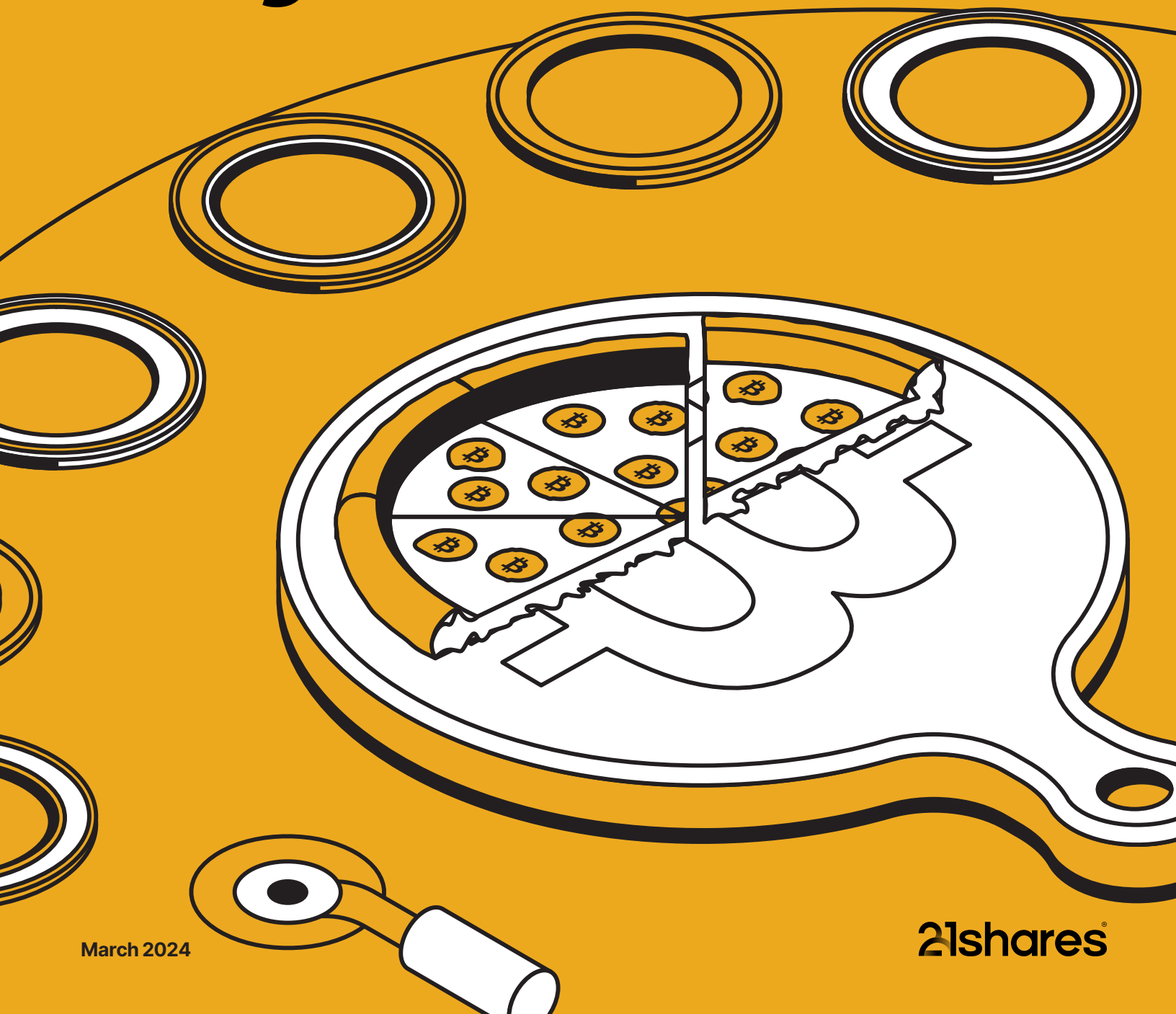
# The Bitcoin Halving and Beyond



March 2024

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# Contents





# Foreword

We are thrilled to release our latest research report - a refreshing primer on the Bitcoin halving.

The Bitcoin halving remains one of the most anticipated events in the crypto industry, which takes place approximately every four years. The fourth halving, expected in April 2024, will reduce the rewards for mining new blocks by half, effectively decreasing the rate at which new Bitcoins are created. This is repeated until the programmed, fixed supply of 21 million units is reached. The supply shock caused by the halving, combined with the narrative that forms around it, has historically led to Bitcoin outperforming in the twelve months following the event. However, as the report will demonstrate, Bitcoin is currently experiencing a different market dynamic leading into the historic event.

This report will explore the implication of the Bitcoin halving, examining its impact on the market, mining community, and the overall ecosystem around Bitcoin.

Since 2018, 21Shares has been providing access to crypto through simple and easy-to-use products — co-founded by Hany Rashwan and Ophelia Snyder. The research team is a cross-functional department collaborating with the distribution, product, and engineering teams. Composed of professionals with substantial experience in the cryptoasset industry, our team places education at the core of our industrial research as we stand by free and publicly accessible content; and strongly believe information asymmetry contradicts the crypto ethos and philosophy. We provide data-driven, cutting-edge, unique insights into the crypto markets and macroeconomic factors likely to influence the state of this industry.

More than 10,000 investors are subscribed to our research notes and reports on a weekly basis, ranging from private banks, asset managers, professional traders, hedge funds, tier-1 media outlets, and regulators.

We hope this report guides you through this burgeoning cryptoasset's journey.


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**Maximiliaan** | Research Associate

# Executive Summary

**What is the Bitcoin Halving?** The Bitcoin halving is a programmed event that reduces the reward for mining new coins by 50% after approximately every four years, ultimately limiting the total supply of Bitcoin, akin to the scarcity of gold. This mechanism, embedded in Bitcoin's protocol, aims to maintain its value proposition as a decentralized, fixed and immutable monetary system, although its performance is influenced by various factors that go beyond the halving.

**How does the halving work?** The Bitcoin halving gradually reduces the reward miners receive for verifying transactions, ultimately leading to a maximum supply of nearly 21 million BTC by 2140. Factors such as hash rate, mining difficulty, and block time interact to maintain a stable network, with adjustments made every 2,016 blocks. As the block rewards diminish, transaction fees will become the primary source of revenue for miners, indicating a shift in the Bitcoin economy.

**How to best make sense of the halving?** The Bitcoin halving represents a departure from traditional centralized monetary control, offering a capped and transparent alternative. Unlike centralized systems, Bitcoin's decentralized network of nodes governs its monetary policy, while its fixed supply of 21 million coins, mined gradually over time, ensures scarcity and consistency. The halving event underscores Bitcoin's resilience and independence from centralized influence, providing a stable and immutable monetary policy framework.

**What is the rationale behind Bitcoin four-year halving cycle duration?** Although the rationale remains a mystery, Bitcoin's halving cycle - which takes place after every 210,000 blocks - coincides with significant events like U.S. elections, potentially aiming to stabilize the market during periods of uncertainty induced by political transitions. Additionally, the four-year timeframe may serve as a psychological benchmark, mirroring traditional economic cycles and major societal events.

