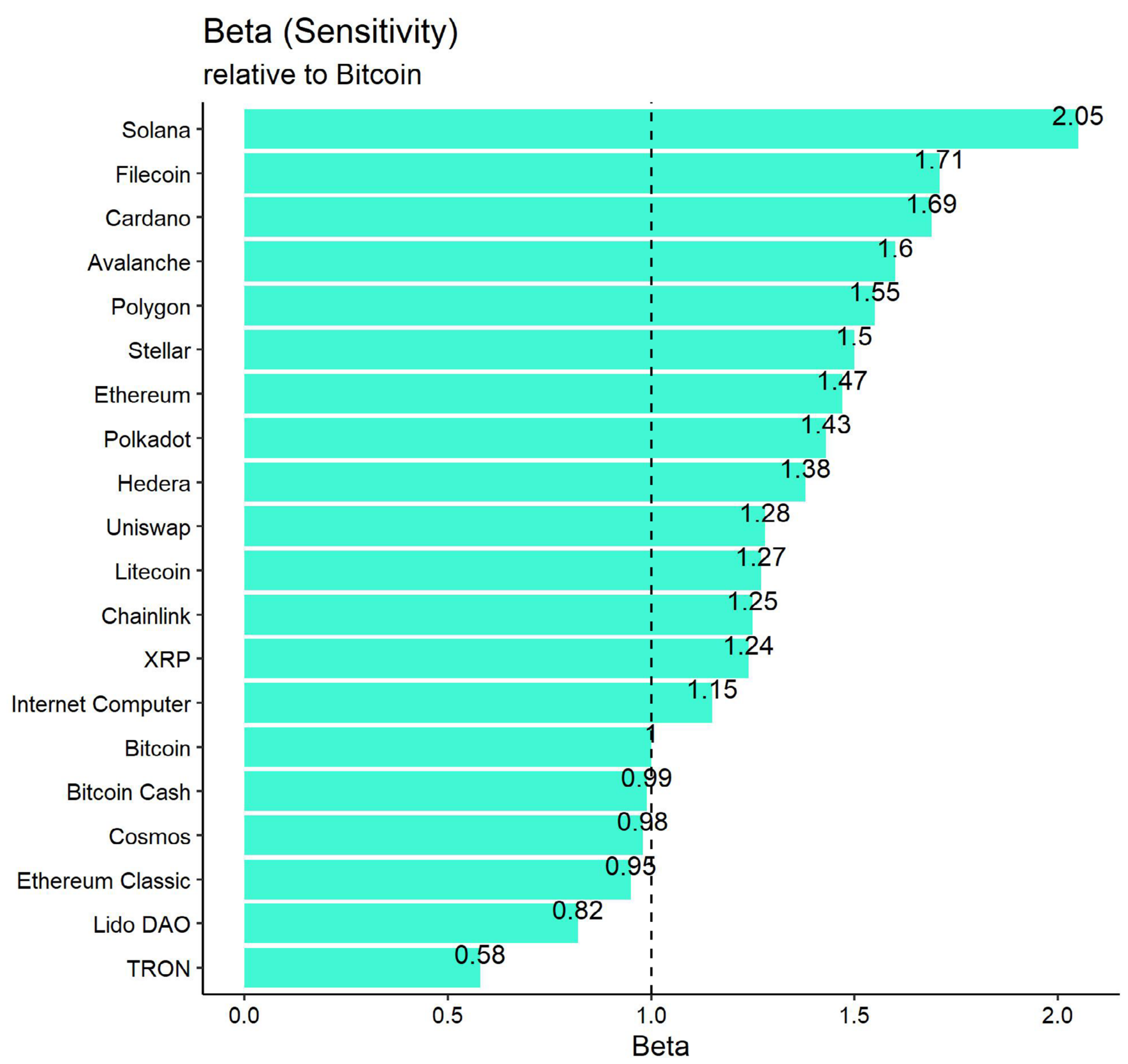
A positive theta value implies that for every day that passed, the respective altcoin has outperformed bitcoin regardless of bitcoin's performance by the theta value per day.

