Ethereum

Insights and Market Trends

2025

CME Group

glassnode

INTRODUCTION

Ethereum finds itself at a critical juncture in 2025 - technologically ahead, yet lagging in market performance. Despite executing one of the most significant engineering feats in blockchain history and leading innovations in programmability and decentralization, Ethereum has notably underperformed Bitcoin and its peers in this cycle. Its price is yet to reach a new all-time high, and investor confidence has been tested by drawdowns exceeding -65%.

This report examines Ethereum's complex fundamentals - from validator dynamics and the effects of the Dencun and Pectra upgrades, to changes in fee structures, inflationary pressures, and ETF performance. We assess how the broader market is recalibrating its view on Ethereum's value proposition and whether recent structural shifts have reshaped ETH's position within the digital asset ecosystem.

About this report

Digital Assets: Insights and Market Trends is a joint publication of CME Group and Glassnode. This report offers a detailed analysis of the digital asset landscape, providing essential information for institutional investors. It includes a market overview, an analysis of capital flows and market cycles, derivatives market fundamentals, and insights on institutional adoption.

To see more of CME Group's research, visit **cmegroup.com/cryptocurrencies**

All of the data and charts included in this report are accurate through May 2025, unless otherwise specified.

About Glassnode

Glassnode is the leading market intelligence provider in the digital asset space, primarily focused on institutions. Glassnode's platform delivers unparalleled on-chain analytics and deep insights into the Bitcoin and decentralized finance (DeFi) markets. Founded in 2017, Glassnode equips institutional investors, hedge funds, banks and asset managers with near real-time, data-driven intelligence, enabling informed decision-making in a highly dynamic trading environment.

For further details and access to the data used in this report, investors are encouraged to contact Glassnode at **glassnode.com/institutions#contact**

UkuriaOC
Analyst, Glassnode
@UkuriaOC

CryptoVizArt
Analyst, Glassnode
@CryptoVizArt

About CME Group

As the world's leading derivatives marketplace, CME Group enables clients to trade futures, options, cash and OTC markets, optimize portfolios, and analyze data – empowering market participants worldwide to efficiently manage risk and capture opportunities. CME Group exchanges offer the widest range of global benchmark products across all major asset classes based on interest rates, equity indexes, foreign exchange, energy, agricultural, metals, and cryptocurrency products. The company offers futures and options on futures trading through the CME Globex® platform, fixed income trading via BrokerTec and foreign exchange trading on the EBS platform. In addition, it operates one of the world's leading central counterparty clearing providers, CME Clearing.

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General Market

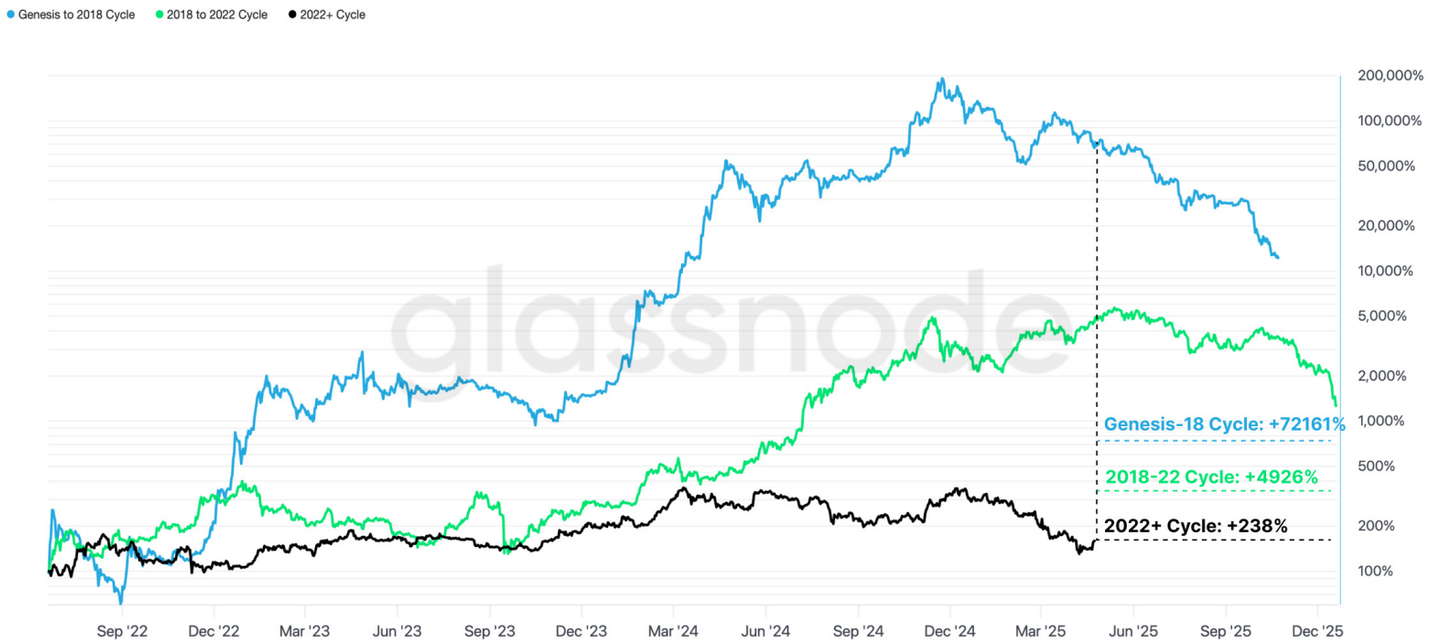
The Ethereum network revolutionized blockchain technology by introducing programmable smart contracts—self-executing code that enables decentralized applications (DApps) to operate without central authorities. Over its decade long existence, the Ethereum network has undergone several significant upgrades to improve the scalability, security, and sustainability of the network, with the Pectra upgrade being the most recent upgrade to be implemented.

Despite vast changes to the consensus mechanism, supply dynamics, and a host of technical upgrades across the networks lifespan, price performance across the last two cycles has been starkly similar in structure.

However, since Jan 2024, a severe deviation in performance with the previous cycle has emerged. When comparing our position in the current cycle, to the same time duration across the previous cycle, our current cycle is underpeforming the previous cycle by 4688%.

- Genesis to 2018: Current Performance: +72161%
- 2018-22: Current Performance: +4926%
- 2022+: Current Performance: +238%