**How does the halving impact miners?** The Bitcoin halving impacts miners through reduced block rewards and shifts in profitability, influenced by Bitcoin's price fluctuations. Miners may seek refinancing options to sustain operations, while decreased mining difficulty during downturns encourages cost-effectiveness and strengthens the network. As a result of this cycle's unique demand dynamics, miners are selling less BTC on exchanges during this halving cycle, indicating a more bullish stance amidst price surges and increased market accessibility driven by ETF inflows.

**How does the ETF approval change the prospects of Bitcoin's supply and demand?** The approval of Bitcoin ETFs in the U.S. could significantly alter the supply and demand dynamics of Bitcoin, as inflows are roughly 5-7X the daily new units of generated BTC. With about $60 billion in assets under management and more than $10 billion in net flows, these ETFs have already accumulated a substantial amount of BTC, with potential inflows capable of doubling its market cap and contributing to a supply squeeze, especially considering the massive scale of the U.S. ETF market and the reluctance of asset managers to invest prior to the ETF approval.

**How is Bitcoin growing beyond its boundaries?** Bitcoin is evolving beyond its original value proposition with innovations like Ordinals and BRC-20 tokens driving demand and expanding network use cases. Increasing transaction fees, reaching over 30% of miner revenue in 2023 at its peak, enhance the network's long-term security, while simultaneously incentivize the adoption of scalability solutions like Lightning Network and Stacks to accommodate rising fees and drive scalability. The emergence of diverse scaling solutions mirrors Ethereum's early development, pushing the boundaries of what's achievable on Bitcoin and accelerating its growth, as evidenced by a fourfold surge in Total Value Locked (TVL) reaching $2.6 billion.



# What Is the Bitcoin Halving?

## Bitcoin is a decentralized, tamper-proof network. In the recent years, it has emerged as a store of value, thanks to its hardcoded halving.

To better understand the Bitcoin halving, let's have a quick recap on Bitcoin mining. Similar to how gold miners exert physical labor to extract gold from the earth, Bitcoin miners exert computational power to solve a brute-force, trial-and-error puzzle to solve a block and mint new BTC. In return for this computational power there is a reward system.

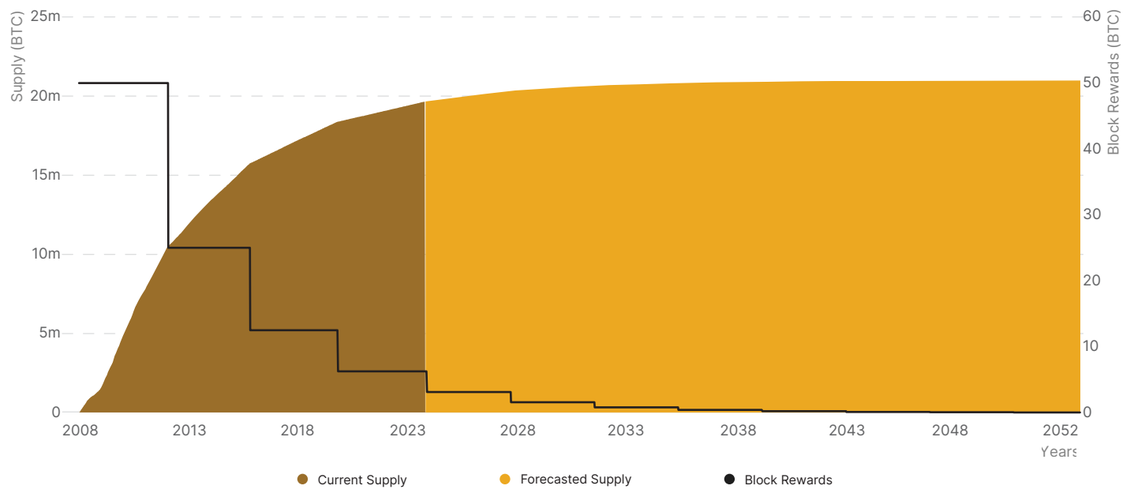
When Satoshi Nakamoto invented Bitcoin in 2008, the first reward for solving a block was 50 BTC, which made ~$5 at that time. Following every 210,000 blocks or approximately four years, the reward gets cut by 50%, as shown in Figure 1. Or in other words, **the number of BTC that can be minted per block is halved.** The first Bitcoin halving took place in late November 2012; the reward - or issuance rate - got reduced to 25 BTC, which made between $3,375 to $28,037 at that time. The second halving in July 2016 reduced it to 12.5 BTC, while the third one reduced it to 6.25 BTC, where we currently stand.

Today, with Bitcoin hovering over the $70K mark, it is estimated to costs on average $29K[1] to mine Bitcoin, the cost varies depending on hardware capacity among other technical factors. The reward for that is currently 6.25 BTC, which is getting halved on April 18, 2024.

Now that we've gone through the financials of Bitcoin mining, it is important to focus on the underlying purpose and real value of Bitcoin, often misrepresented as a bubble.

The Bitcoin halving is hardcoded on Bitcoin's operating system to put a hard cap on its supply to ultimately make the asset scarce, much like gold. That being said, thanks to the robust technology behind it, the demand for Bitcoin would be tied to people's need for an alternative, decentralized monetary system and its value would be highly influenced by its diminishing supply. While it adds a layer of optics to Bitcoin's scarcity, there's more to Bitcoin's performance than the halving; read more on page 14.

**Figure 1 – Bitcoin's Block Reward and Supply**



# How Does the Bitcoin Halving Work?

## The 21 Million Hard Cap and the Missing Satoshi

**The Bitcoin network is programmed to stop the issuance of new coins by the year 2140**, or after the (almost) twenty-one-millionth BTC is minted. That essentially means that the block reward will go to 1 satoshi before the last 210,000 blocks. The Bitcoin network is programmed to round down to the nearest whole integer, leaving the total number of mined Bitcoin a fraction short from its maximum supply: 20,999,999.9769 BTC.

The competitive landscape of Bitcoin is constantly incentivizing nodes to join the race to the next block. Moreover, this whole financial system is primarily controlled by the following parameters:

- **Hash rate:** This represents the total computational power used by miners to process transactions and secure the Bitcoin network. A higher number means more competition among miners, but also higher security.
- **Mining difficulty:** The difficulty refers to the "puzzles" miners solve before creating a new block which adjust accordingly based on the level of miner participation in order to keep an average block time of 10 minutes.
- **Block time**: The average time required to create a new block.