As one can see from the abovementioned table, most altcoins exhibit a higher beta than 1 but also exhibit a negative theta value.

The following bar charts order the current 20 constituents of the **MSCI Global Digital Assets Select Top 20 Capped Index** based on their respective Beta and Theta:

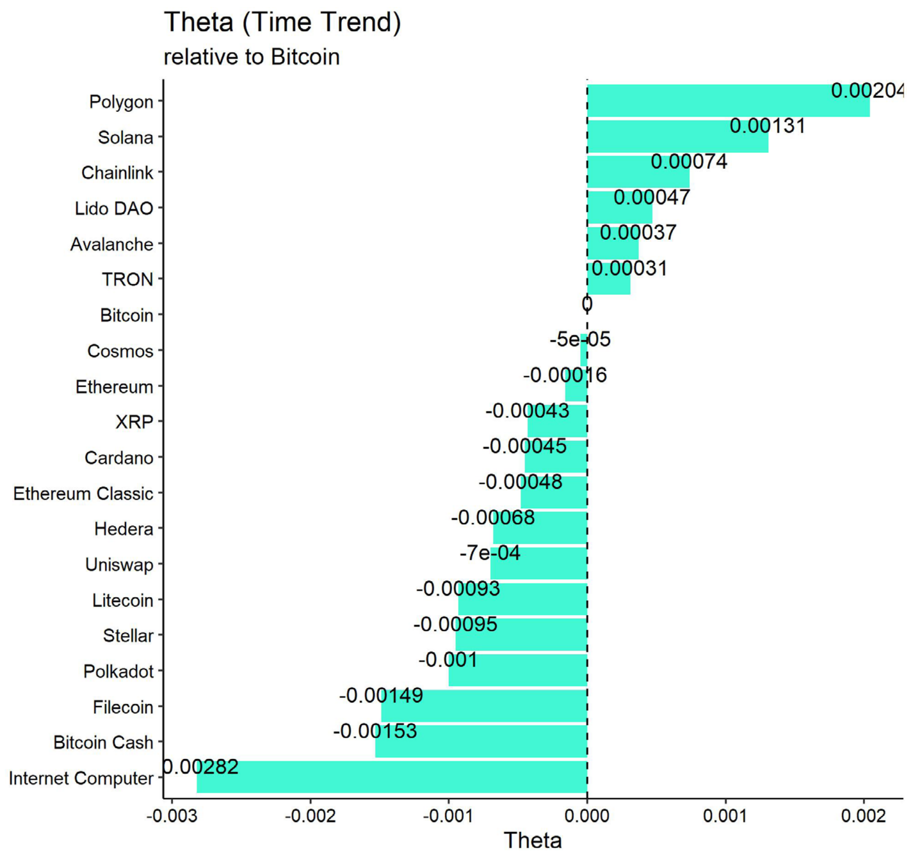
> From a pure statistical point of view, it makes sense to allocate to these altcoins that both exhibit a high beta but also a positive theta relative to Bitcoin in order to harvest the full performance benefits of altcoins.

Beta: MSCI Global Digital Assets Select Top 20 Capped Index Constituents



Source: Coinmarketcap, ETC Group; Differing sample sizes; Results based on linear regression, Beta = sensitivity to BTC

Theta: MSCI Global Digital Assets Select Top 20 Capped Index Constituents



Source: Coinmarketcap, ETC Group; Differing sample sizes;
Results based on linear regression, Theta = relative time trend against BTC

> Based on this rationale, in order to maximize returns in 2024, a sensible strategy was to overweight high beta and positive theta cryptoassets such as Solana, Polygon, Chainlink, and Avalanche vis-à-vis Bitcoin.

Lido DAO and Tron both exhibit a positive theta but are low beta cryptoassets relative to Bitcoin.

That being said, there is generally a "size effect" visible during cryptoasset bull markets as well, i. e. smaller medium cap cryptoassets tend to outperform large cap cryptoassets.