Price Performance Since Cycle Low



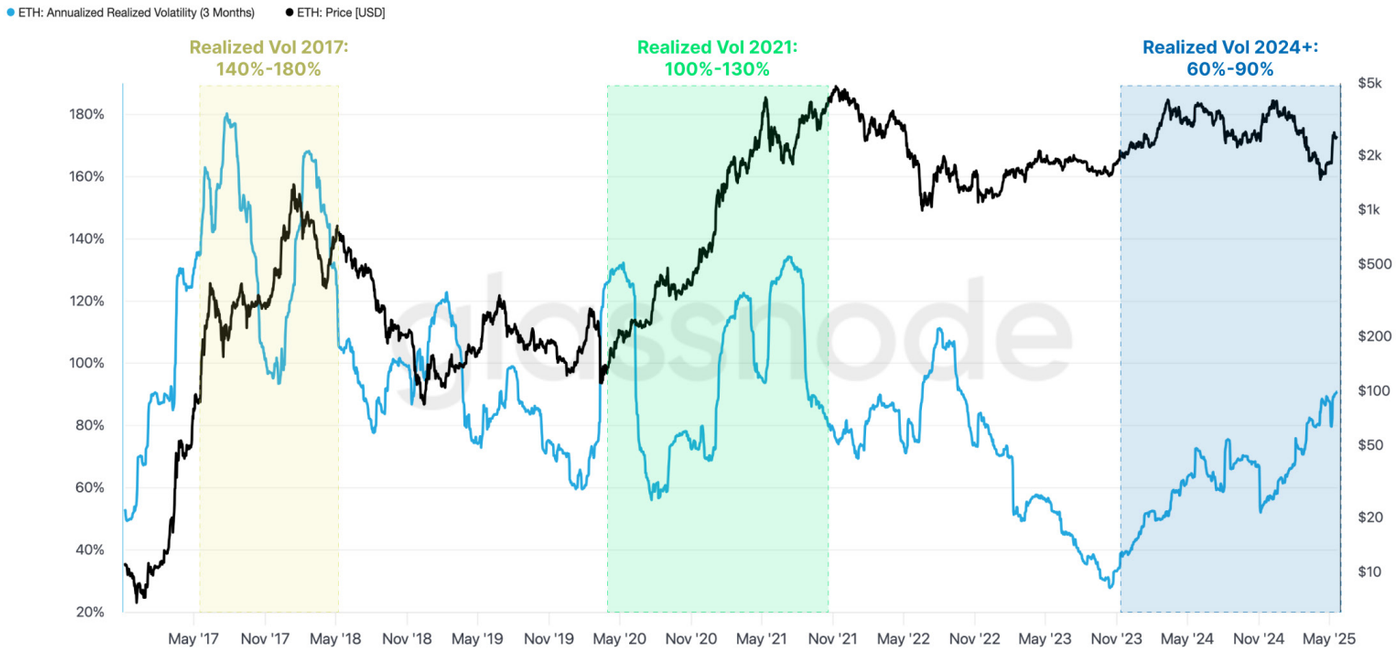
Source: Glassnode

With a market capitalization of over $327B, Ether holds the ranking as the 2nd largest digital asset. Additionally, Ether places as the 34th largest asset in the world, sitting at a similar market cap to companies like Palantir and Alibaba. As Ether grows in size, its volatility profile has evolved and matured.

Realized volatility for Ether has been shown to compress across cycles, currently sitting around 80%, which is down from the 120%+ in prior cycles. As the size of the asset increases, the capital required to induce changes in the valuation becomes increasingly large as well.

Ether's 3-month realized volatility tends to climb during bull markets, and decline during bearish trends. However, the 2024-25 cycle has been somewhat different. Realized volatility reached 60% in mid-2024 as the price peaked at $4k, but has continued to increase to over 90% as the price fell towards $1500.

Annualized Volatility



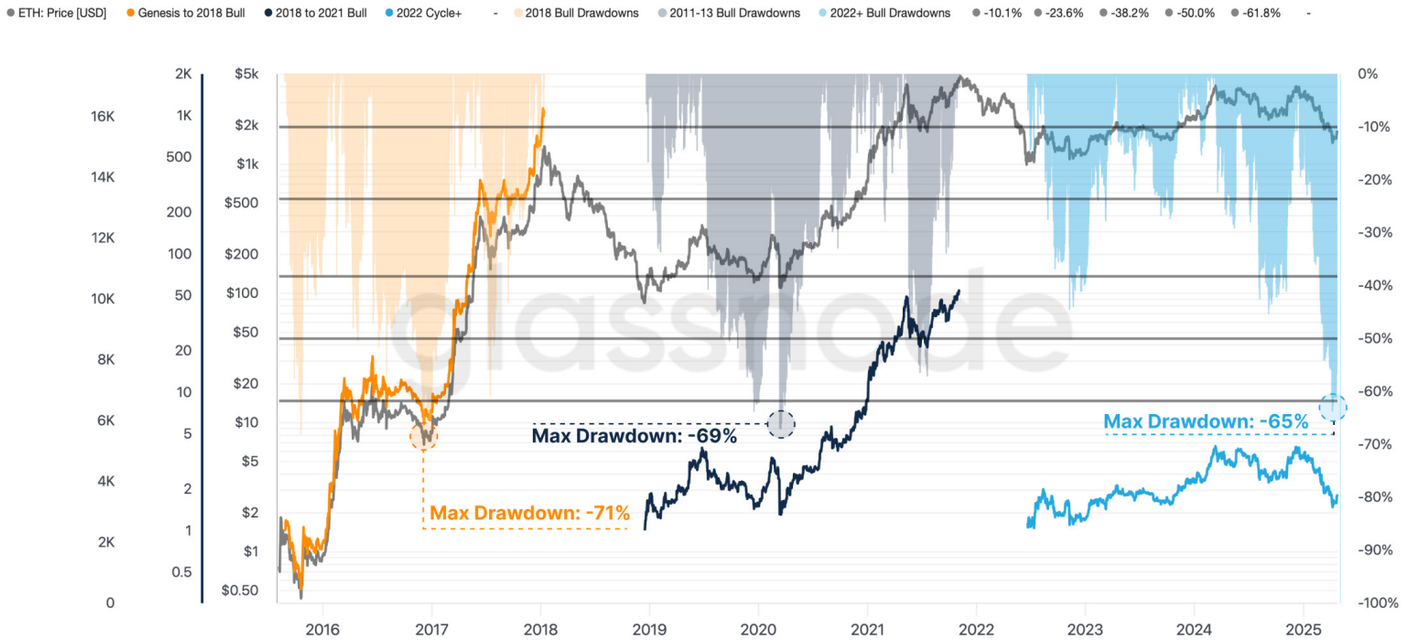
Source: Glassnode

The 2023-25 cycle has been quite challenging for many Ether investors. When we compare the drawdown structure of bullish Ether trends, the current cycle is largely in-line with the structure of the two previous cycles. Corrections extending -40% or more from the local peak are not uncommon during Ether bull cycles.

However, a key difference in the Ether cycle thus far has been the lack of a fresh price ATH, unlike Bitcoin and Solana. This comes as somewhat of an upset for many digital asset investors, with many market participants expecting the second largest digital asset to perform in line with its peers. Ether's downside price action has also been notably more volatile, with multiple -40% contractions from the local high, and with the most recent drawdown in 2025 being the worst of the cycle thus far.

The current peak drawdown resides at -65.4%. Whilst previous cycles have seen corrections exceeding this value during both the early and later phases of macro bull markets, this cycle seems to have such a drawdown coming earlier than many had anticipated.