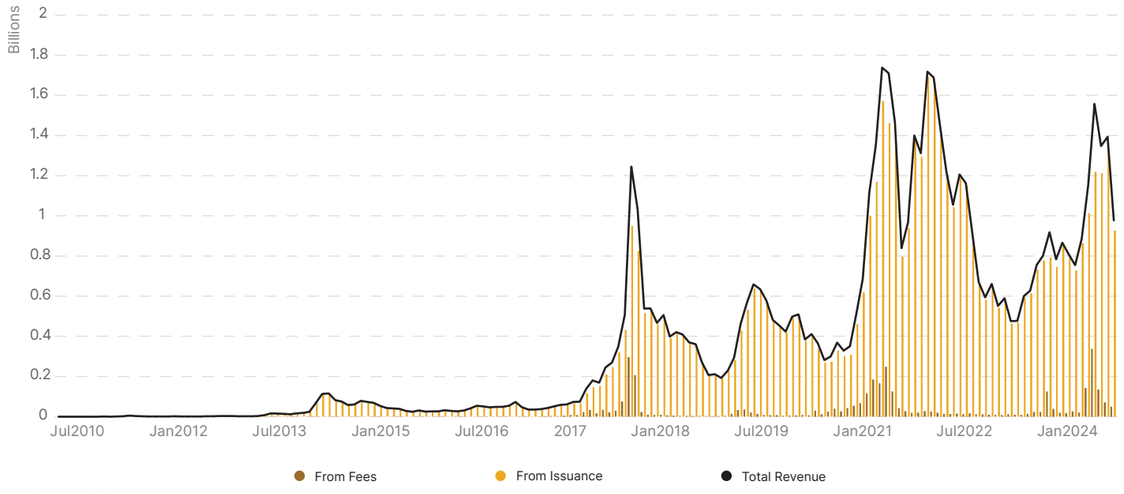
**How do these parameters play together?** If the hash rate increases, meaning more miners are joining the network, blocks are created faster than the intended target block time of 10 minutes. When this happens, the network will automatically adjust the difficulty level of the "puzzle" at the next so-called difficulty adjustment, which takes place every 2,016 blocks, in order to push the block time back to its target. Conversely, the same applies if the hash rate decreases. This is the reason why, while not entirely certain, there is a high degree of predictability on when halving events occur. Our Dune dashboard "Bitcoin: Halving Countdown and Analysis" provides an estimate based on the 90-day block time average, scan the QR code at the back of this report to learn more.

A satoshi is the smallest unit of a Bitcoin: one-hundred-millionth of a single Bitcoin (0.00000001 BTC). When the final 210,000 blocks are solved, it will be time to halve the satoshi. However, the Bitcoin network won't halve the satoshi since Satoshi Nakamoto wanted to keep Bitcoin maintained at 8 decimal points, to remain an effective medium of exchange as the price increases per whole BTC.

**So, what happens after all BTC are minted?** Miners actually make revenue through two sources, the block rewards and transaction fees that are generated by network users. While block rewards become smaller over time, fees will gradually emerge to become the dominant means of revenue for miners, as we are beginning to see in Figure 4 with the rise of new use cases for the Bitcoin network beyond store of value (See page 23).

**Figure 2 – Bitcoin Mining and the Growing Role of Fees**


**Figure 3 – Bitcoin Miners Revenue Breakdown (Rewards vs. Fees, in USD)**




Source: @21.co

# How Can We Make Sense of the Bitcoin Halving?

## Now that we've gone through the definition and mechanics of the Bitcoin halving, it's time to delve deeper into why it is necessary.

Centralized control over money supply has been the status quo since the inauguration of central banks in the 17th century. For the purpose of this report, we'll use the U.S. financial system as our teaching skeleton. The money supply is controlled by two parameters:

- **Monetary policies** are driven by the Federal Reserve (Fed) which controls the money supply through various tools, such as trading government securities to inject or drain money from the system; setting bank reserve requirements to influence lending and money creation; and interest rates.
- **Money supply** is fulfilled by the Bureau of Engraving and Printing (BEP), controlled by the Fed. This means, the Fed can request the BEP to add money to the circulation to meet the demand of the Federal Reserve, **without schedule restrictions, or any limit.**

**The implications of poorly managed money supply is one of the side effects of centralization**. For instance, growth in the Fed's balance sheet has steadily preceded soaring inflation rates, as shown in Figure 4. Moreover, it has continuously led to hyperinflation and currency debasement like we have seen in many chapters of history: Germany in the 1920s and Japan in the 1980s.

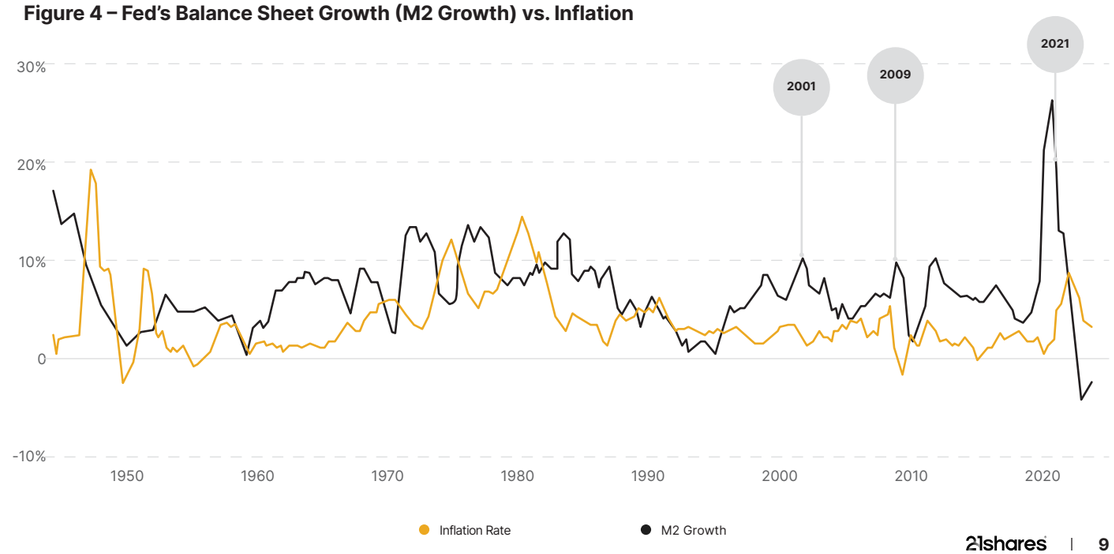
**In 2008, Bitcoin's mission rose from the ashes of the failures of traditional finance.** Frustrated with the lack of transparency and accountability that led to the Great Financial Crisis, Satoshi Nakamoto started a movement promising a monetary system that is capped, programmed, and publicly available on a ledger distributed across thousands of nodes.

To draw comparisons between centralized (Fed) and decentralized (BTC), we can deduce the following:

- **Bitcoin's monetary policies** represented by transaction verification within the Bitcoin network are determined by the tens of thousands of nodes validating and verifying transactions, globally, around the clock, and can be verified by anyone.
- **Bitcoin's money supply** is programmed with an upper limit of 21 million BTC, mined gradually over a span of approximately 130 years. The steady addition of a constant amount of new coins is analogous to gold miners expending resources to add gold to circulation.

The halving event is important because it highlights Bitcoin's hardcoded and immutable monetary policy that runs completely detached from any centralized control and remains consistent disregarding any economic circumstances.

**Figure 4 – Fed's Balance Sheet Growth (M2 Growth) vs. Inflation**



# What Is the Impact of the Four-Year Bitcoin Halving Cycle?

## After exploring how the halving works and why it exists, let's dive into its historical results, miner behavior, and impact on price.

**Why does the halving happen every four years?**
While Satoshi's motivation for the four-year halving cycle remains unclear, its alignment with significant events like U.S. elections, which introduce market uncertainty, underscores its importance. Given the substantial influence of U.S. fiscal policies on the global economy, the timing of Bitcoin's almost-parallel halving could be seen as an intentional effort to provide stability amid traditional financial system turbulence that emerge during political transitions. Further, while not perfectly correlated, the four years are potentially a psychological benchmark, such as traditional economic cycles, elections or major sporting events.