So, a sensible strategy was also to overweight medium caps vs large cap cryptoassets in the upcoming bull market. An efficient way to implement such a strategy are diversified but capped cryptoasset indices like the MSCI Global Digital Assets Select Top 20 Capped Index.

Based on this rationale, in order to maximize returns in 2024, a sensible strategy was to overweight high beta and positive theta cryptoassets such as Solana, Polygon, Chainlink, and Avalanche vis-à-vis Bitcoin.

Lido DAO and Tron both exhibit a positive theta but are low beta cryptoassets relative to Bitcoin.

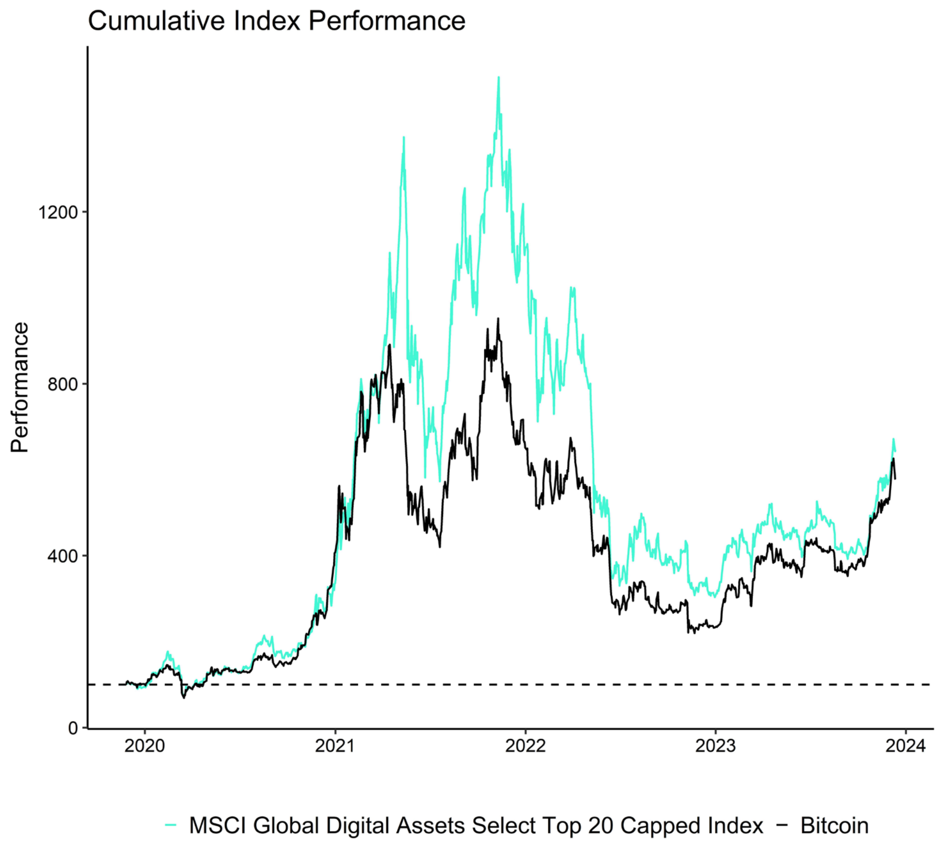
That being said, there is generally a "size effect" visible during cryptoasset bull markets as well, i. e. smaller medium cap cryptoassets tend to outperform large cap cryptoassets.

So, a sensible strategy was also to overweight medium caps vs large cap cryptoassets in the upcoming bull market. An efficient way to implement such a strategy are diversified but capped cryptoasset indices like the **MSCI Global Digital Assets Select Top 20 Capped Index.**

The reason is that, due to the capping mechanism, large caps like Bitcoin (and Ethereum to a smaller extent) are underweighted relative to their true market cap weighting while smaller medium cap crytoassets such as XRP, Solana, Cardano or Avalanche are overweighted relative to their market cap weighting.