Bull Market Corrections



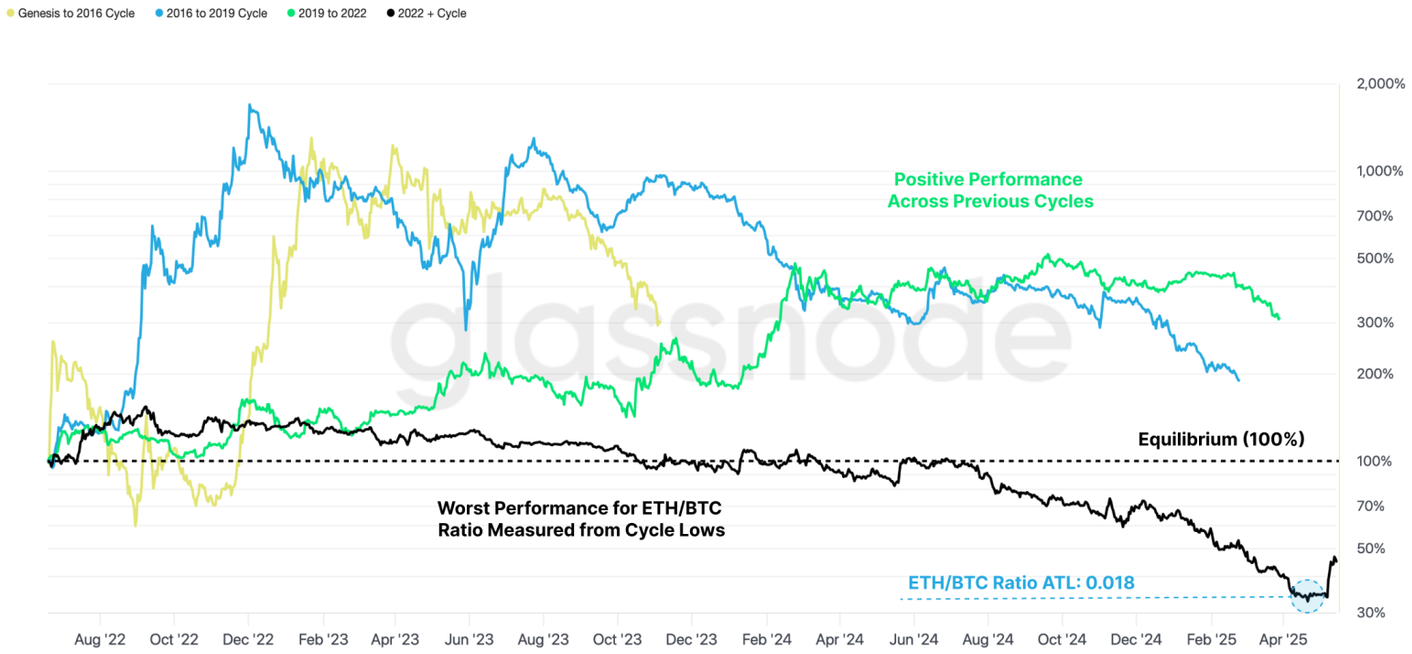
Source: Glassnode

The digital asset market tends to experience an internal rotation of capital along the risk curve as the market cycles progress. Historically, the largest asset, Bitcoin, tends to lead the market during bear markets and early bull markets, but lags during the more speculative phases of late-stage bulls.

Notably, a striking shift from these historical norms is underway in 2024-25. The ETH/BTC ratio has experienced a persistent decline over the last 3 years, despite the wider digital asset market being in bullish conditions since Nov 2022. This is atypical from a historical perspective, since Ether recorded strongly positive out-performance relative to Bitcoin in all previous cycles.

Since Nov 2022, the ETH/BTC Ratio has declined from 0.070 to a value of 0.018, its lowest value since January 2020. This underscores the gravity of Ether's market struggles in the 2022 cycle, and the growing divergence between the valuations of the two leading digital assets. However, a resurgence in the ETH/BTC is currently underway, with Ether's recent uptrend in price bringing the ratio back to a value of 0.026.

The ETH / BTC Ratio



Source: Glassnode

Proof-of-Stake Consensus

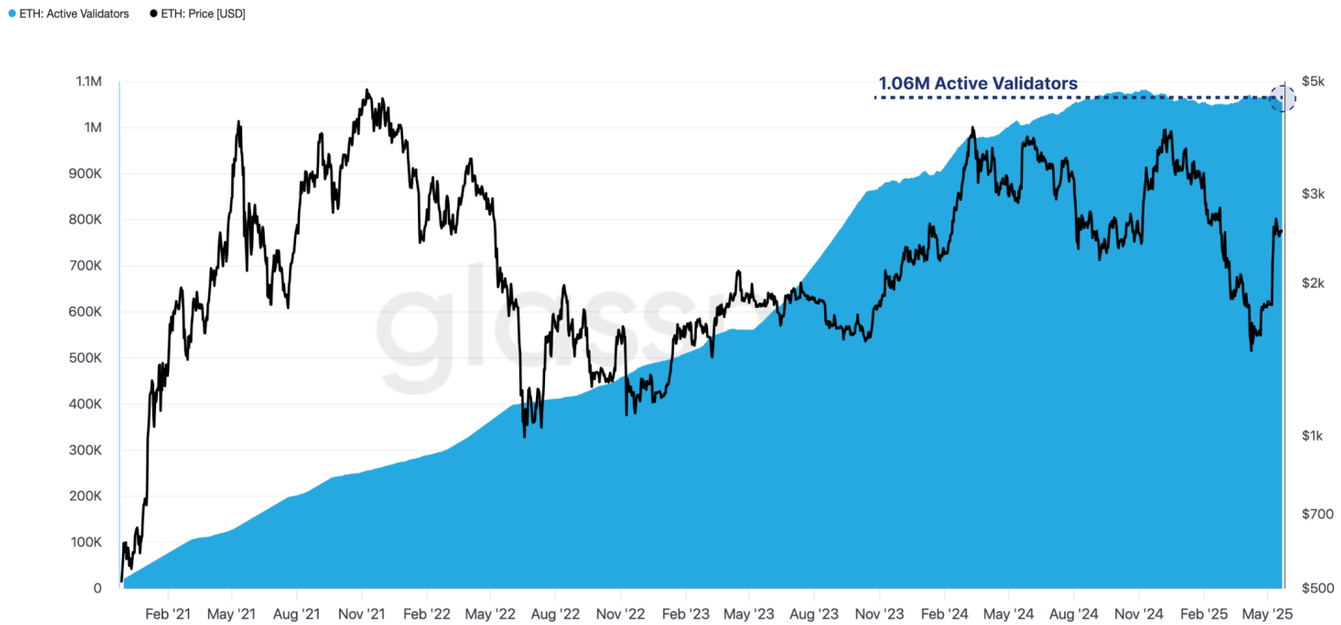
Ethereum initially launched as a Proof-of-Work blockchain, which differentiated itself from Bitcoin by using an algorithm that favored GPU mining chips. In September 2022, the Ethereum project transitioned its consensus mechanism into a Proof-of-Stake system, which moved the role of block construction from miners to validators. The upgrade was completed via a process known as The Merge.

Validators take the place of miners in the Ethereum Proof-of-Stake system and are responsible for transaction ordering and the proposal of the next valid block. Each validator is required to host collateral of 32 Ether as a form of security bond, and is rewarded with both newly minted Ether, and a portion of the transaction fees paid by users.

The number of Active Validators on the Ethereum network has been in a consistent uptrend since The Merge, with 1.06M validators now active on the network. Only recently the network has experienced a small contraction in the overall validator count, however, this is starting to stabilize and recover in recent weeks.

The recent Pectra upgrade introduced a key change; validators can now increase their max effective balance from 32 Ether to 2048 Ether. This enables the compounding of consensus layer rewards to actively participate in the Proof-of-Stake system. This is expected to drive validator consolidation, leading to a reduced validator count, and greater network efficiency.

Active Validators



Source: Glassnode

Rather than using computational work to build the blockchain, Ethereum validators instead hold a volume of 32 Ether as collateral, which can be slashed in the event of adverse behavior.

There are currently over 34.2M Ether locked as staked collateral, equivalent to 28.3% of the circulating supply. With active validators and the supply staked intrinsically connected, the volume of supply staked has also recently experienced its first net decline since The Merge. Over 1M Ether were unstaked between Nov 2024 and Feb 2025, however, this metric is also beginning to stabilize and recover.