**How did the halving impact Bitcoin prices in the past?**
The effect of the halving has diminished progressively over time, with each successive event resulting in diminishing growth rates. For example, Bitcoin experienced a surge of approximately ~5,500% in the cycle after the first halving, followed by ~1,250% in the cycle after the second halving, and around 700% in the current cycle, as shown in Figure 5. That said, Bitcoin's stabilizing growth over the years suggests a growing maturity of the market. Explosive growth often accompanies hype and speculation, whereas a more sustained pace indicates increased stability and wider adoption, akin to traditional assets such as gold. Nevertheless, the exogenous demand stemming from the ETF inflows could very well set a new precedent of growth during this cycle unlike previous ones, evident by Bitcoin's impressive performance that broke its all-time high (ATH) before the halving. This could be emanating from a supply shock, a concept that we will expand on in the coming sections.

**How does the halving impact miners?**
The Bitcoin halving impacts miners in several ways, including **reduced block rewards, changes in profitability and operational costs,** but all of which is dependent on the price of Bitcoin at the time. For instance, while block rewards might be reduced, it could be compensated by higher Bitcoin prices. That said, some miners opt for refinancing, like Marathon and Core Scientific, to bootstrap cash and avoid shutting down their machinery.

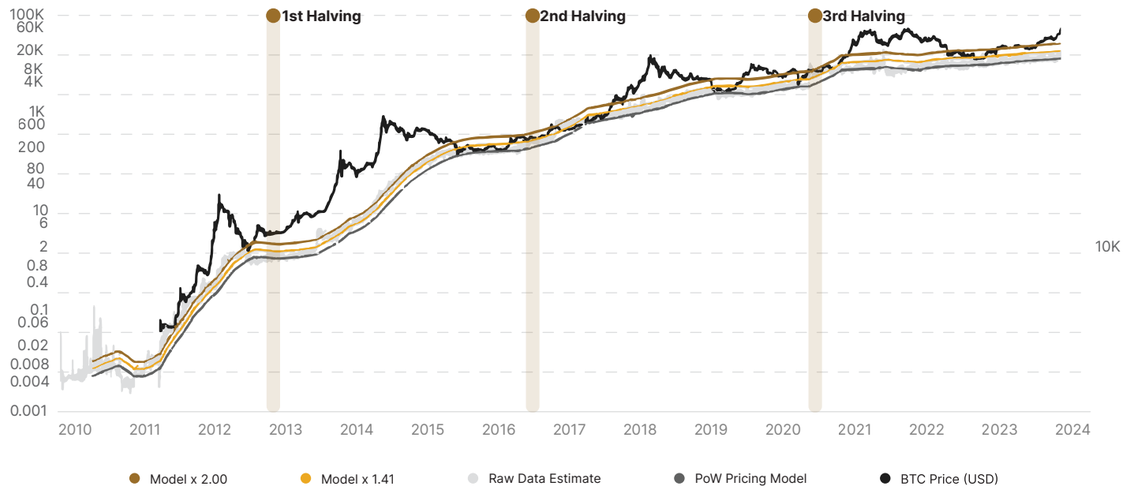
Moreover, the situation isn't entirely bleak for miners. If they withdraw from the network, the mining difficulty decreases, which then contributes to a reduction in electricity expenses, making Bitcoin mining more cost-effective, a dynamic evolution that can be observed further on Figure 6. Consequently, this encourages miners to return to the network, thereby strengthening its hash rate. Conversely, some miners may find it necessary to sell off their holdings, a topic we will explore further in relation to a proxy metric useful for estimating their selling pressure.

**What do miners do in anticipation of the halving event?**
A significant indicator of interest lies in miners' deposit activity on exchanges. Typically, miners **sell BTC to cover operational costs** like electricity and hardware expenses. However, during this halving cycle, miners are selling less compared to previ-

**Figure 5: Bitcoin's Growth Following Throughout Each Halving Cycle**


Source: 21co on Dune Analytics

**Figure 6: Bitcoin Miners Production Cost (Difficulty Per Issuance Pricing Model)**



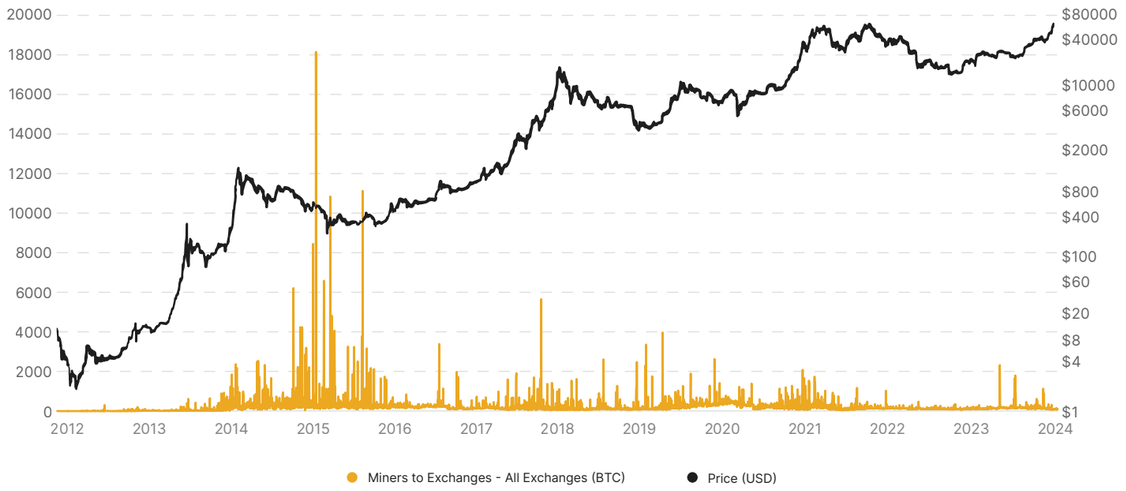

Source: 21Shares, Glassnode. Data as of March 12, 2024

ous cycles. Throughout February of 2024, miners deposited an average of 127 BTC to exchanges, **nearly 70% less than in the previous cycle**: 417.4 BTC in February-March 2020, as shown in Figure 7. However, it's important to remember that miners have to cover their operational costs in USD terms, which suggests that they are taking advantage of BTC's higher price driven by ETF flows, which is amplifying Bitcoin's market reach and accessibility.