Hence, capped indices amplify a "size effect" by overweighting smaller cap cryptoassets relative to large cap cryptoassets. In bull markets, this tends to be beneficial as smaller cap cryptoassets tend to outperform Bitcoin:

Capped diversified indices tend to outperform bitcoin in bull markets on account of the 'size effect'



Source: Bloomberg, ETC Group

Bottom Line

Bottom Line: Rising inscription demand and network activity were probably the reasons for BTC's outperformance of ETH in 2023. However, we expect this relative performance to mean revert in 2024 based on historical patterns.

The benefits of diversifying some BTC exposure into altcoins tends to be highest in BTC bull markets.

We recommend diversifying into high beta and positive theta altcoins which are Solana, Polygon, Avalanche, and Chainlink.

Capped diversified cryptoasset indices can also offer performance benefits via the "size effect".

Conclusion

1

As we wrap up an eventful year and look forward to 2024, the landscape of Bitcoin and cryptoassets is poised for an exciting phase of growth and innovation. The upcoming year promises a blend of challenges and opportunities, with pivotal events like the Bitcoin Halving and the evolving macroeconomic climate shaping the future of digital assets.

2

Our analysis indicates that 2024 could be a landmark year for Bitcoin, potentially reaching new all-time highs and breaking the 100k USD barrier. This optimism is grounded in a confluence of factors, including the increasing scarcity of Bitcoin supply, heightened institutional interest, and significant macroeconomic shifts. The anticipated US recession and shifts in global monetary policy are likely to play a crucial role in the cryptoasset market dynamics, presenting both risks and opportunities.

3

The journey of cryptoassets, especially Bitcoin, is intricately linked with broader economic trends and technological advancements. As we navigate this complex terrain, we foresee a heightened interest in Bitcoin and other cryptoassets, not just as investment vehicles but as integral components of a diversified financial portfolio.

4

In essence, 2024 is set to be a year when cryptoassets, led by Bitcoin, may not only weather the storm of economic uncertainties but also emerge stronger, marking a new era of digital financial innovation and adoption. At ETC Group, we remain committed to providing our clients with insightful analysis and strategic guidance, helping them make informed decisions in this ever-evolving and exciting market.

References

- 100trillionUSD. (2019). Modeling Bitcoin's value with scarcity. Medium. Retrieved from https://medium.com/@100trillionUSD/modeling-bitcoins-value-with-scarcity-91fa0fc03e25
- Auer, R., Claessens, S., Frost, J., & Shin, H. S. (2022). Crypto trading and Bitcoin prices: Evidence from a new database of retail adoption. BIS Working Papers, 1049. Retrieved from https://www.bis.org/publ/work1049.pdf
- Bouri, E., Gabauer, D., Gupta, R., & Kinateder, H. (2023). Global geopolitical risk and inflation spillovers across European and North American economies. Research in International Business and Finance, 66.
- btconometrics. (2023). The Bitcoin auto-correlation exchange rate model: A novel two-step approach. Medium. Retrieved from https://archive.is/3XfkY
- Caldara, D., & Iacoviello, M. (2022). Measuring geopolitical risk. American Economic Review, 112(4), 1194-1225.
- de Best, R. (2023). Cryptocurrency adoption in 56 different countries worldwide 2019-2023. Statista. Retrieved from https://www.statista.com/statistics/1202468/global-cryptocurrency-ownership/
- Dragosch, A. (2020). Which macro factors explain the price of Bitcoin? Medium. Retrieved from https://andre-dragosch.medium.com/which-macro-factors-explain-the-price-of-bitcoin-f0538420c2c4
- Kripfganz, S. (2020, May 12). The Bitconometrics of the stock-to-flow model: An introduction and critical assessment [Video]. Retrieved from https://www.youtube.com/watch?v=u_VkwA5fkLA
- Linus, R. (2023). Compute anything on Bitcoin. Retrieved from https://bitvm.org/bitvm.pdf
- Nakamoto, S. (2009). Bitcoin: A peer-to-peer electronic cash system. Retrieved from https://bitcoin.org/bitcoin.pdf
- Rogers, E. M. (1962). Diffusion of Innovations. New York, NY: Free Press of Glencoe.
- Van Aarle, B. (2017). Macroeconomic fluctuations in a New Keynesian disequilibrium model. Journal of Economic Structures, 6(10).