Total Supply Staked

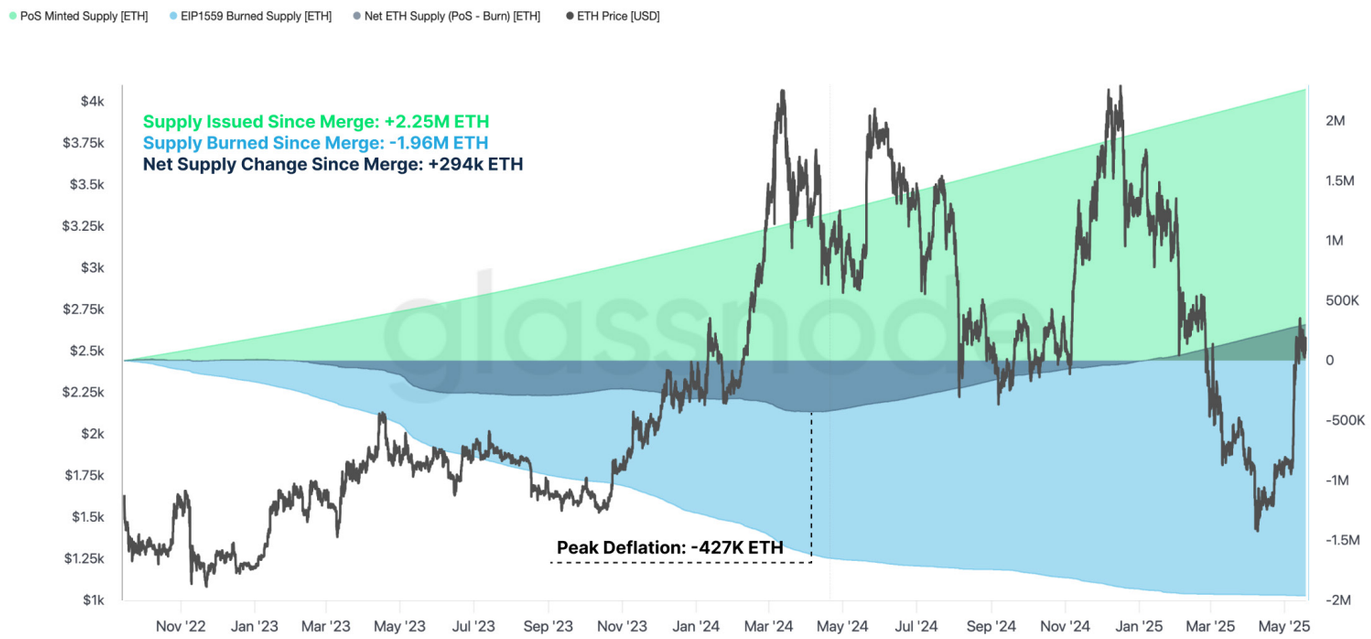
Source: Glassnode

Ethereum has a supply burn mechanism that was introduced as part of the EIP1559 upgrade in August 2021. This mechanism burns a portion of the transaction fees, which at times can exceed the total volume of newly minted Ether issued to validators. As a result, during periods of high network activity, the Ether supply can experience periods of net deflation, resulting in a decline in the overall circulating supply.

For the majority of the time since The Merge, the net Ether supply change has been deflationary, peaking at -427k Ether burned in March 2024. However, the Dencun upgrade introduced a new data storage solution known as 'Blob Space', which allows for the storage of large data sets off-chain, specifically used by Layer-2 scaling networks. This innovation significantly reduced the overall fee pressure on the Ethereum blockchain, which in turn lowered the transaction fees and thus reduced the volume of Ether supply burned.

Since the burning of supply is governed by the fee cost of transactions, the reduction in gas fees following the Dencun upgrade, compounded by relatively lighter network demand, has resulted in a net inflationary environment for Ether. Since The Merge, the Ether supply has now expanded by +294k Ether.

Issuance vs Supply Burned



Source: Glassnode

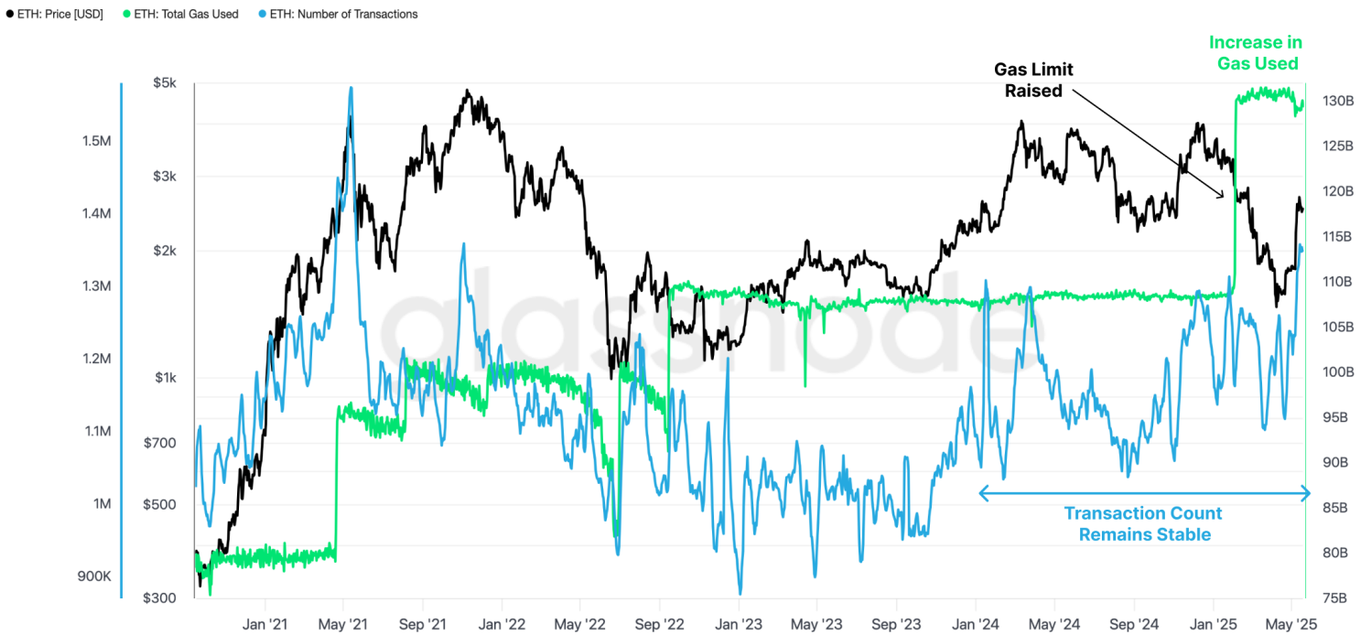
Each transaction on the Ethereum network requires computational resources to execute, with the amount of gas used corresponding to the complexity of the transaction. The fee for the unit of gas, measured in gwei, is the combination of two parts:

- The base fee is governed by the protocol based on current network congestion.
- The priority fee set by the user as a tip to make the transaction more attractive to validators.

As of 19 Feb 2025, the total gas limit per block has been increased by 20%, up from 30M to 36M. The target amount gas to be used per block has also been raised from 15M, to 18M, creating more blockspace for transactions each day.

We can see a significant uptick in gas used since this upgrade, despite the number of transactions executed remaining largely similar. This suggests that network users are opting to execute more sophisticated, and computationally expensive transactions, which now have relatively cheaper gas fees.