**The Halving Effect: Bitcoin's Four-Year Cycle Compass**

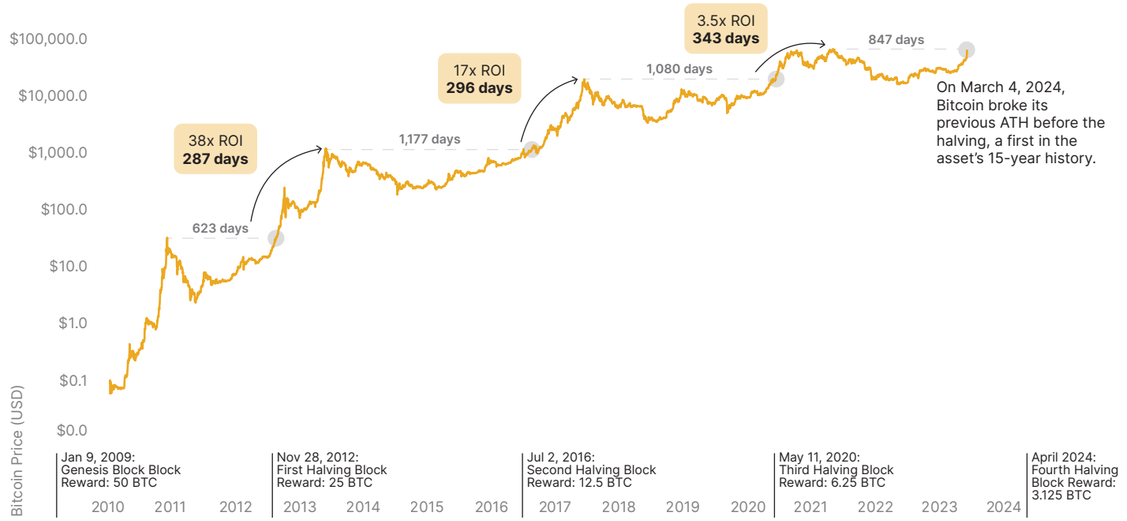
The halving remains Bitcoin's most anticipated event. With the fourth one expected in April 2024, the block reward received by miners will drop from 6.25 to 3.125 BTC, meaning Bitcoin's annualized **inflation rate will halve from ~1.70% to ~0.85%** as the asset follows its programmed path to 21 million units. The halving supply shock, combined with the narrative that forms around it, has historically led to Bitcoin outperforming in the 12 months after. On average, as shown in Figure 8, it takes BTC 172 days to break its previous ATH after halving, while it takes 308 days to reach a new cycle top once it is breached. However, as Bitcoin is currently trading around its ATH, it seems this cycle might play out differently, as in the past Bitcoin traded in average 40%-50% away from the previous high in the weeks leading into the halving. In addition, **Bitcoin recorded the largest monthly candle ever (in USD terms)** in its history, increasing by more than $20K throughout February, showing once again the unprecedented level of excitement the asset is experiencing even before the halving takes place.

**Figure 7: Miners Deposit Activity to Exchanges**




Source: 21Shares, Glassnode. Data as of March 12, 2024

**Figure 8: Bitcoin Historical Returns After Breaking ATHs**




Source: 21Shares, Glassnode. Data as of February 19, 2024

# How Is This Halving Cycle Different?

**Bitcoin seems to be following a different path this time around, with more growing institutional adoption and expanding use cases. Let's explore the current supply and demand for Bitcoin to better describe the difference.**

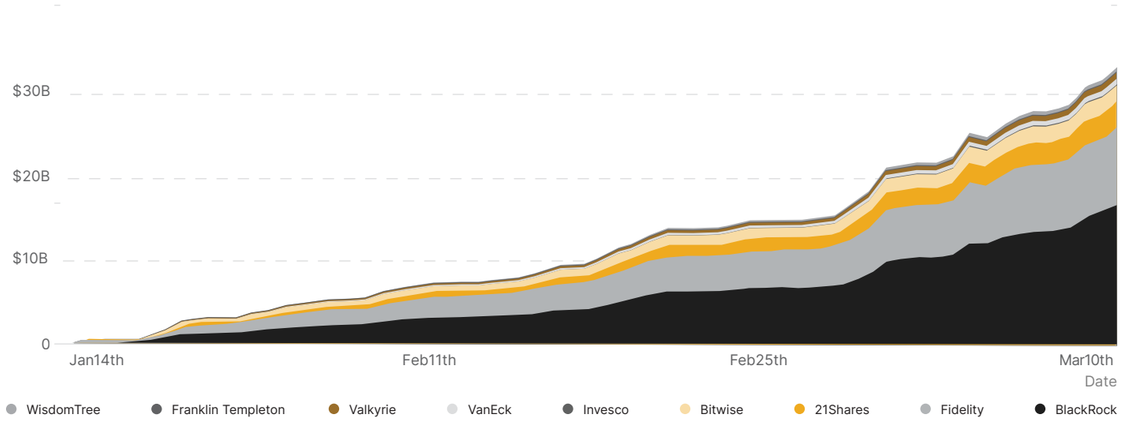
**Supply, demand, and their impact on Bitcoin**

In order to assess the potential impact of the next halving it's important to take a look at the current supply and demand dynamics. There are currently several factors that come into play, that not only differ from previous cycles, but could also lead to an earlier rally. Let's run through some of these factors.

**U.S. BTC spot ETFs**

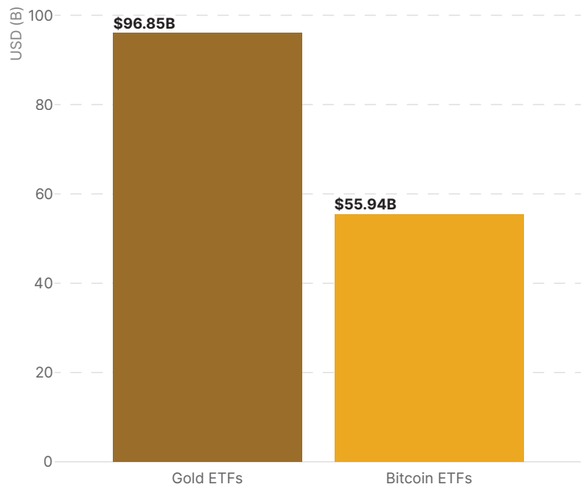
The Bitcoin ETF approvals marked a milestone in Bitcoin's history, as it opened the doors for traditional investors to gain access to this new asset class. The success of the launch of these ETFs cannot be understated, as Bitcoin has grown by around 50% since its first trading day. Moreover, BTC spot ETFs demonstrated staggering trading volumes, signaling significant interest from traditional investors by reaching a new all-time high of over $1 billion of inflows in a single day, on March 13, 2024. Additionally, U.S. BTC spot ETFs have seen unprecedented success, with nine issuers (excluding Grayscale) amassing about $30 billion in assets under management, as seen in Figure 9, within just two months of trading. If we look at all 10 issuers, we will find them capturing more than half of the market share of gold ETFs estimated at $90B, as shown in Figure 10.