Contacts

etc-group.com

investors@etc-group.com

linkedin.com/company/
etcgroup-crypto

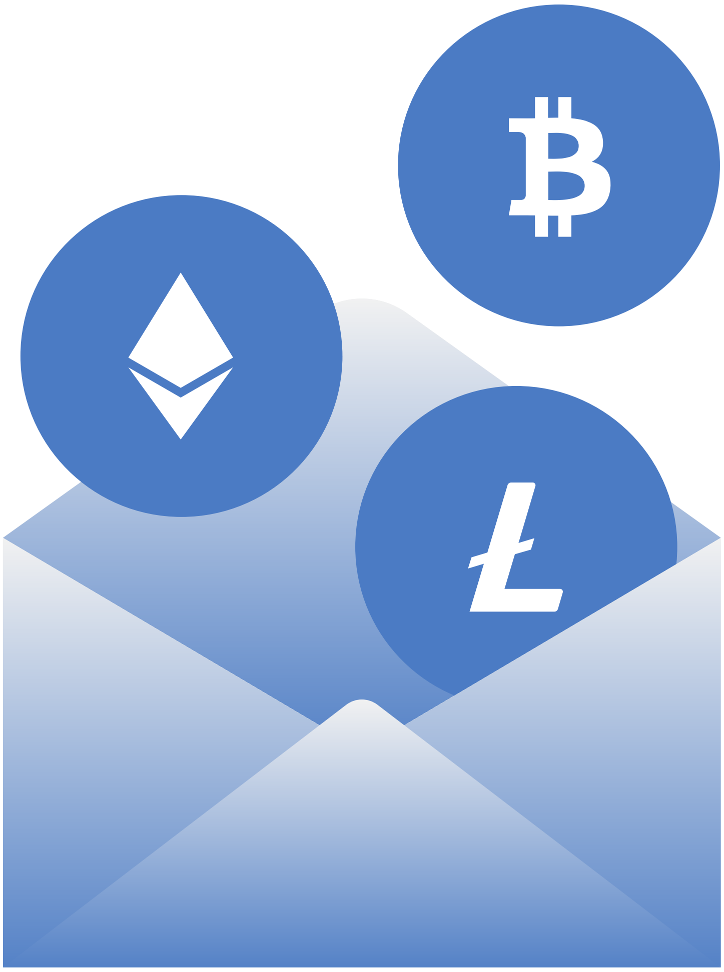
Product materials, analysis as well as due diligence collateral including SFDR information are available upon request.

Head office

ETC Management Ltd
3rd Floor Quality House,
5-9 Quality Court Chancery Lane,
WC2A 1HP, London, United Kingdom

Issuer

ETC Issuance GmbH
Thurn- und Taxis Platz 6,
60313 Frankfurt am Main
Deutschland



Be the first to get expert insights on the latest in crypto

Subscribe to our industry-leading newsletter and research content

Disclaimer

Important Information

The information provided in this advertising material is for informative purposes only and does not constitute investment advice, a recommendation or solicitation to conclude a transaction. This document (which may be in the form of a marketing brochure, press release, social media post, blog post, broadcast communication or similar instrument – we refer to this category of communications generally as a “document” for purposes of this disclaimer) is issued by ETC Issuance GmbH (the “issuer”), a limited company incorporated under the laws of Germany, having its corporate domicile in Frankfurt, Germany. This document has been prepared in accordance with applicable laws and regulations (including those relating to financial promotions). If you are considering investing in any securities issued by ETC Group, including any securities described in this document, you should check with your broker or bank that securities issued by ETC Group are available in your jurisdiction and suitable for your investment profile.