Transactions and Gas Fees



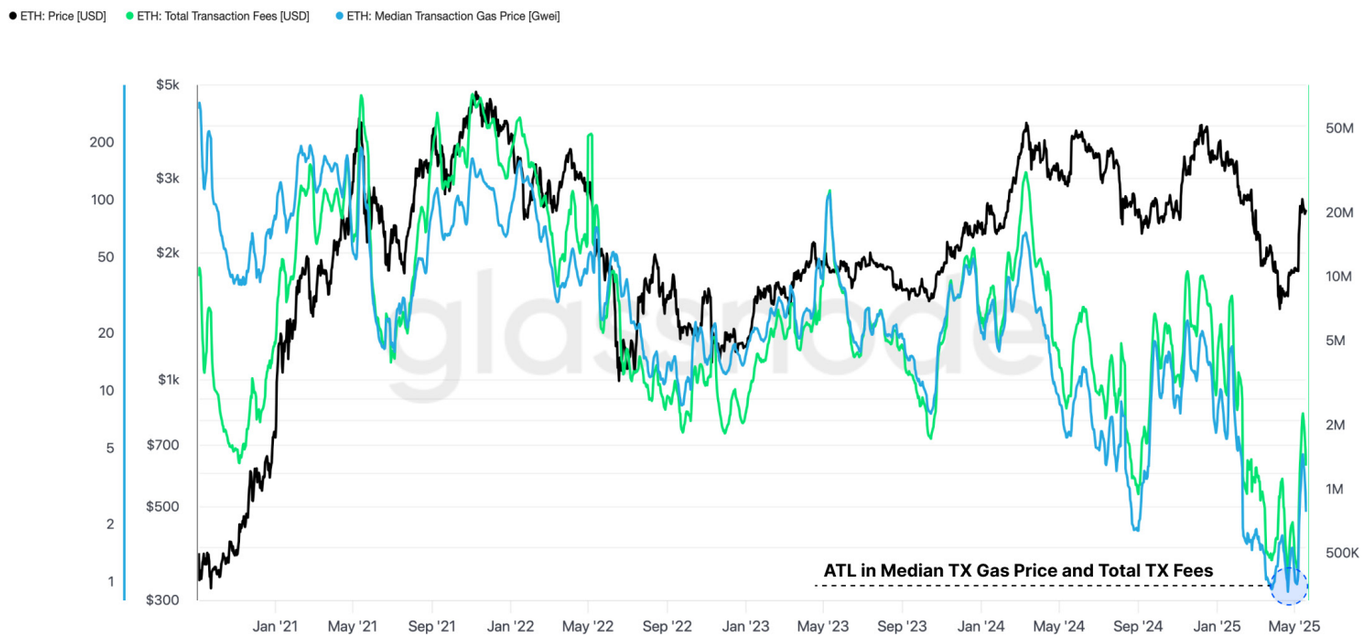
Source: Glassnode

Whilst the amount of gas consumed is at an ATH, the price of a unit of gas remains historically low. We can observe this via the median gas price per transaction metric, which across the last few months has dropped to historic lows of just 0.89 gwei (7-day moving average).

With such a stark contraction in the price of gas, the validator fees for processing transactions has also contracted to $431k/day, its lowest level since May 2020. This highlights a relatively light demand profile from Ethereum users, meeting a more abundant supply of blockspace. Transacting on the Ethereum network is arguably as cheap as it has ever been.

However, following the recent surge in the Ether price, the median gas price and transaction fees have grown to 4.49 gwei and $2.17M respectively, highlighting a notable recovery in activity.

Fees and Median Gas Price



Source: Glassnode

On-Chain Market

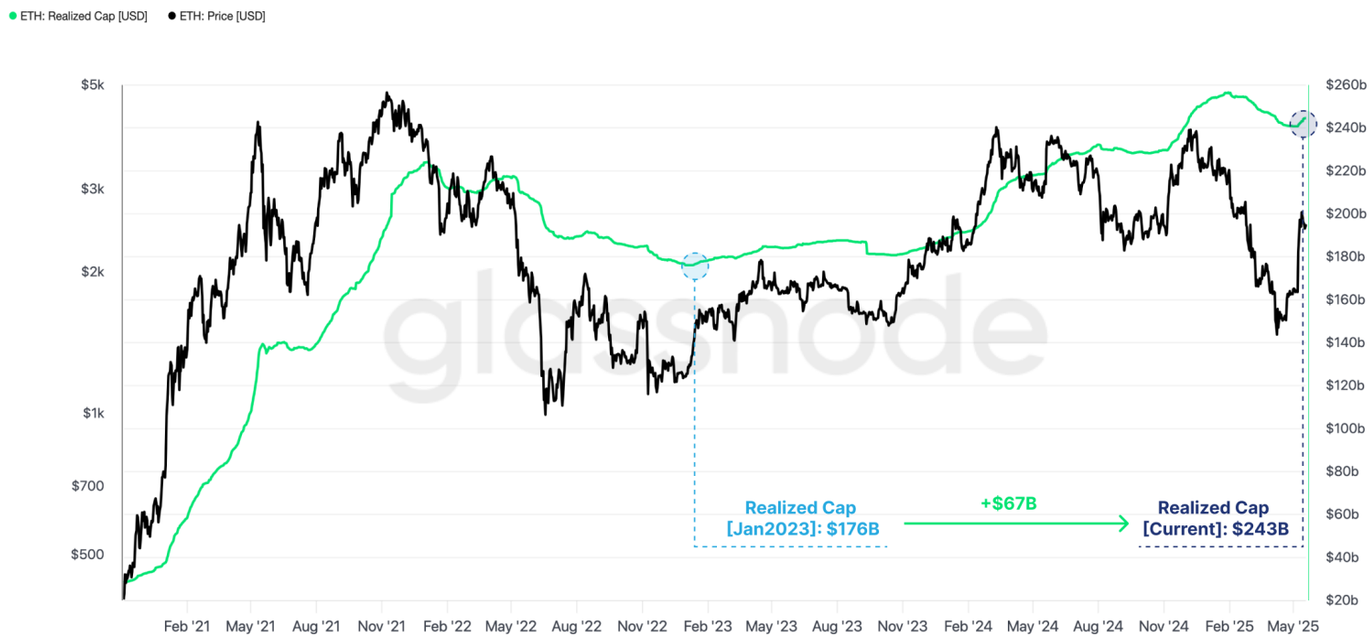
Liquidity and capital flows is an essential concept throughout financial markets, and is commonly considered as a key driver of an assets valuation. One method we can use to quantify the "value stored" in Ethereum is through the Realized Cap metric, which captures the aggregate value of all coins, priced at the time they last transacted on-chain. In many ways it is analogous to a form of "on-chain market cap."

The Realized Cap was initially constructed for Bitcoin's UTXO model, however, Ethereum uses a different blockchain accounting model, which utilizes 'accounts', rather than individual coins. Additionally, the ecosystem of Ethereum is more complex, with coins being used as collateral for lending markets, and within liquidity pools for decentralized exchanges. As such, the computation of the Realized Cap for Ethereum requires different methodologies to account for these nuances.

With reference to the cycle low set in Jan 2023, the Realized Cap has grown from a value of $176B, to a current value of $243B, a 38% increase. This implies that Ethereum has absorbed around +$67B of fresh capital inflows throughout the current cycle.

Comparing the percentage of growth in the Realized Cap over various cycles, the 2023-25 cycle is somewhat lacklustre in comparison to the 2021 cycle, where the Realized Cap increased by more than +1,000%. This highlights a relatively smaller inflow of new liquidity and capital into Ethereum, which goes some way to explaining Ether's comparatively lacklustre performance this cycle.

Realized Cap



Source: Glassnode

The MVRV Ratio is a derivative metric from the Realized Cap and is best thought of as the unrealized profit multiple held by investors. It is computed as the ratio between the Market Cap and the Realized Cap, and can be interpreted within the following framework:

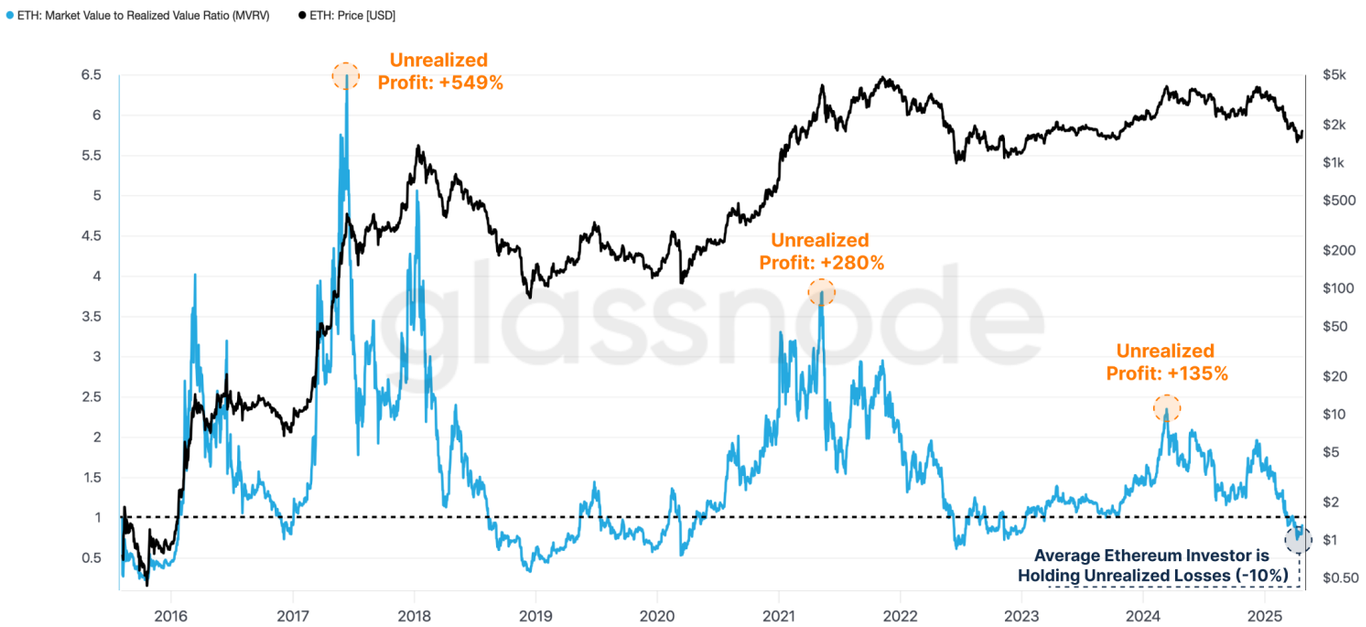
- High MVRV Values above 1.0 indicate that the average investor is holding a large unrealized profit.
- Low MVRV Values below 1.0 indicate that the average investor is holding a large unrealized loss.
- MVRV Values of exactly 1.0 indicate that the average investor is at break-even.