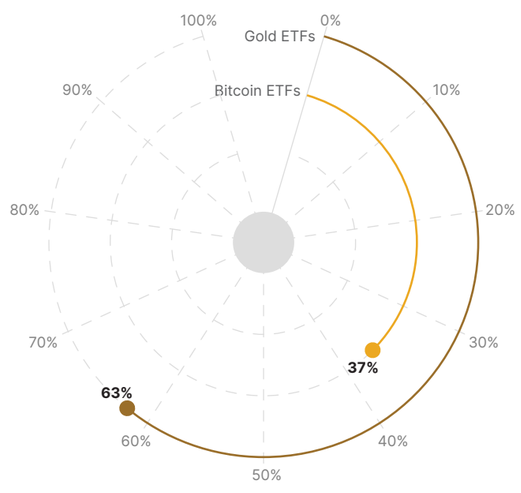
**Figure 9: Growth of Total BTC AuM (in $ terms) Accumulated by the 9 BTC Spot ETF issuers in the U.S.**




Source: Hildoby @ Dune Data as of March 12, 2024

**Figure 10: AuM of Bitcoin ETF (incl. Grayscale) vs. Gold ETF**




Source: Bloomberg Terminal, data as of March 2023

# Demand Side: ETF Buying Pressure

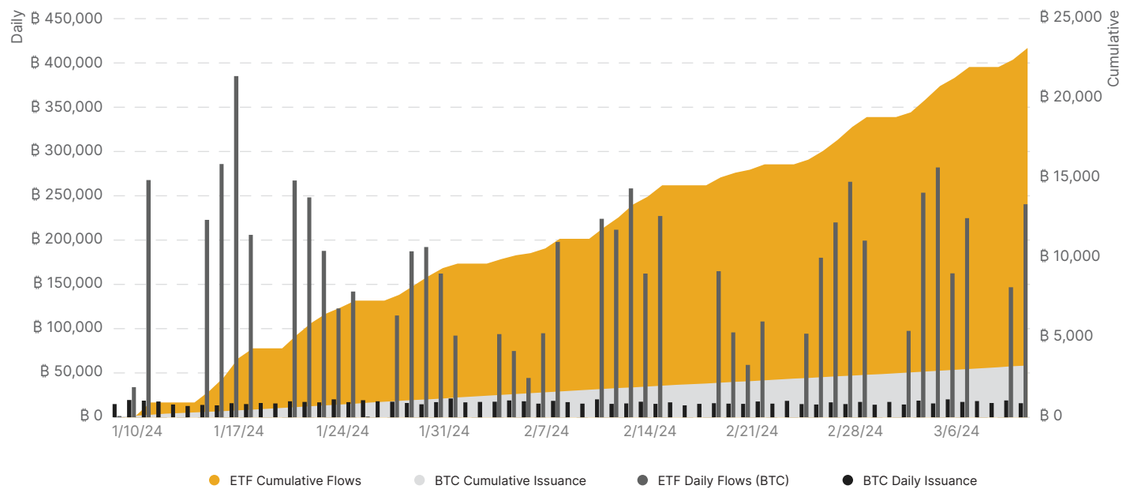
With Bitcoin experiencing sustained growth in recent weeks, U.S. spot ETFs have witnessed a growing interest in the asset, attracting more than $10 billion of net flows so far. This translates to a 14-day average inflow of about 2.5K BTC equating to ~$150M, which is 3X the daily minted supply (900), and will be close to 5.5X post halving (450).

To further contextualize, ETFs hold over **400K** BTC, as seen below in Figure 11, which already eclipsed Bitcoin's annualized supply post April's halving (~164K) by about **240%**. Moreover, the current demand has absorbed around 4.5% of Bitcoin's available supply, based on Glassnode's average of highly liquid and liquid assets, along with short-term holders' supply and exchange balances, totaling roughly 4.7M BTC.

Moreover, the U.S. ETF market, valued at $7 trillion, dwarfs its European counterpart by fourfold. Prior to ETF approval, 77%[4] of asset managers were reluctant to invest in Bitcoin. With Registered Investment Advisors overseeing around **$114 trillion** in the US, mandated to wait 90 days post new product launches before investing, a mere 1% allocation to Bitcoin could trigger substantial inflows, nearly doubling its current market cap and resulting in a supply squeeze in the process.

We're starting to see the early innings of this with banks like Wells Fargo and Merrill Lynch providing access to spot Bitcoin ETFs to select wealth management clients, while Morgan Stanley is allegedly evaluating the Bitcoin funds for its brokerage platform. Cetera is also amongst the first wealth managers to officially roll out a formal policy on BTC ETFs, signifying that a new wave of demand is starting to roll in.

**Figure 11: Bitcoin Daily Issuance Vs Daily ETF Inflows (Excl. GBTC) vs Cumulative Flows (All in BTC)**



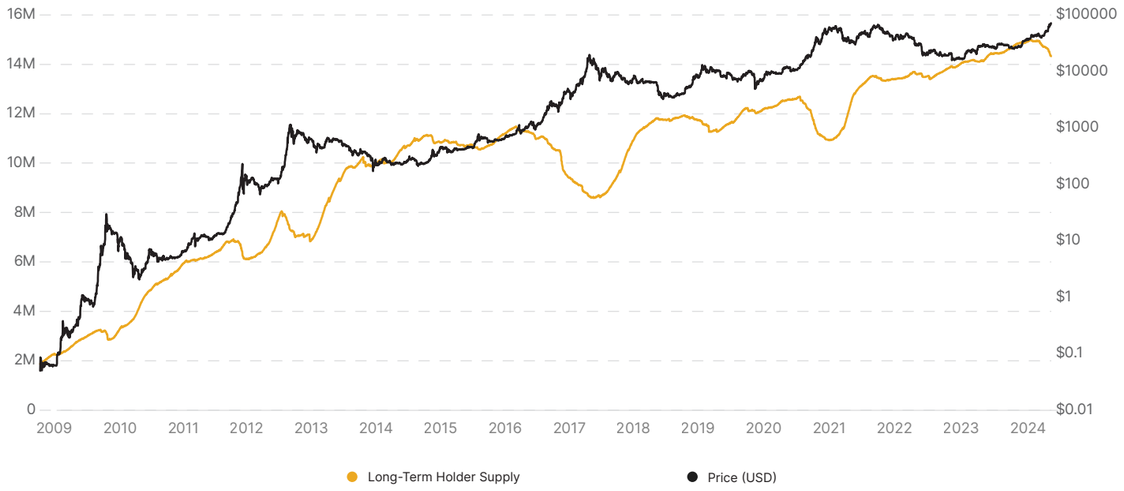

Source: 21Shares, Glassnode, Hildoby on Dune. Data as of March 11, 2024

# Supply Side: Increasingly Illiquid

**Long and short term holders supply** - investors who have held their Bitcoin for over 155 days - are showing unshakeable confidence and conviction. As shown in Figure 12, the Bitcoin supply held by long-term holders (LTHs) has surged to a record high in December (14.9M BTC) before retracting to current levels around 14.29M BTC (almost 70% of total supply).