Exchange-traded commodities/cryptocurrencies, or ETPs, are a highly volatile asset and performance is unpredictable. Past performance is not a reliable indicator of future performance. The market price of ETPs will vary and they do not offer a fixed income. The value of any investment in ETPs may be affected by exchange rate and underlying price movements. This document may contain forward looking statements including statements regarding ETC Group’s belief or current expectations with regards to the performance of certain asset classes. Forward looking statements are subject to certain risks, uncertainties and assumptions, and there can be no assurance that such statements will be accurate and actual results could differ materially. Therefore, you must not place undue reliance on forward-looking statements. This document does not constitute investment advice nor an offer for sale nor a solicitation of an offer to buy any product or make any investment. An investment in an ETC that is linked to cryptocurrency, such as those offered by ETC Group, is dependent on the performance of the underlying cryptocurrency, less costs, but it is not expected to match that performance precisely. ETPs involve numerous risks including among others, general market risks relating to underlying adverse price movements and currency, liquidity, operational, legal and regulatory risks.

ETC Issuance GmbH, incorporated under the laws of Germany, is the issuer of any securities described in this document, under the base prospectus dated 21 November 2022, supplemented from time to time, and approved by BaFin.

Any decision to invest in securities offered by ETC Group (including products and amounts) should take into consideration your specific circumstances after seeking independent investment, tax and legal advice. You should also read the latest version of the prospectus and/or base prospectus before investing and in particular, refer to the section entitled ‘Risk Factors’ for further details of risks associated with an investment. These prospectuses and other documents are available under the “Resources” section at etcgroup.com. When visiting this website, you will need to self-certify as to your jurisdiction and investor type in order to access these documents, and in so doing you may be subject to other disclaimers and important information.

IF YOU ARE IN THE UK, US, OR CANADA

Information contained in this document is not, and under no circumstances is to be construed as, an advertisement or any other step in furtherance of a public offering in the United States or Canada, or www.etc-group.com any state, province or territory thereof, where neither the issuer nor its products are authorised or registered for distribution or sale and where no prospectus of the issuer has been filed with any securities regulator. Neither this document nor information in it should be taken, transmitted or distributed (directly or indirectly) into the United States.

PUBLICATIONS & SOCIAL MEDIA DISCLOSURE

Social media posts (including, but not limited to, LinkedIn and Twitter) of ETC Group and its subsidiaries (“Social Media”) are not, and should not be considered to be recommendations, solicitations or offers by ETC Group or its affiliates to buy or sell any securities, futures, options or other financial instruments or other assets or provide any investment advice or service. ETC Group makes all reasonable efforts to ensure that the information contained on Social Media is accurate and reliable; however, errors sometimes occur. You should note that the materials on Social Media are provided “as is” without any express or implied warranties. ETC Group does not warrant or represent that the materials on Social Media are accurate, valid, timely or complete.

RISKS OF CRYPTOCURRENCIES

Cryptocurrencies are highly volatile assets and are known for their extreme fluctuations in prices. While there is potential for significant gains, you are at risk of losing parts or your entire capital invested. The value of the ETCs is affected by the price of its underlying cryptocurrency. The price of cryptocurrencies can fluctuate widely and, for example, may be impacted by global and regional political, economic or financial events, regulatory events or statements by regulators, investment trading, hedging or other activities by a wide range of market participants, forks in underlying protocols, disruptions to the infrastructure or means by which crypto assets are produced, distributed, stored and traded. The price of cryptocurrencies may also change due to shifting investor confidence in future outlook of the asset class. Characteristics of cryptocurrencies and divergence of applicable regulatory standards create the potential for market abuse and could lead to high price volatility. Amounts received by Bondholders (i) upon redemption of the Bonds in USD, in cases where Bondholders are prevented from receiving cryptocurrency for legal or regulatory reasons; or (ii) upon sale on the stock exchange depend on the price performance of the relevant cryptocurrency and available liquidity.

For a detailed overview of risks associated with cryptocurrencies and specifically associated with the ETCs, please refer to the prospectus and base prospectus available at the issuer’s website at www.etc-group.com.