In March 2024, when the Ether price hit its cycle high of $4k, the MVRV Ratio was trading at 2.35. This means the average Ether investor was holding 135% in paper gains. Whilst this is a large unrealized profit, it is much lower than the MVRV of 3.8 reached at the height of the 2021 bull cycle.

Following an extended period of tumultuous price action since the $4k high, the market began to trade at levels where average Ether investor held an unrealized loss of around -10%. Holding unrealized losses at such a late stage of the bull market is somewhat indicative of the testing and unique market conditions for Ether in the current cycle, and the pressure Ether investors have experienced.

Nevertheless, the profitability of the average Ether investor has improved meaningfully during the recent rally, with the MVRV Ratio rising to 1.35. This indicates that the average investor is now sitting on a 35% unrealized gain, a remarkable recovery.

Investor Cost-Basis



Source: Glassnode

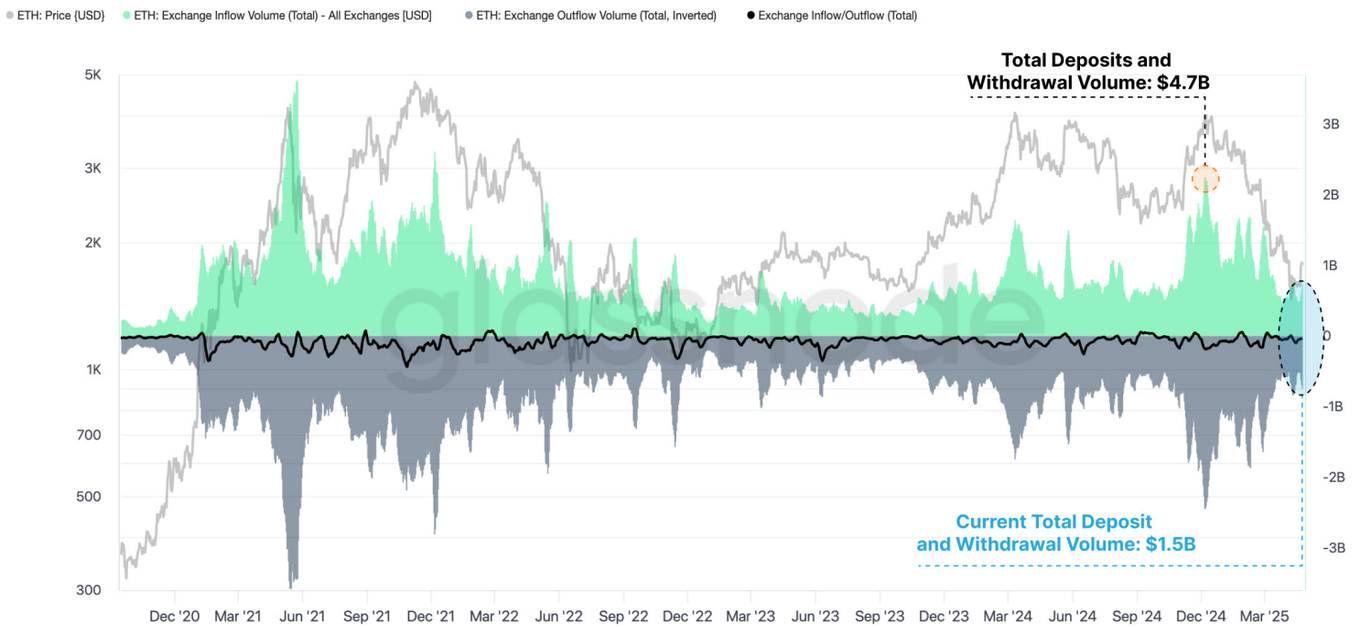
Spot Market

Everyday, billions of dollars of Ether are deposited and withdrawn from centralized exchanges, marking these venues as a key location for trading activity and price discovery. Therefore, we can utilize the volumes flowing in and out of exchanges as a gauge for the appetite of investors to trade and speculate on the Ether price.

Ether's cyclical uptrend commenced around Oct 2023, and volumes to exchanges began to rapidly accelerate. Exchange flows peaked at a value of $4.7B/day at the cycle price high of $4k. However, exchange volumes have since fallen dramatically, with exchange flows now at a relatively depressed value of $2.4B/day, a -49% decline from the peak.

Similar to the spot price, absolute volumes flowing in/out of exchanges did not reach a new ATH this cycle, underscoring a distinct contraction in the investor demand profile for Ether relative to the 2021 cycle.

Exchange Inflows and Outflows



Source: Glassnode

By examining the trade activity on major centralized exchanges, we can see a parallel trend exists in Spot Volume. Since the $4k cycle high Ether price set in Dec 2024, trading volumes have decreased significantly, falling from a peak of $14.7B/day to a low $2.9B/day, an 80% reduction.

Adding further evidence to Ether's struggles this cycle, spot volume has yet to reach a new all-time high in this cycle, supporting several indicators which signal a structural decline in demand growth for Ether compared to previous cycles.

Despite this, trade volumes have experienced a significant uptick recently, rising to $8.6B/day, suggesting a boost in investor confidence and heightened trading activity.

Spot Volume

Source: Glassnode

Derivatives Market

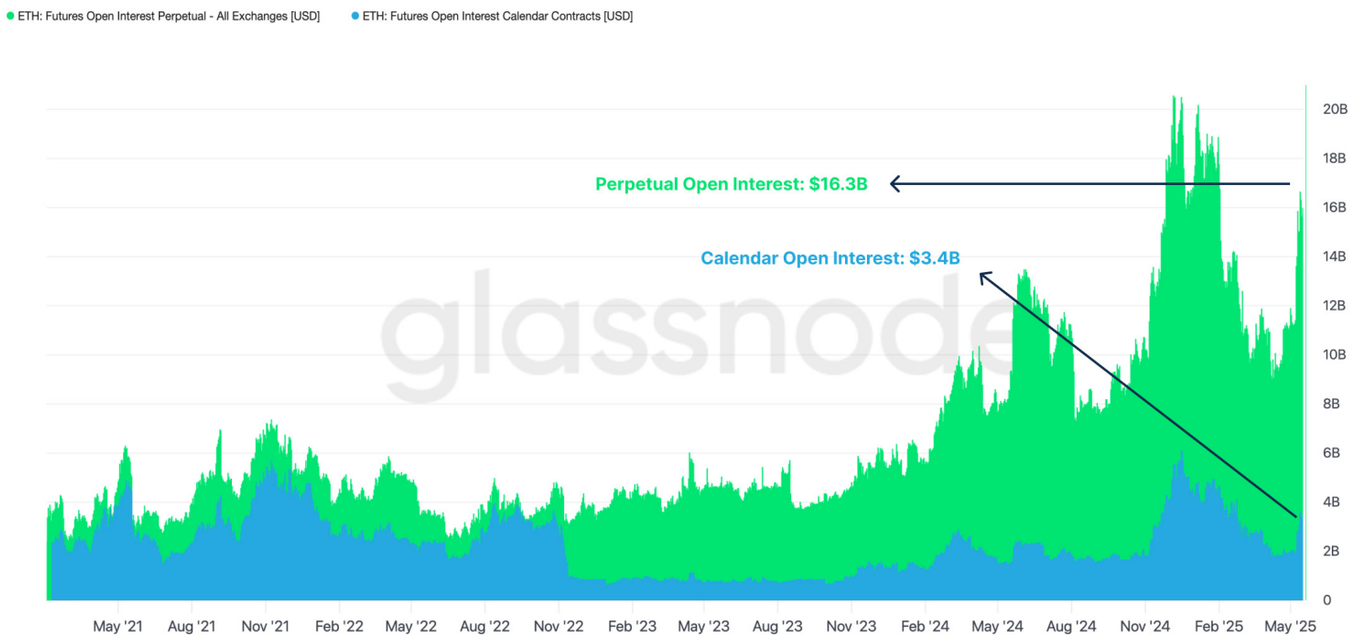
The derivative market for Ether has grown significantly over recent years, reflecting both the maturity of the digital asset industry, and the inflow of institutional demand. Notably, the futures market consistently experiences the highest trade volume of all market sectors.