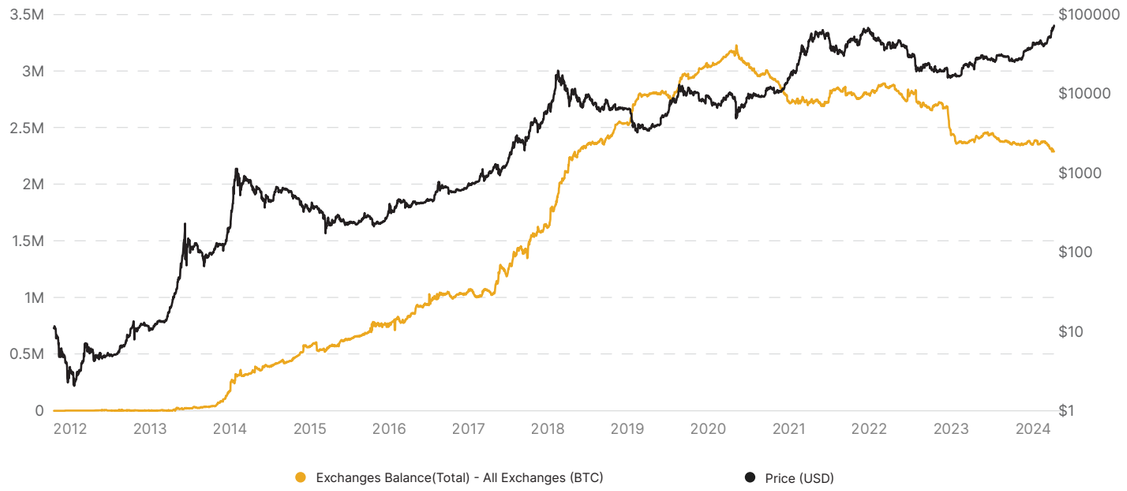
- Akin to 2017/18 and 2020/21, LTHs have progressively sold into strength so far this cycle, as they were first triggered by the hallmark event of the ETF approval.
- Nevertheless, although the supply they hold declined by 4% from 14.9M to 14.29M, the supply held by short-term holders has surged by over **33%, rising from nearly 2.3M to 3.07M**. This showcases the balancing act between the two cohorts, which usually takes place at the start of a bull market post-halving, but now has emerged earlier due to the exogenous ETF demand, resulting in a near-neutralizing market force.
- This scenario would coincide with BTC's **exchange balance hitting a five-year low, reaching 2.3M**, as shown in Figure 13, reinforcing the case for an imminent supply shock.
- If this trend persists, Bitcoin's supply side will increasingly become illiquid, laying the groundwork for a supply squeeze and the potential onset of a parabolic bull run.

**Figure 12: BTC supply held by long-term holders (LTHs)**




Source: Glassnode. Data as of March 5, 2024

**Figure 13: BTC Balance on exchanges**




Source: Glassnode. Data as of March 5, 2024

# On-Chain Dynamics Ahead of the Halving

**Market-Value-to-Realized-Value (MVRV - Z-Score)**
The Market Value to Realized Value ratio is a metric used to assess the valuation of Bitcoin by comparing its current market capitalization (market value) to the realized value of Bitcoin. The realized value is the aggregate value of all BTC based on their last transaction price, essentially representing the average price at which all BTC in circulation were acquired. The Z-Score standardizes the MVRV metric by measuring how many standard deviations the current MVRV is from its historical mean. If the market cap is multiples higher than its realized value, that could indicate that BTC is considered overvalued, which has historically signalled a market top, and vice versa.

As shown in Figure 14, BTC is currently at the MVRV Z-score of ~3, contrasting with ~6 in February 2021. However, when compared to levels preceding prior halvings, Bitcoin seems to exhibit slight deviations in behavior during this cycle. This is evidenced by notable growth in its realized price, with MVRV averaging 2.4 over the last 30 days, compared to an average of 1.07 over the same period in the last three cycles. This indicates investors may have accumulated BTC at higher recent prices, as the realized price reflects the last transaction price per Bitcoin. While MVRV is at elevated levels, compared to its historical average, it still suggests that we might be at the early **belief stage of the Bitcoin bull market**; the ETF approval may have front-run rather than followed the typical market excitement and price actions associated with halving events.

**Net Unrealized Profit And Loss (NUPL)**
We observe a similar picture, looking at the net unrealized profit and loss, or NUPL, an indicator that evaluates Bitcoin holders' profitability by comparing their current holdings' market value to their original purchase price, it acts as a great market sentiment indicator, where 0 represents extreme capitulation and 1 represents extreme euphoria; arguably echoing a market bottom and top. Currently averaging 0.6, the NUPL indicates **Bitcoin hasn't peaked in greed levels**, unlike the average of 0.7 seen during the run-up to $60K from February to March 2021. However, comparing Bitcoin's current average NUPL to the periods leading up to the three previous halving events (two months prior), it reveals a growing bullish market, with Bitcoin currently at 0.6 versus an average of 0.42 in the previous cycles. This reinforces our belief that ETF inflows are preempting the anticipated market activity post-halving and would back our arguments that BTC is likely to mildly correct in the next weeks if it follows historical precedence.

Looking on-chain, it also seems like this cycle is already playing out slightly differently, and could indicate that the cycle is skewed to the left.

**Figure 14: MVRV Z-Score**


Source: 21Shares, Glassnode. Data as of March 5, 2024

**Figure 15: BTC Net Unrealized Profit and Loss (NUPL)**


Source: Glassnode. Data as of March 5 2024

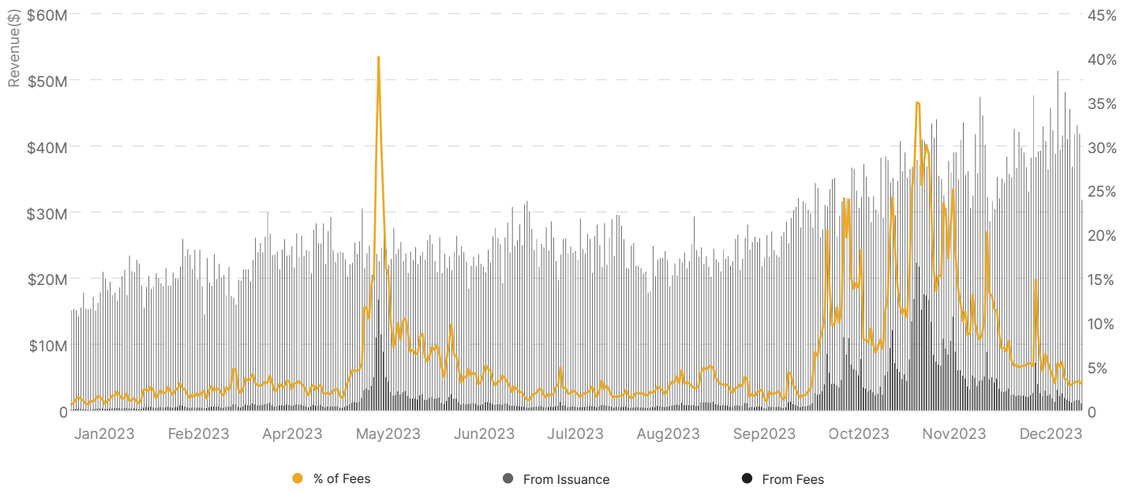
# The Halving Coincides with a Favorable Market Structure

While 2024 is the "year of the halving," it coincides with other tailwinds for Bitcoin creating a compelling blend of supply and demand dynamics:

- **Improving macro environment:** With the Fed holding rates steady in their last two meetings, the market is pricing a ~39% probability of at least one rate cut by June 2024 and ~51.9% by December 2024, per the CME FedWatch Tool[2].
  This ongoing uncertainty regarding the interest rate cuts, inflenced by a stream of conflicting data indicating persistent inflation, serves to underscore the value proposition of an unchanging and disciplined monetary policy. This reliability only becomes more evident with each successive halving event.
- **ETF buying pressure:** The approval of a spot ETF in the U.S. has already favored Bitcoin's market structure, attracting more than $10B of net inflows since launch and accumulating more than 400K BTC to date, which is over 240% more than the annualized post-halving issuance.
- **Long-term holders creating illiquid supply:** As if the halving supply shock wasn't material enough, the Bitcoin supply held by long-term holders (LTHs) - investors who haven't moved their BTC for at least 155 days - has steadied at around 14.29 million BTC or ~70% of BTC's circulating supply, as of March 15, 2024.
- **Whales remain unfazed despite the market reaching its highest point since the previous cycle:** Despite Bitcoin's impressive momentum since the launch of the ETFs, large investors holding over 1K BTC have opted not to sell amidst the market's strength. Even as BTC reached 60K, a level that historically prompted holders' sell-off leading to the all-time high in March and October 2021, investors have showcased their confidence in Bitcoin, indicating their belief that the current rally still possesses substantial growth potential. This conviction persists despite the fact that, as of the first of March, 99.6% of the current circulating supply is currently profitable—a percentage that typically signals a territory where aggressive profit-taking occurs, often leading to subsequent price declines.

Bringing it all together and taking into account all factors, this paints an overall bullish picture for the biggest cryptoasset. We conclude that this cycle indeed might indeed be slightly different. While investors should be reminded that Bitcoin is still a relatively volatile asset, which implies potential pullbacks, the overall circumstances seem to look favorable going into the next cycle.

**Figure 16: Bitcoin Miner Revenue Breakdown and Fees in % terms**




Source: 21.co (parent company of 21Shares), Dune Analytics. Data as of March 5, 2024.

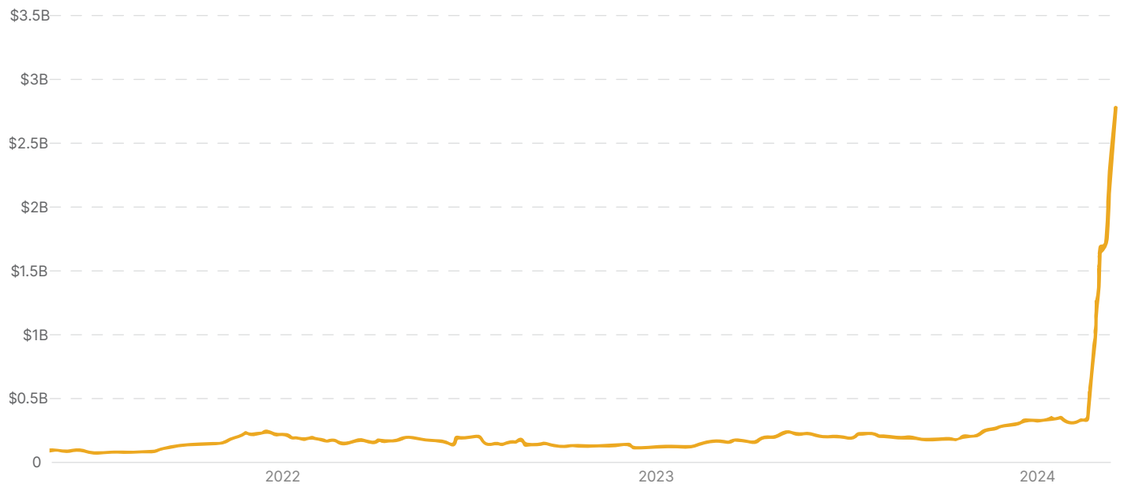


# Beyond the Halving

**There's Life for Bitcoin Beyond a Store-of-Value Asset**
We wanted to include this section to shed some light beyond the halving event. On the fundamentals side, we expect innovations like **Ordinals** and **BRC-20 tokens** to drive more demand for Bitcoin and expand its use cases. This is crucial as it ensures that miners can survive on revenue from transactions while block subsidies continue to diminish leading into 2140. As Bitcoin's block size is limited, when demand for transactions increases, we see an increase in fees. In 2023, miner revenue from transaction fees increased from ~0.73% at the beginning of the year to more than 30% in December 2023, as shown in Figure 16, representing more than $15 million in daily fees at times. Rising fees may price out small-sized transactions and drive more adoption of Layer 2s, such as the Lightning Network and Stacks.

However, the enthusiasm for Bitcoin's blockspace is driving the expansion of a diverse ecosystem of scaling solutions beyond the usual contenders. **This trend mirrors the early development of Ethereum's Layer 2 (L2) solutions** such as Arbitrum, Optimism, and Polygon, which are making their way to Bitcoin, introducing a variety of scaling approaches using Optimistic and Zero-Knowledge-based rollups. While their long-term viability remains uncertain, the emergence of these scaling methods is beneficial to unlock more utility on Bitcoin, and accelerate its growth much like it did to Ethereum, to levels previously unimaginable just a year ago. A compelling indication is **Bitcoin's growing Total Value Locked (TVL), which surged sevenfold in March**, reaching $2.7 billion, positioning it among the six leading networks by TVL, as can be seen below in Figure 17, spurred by two new L2s. Finally, **Bitcoin claimed 33% of the NFT volume** from December 2023 to February 2024, amounting to $2.76B, placing it second to Ethereum's $3.99B and surpassing Solana's $1.2B. This underscores the notable influence of Ordinals on the Bitcoin network.

**Figure 17 Bitcoin's Growing Assets Under Management**




Source: DefiLLama. Data as of March 5, 2024.

# Conclusion

As the Bitcoin network is programmed to reduce the number of BTC minted per block, every 210,000 blocks, this "halving" event doubles down on Bitcoin's scarcity, making it more valuable, and at times a safe haven for investors as a hedge against currency debasement and adversary monetary policies. Given historical halving patterns, investors should anticipate volatility in Bitcoin's price in the months following the event. However, this Bitcoin halving comes in a different, more mature environment. It's a historical moment for the industry; Bitcoin's expanding use cases, strengthening its fundamentals in addition to the Bitcoin ETFs finally approved in the U.S. are all expected to pour in the favor of the largest cryptoasset.

# Glossary

**MVRV:** (Market Value to Realized Value) ratio is a metric used to assess the valuation of Bitcoin by comparing its current market capitalization (market value) to the realized value of Bitcoin. The realized value is the aggregate value of all BTC based on their last transaction price, essentially representing the average price at which all BTC in circulation were acquired.

**NUPL:** (Net Unrealized Profit/Loss) indicator is a tool used to assess the overall sentiment and behavior of long-term Bitcoin holders. It does this by measuring the difference between the market value of all Bitcoin holdings and the cost basis (purchase price) of those holdings.
In other words, the indicator evaluates Bitcoin holders' profitability by comparing their current holdings' market value to their original purchase price, covering both realized and unrealized gains/losses.

**Optimistic-based Rollups:** Scaling transactions that process transactions off-chain, significantly reducing fees and transaction times while inheriting the security of the main underlying mainnet. Called Optimistic because they assume all transactions are valid by default, with a built-in mechanism for anyone to challenge and dispute fraudulent ones

**Zero-Knowledge based rollups:** Scaling solution powered by a cryptographic method that enables an individual to prove to a verifier that a particular asset or information exists without revealing details about the asset or information itself.

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