The digital asset industry utilizes two main types of futures contracts, the perpetual swap and the calendar expiring contract. Measured by open interest, the industry has historically seen a preference for the crypto-native perpetual swap instrument. However, as institutional interest grows, we have seen a renewed dominance of calendar expiring futures. This is particularly due to the capacity for institutional capital to execute a cash-and-carry strategy by longing the spot ETFs, and shorting the calendar futures to capture the basis spread.

From October 2023, futures open interest has seen a sustained increase across both perpetual and calendar futures contracts. Perpetual open interest has climbed from $4.1B to a peak of $19.1B, while calendar contracts have grown from $666.1M to a peak of $5.4B.

After a prolonged period of downward price movement, the recent surge in price has sparked growth in open interest for both perpetual and calendar contracts, now standing at $16.3B and $3.4B, respectively. This indicates a significant rise in speculative positioning and hedging activity.

Open Interest [Calendar and Perps]

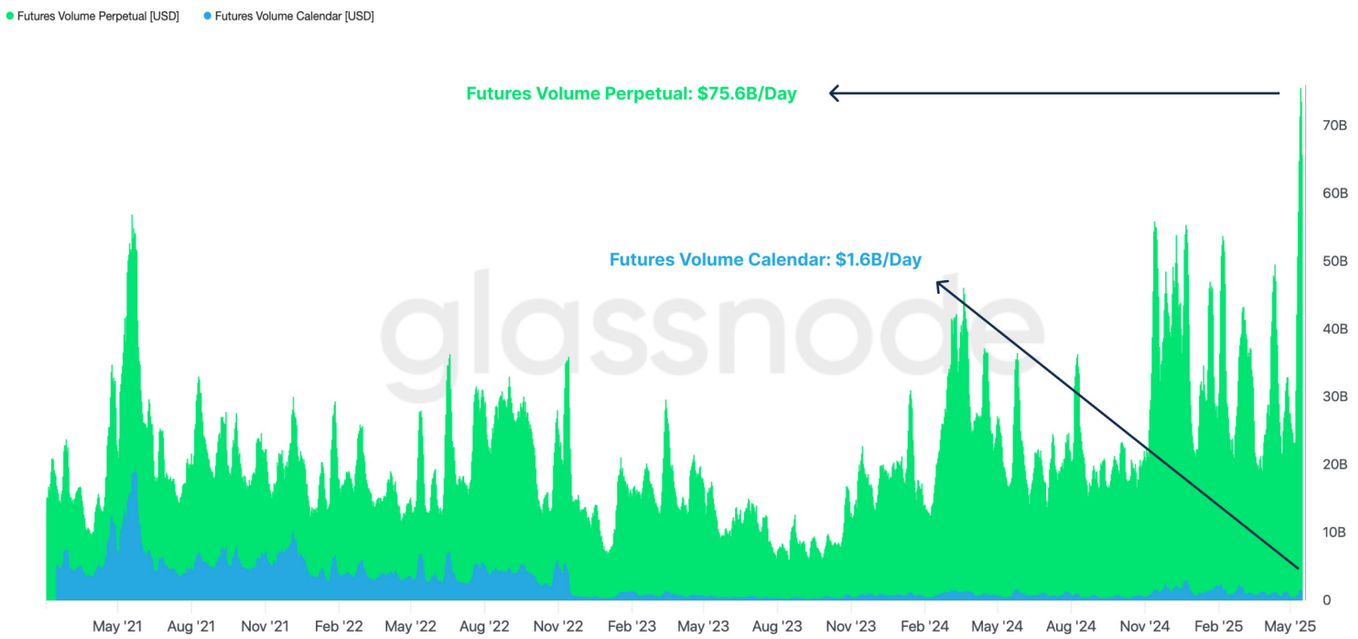


Source: Glassnode

As previously noted, the futures market remains the primary venue for trading activity in digital asset markets, frequently exceeding both spot and on-chain volumes by a significant margin—often by an order of magnitude.

Similarly to open interest, futures volumes across across perpetual contracts have experienced substantial growth, with volumes reaching a new ATH of $75.6B/day. Alternatively, calendar contract volume remains slightly subdued at $1.6B/day, but remains elevated relative to previous years. This indicates strong futures trading activity around Ether YTD.

Futures Volume [Calendar and Perps]



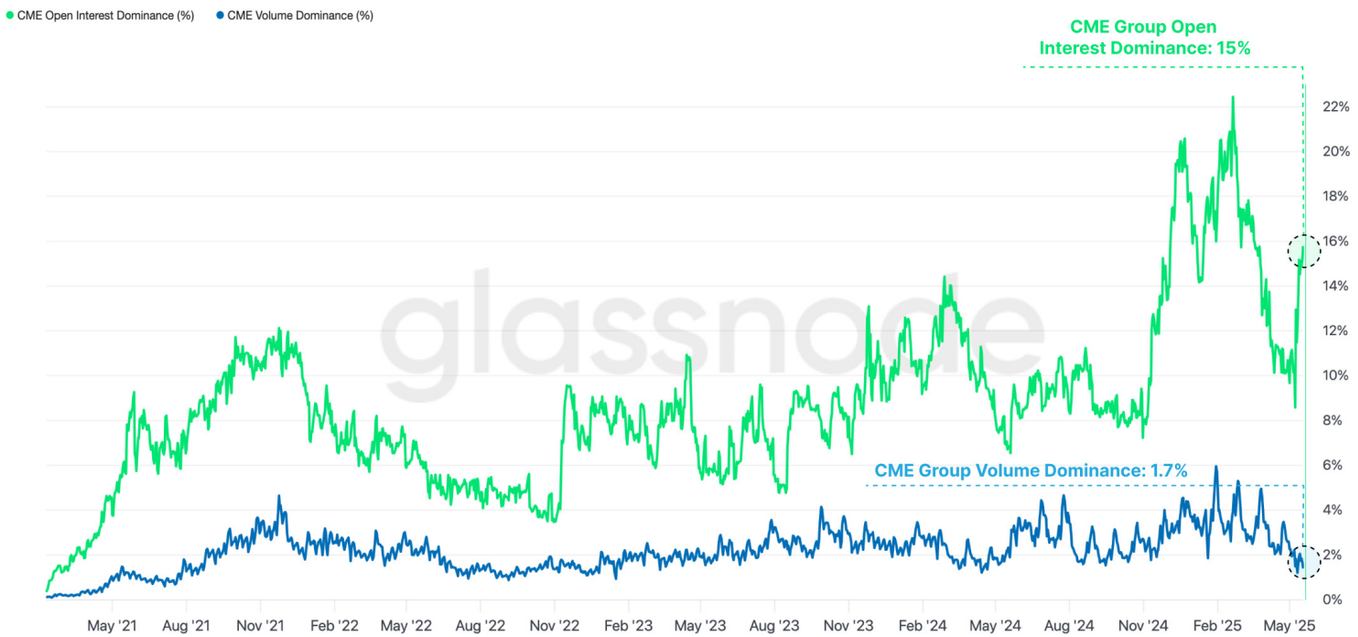
Source: Glassnode

A key indicator of growing institutional involvement in digital asset derivatives is the rising share of open interest and trading volume concentrated in CME Group futures contracts.

A notable inflection point in the dominance of CME group instruments occurred following the November 2022 cycle low, following the FTX collapse and the subsequent deleveraging of excessive leverage in the industry. This shift marks a broader trend for the industry towards regulated institutional-grade products, and away from unregulated, offshore, and often highly leveraged trading platforms.

Today, CME Group futures account for over 15% of global Ether open interest and 1.7% of total futures trading volume.

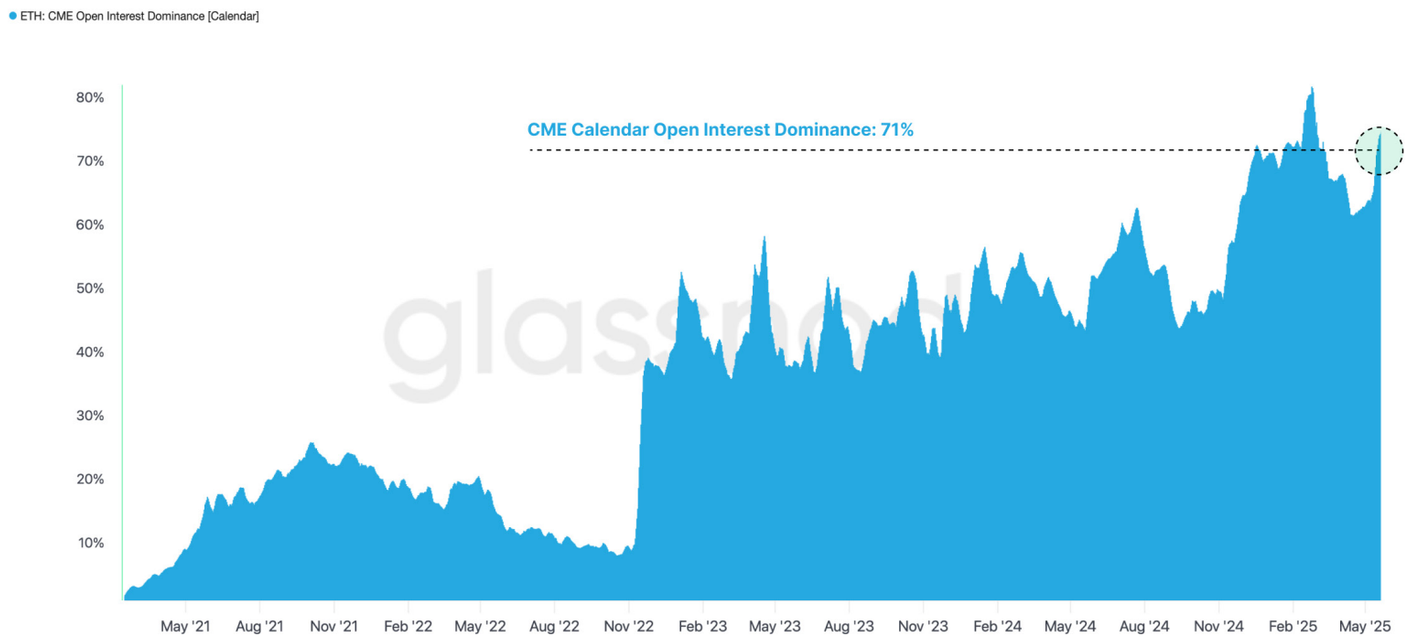
CME Group Open Interest and Volume Dominance



Source: Glassnode

When isolating for calendar-expiring futures, the dominance of CME Group instruments among institutional investors becomes significantly more evident. Notably, we can see a strong uptick in growth since the beginning of 2023, with CME Group now accounting for over 71% of all calendar futures open interest for Ether.

CME Group Open Interest Dominance [Calendar]



Source: Glassnode

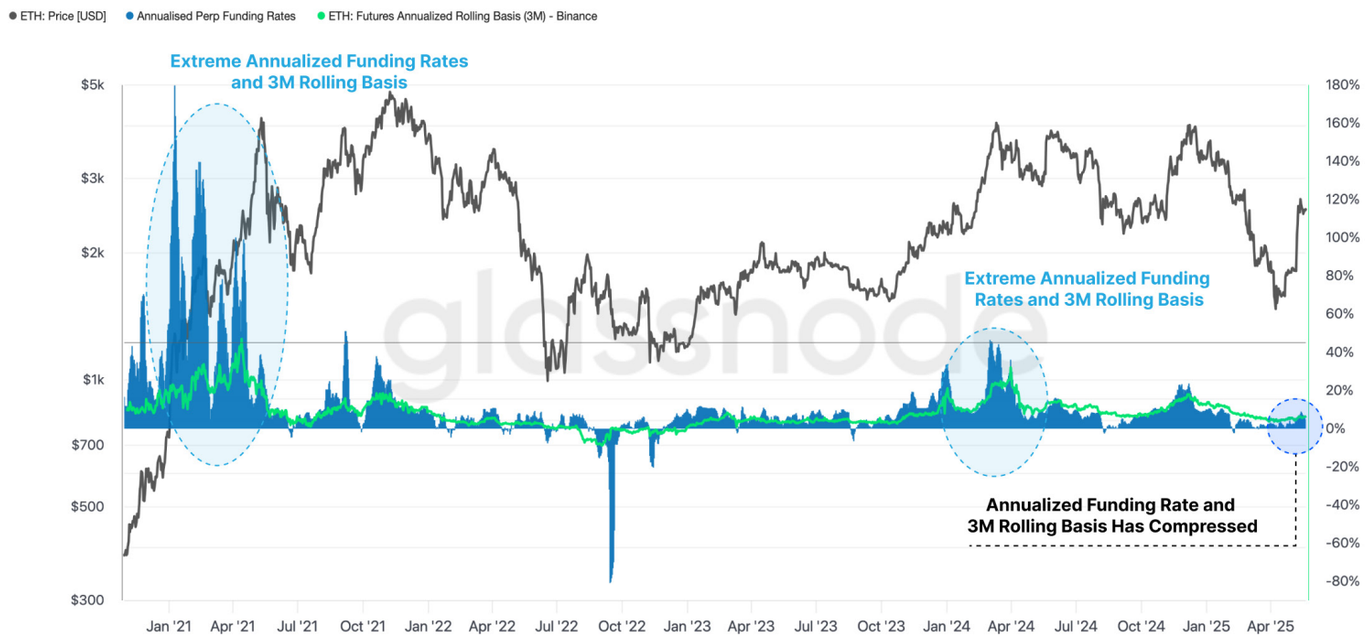
Perpetual swaps, which have no expiration date, are commonly used by traders seeking exposure to digital assets, and favor them by how closely they track the spot price. In order to keep these products in line with the corresponding spot index price, perpetual swaps utilize a funding rate, whereby traders are paid an interest rate yield (called a funding rate) depending on deviations between the futures prices and the spot index price.

Funding rates are designed such that in periods when the perpetual price trades above the spot index price, traders with open long positions will pay a periodic interest rate to short traders. The opposite is true when perpetual prices trade below the spot index price.

Since October 2023, perpetual funding rates have consistently shown a strong positive bias, suggesting that leveraged traders have predominantly taken net long positions. As Ether prices approached the $4k cycle peak, these yields spiked to over +40%/yr, which is a historically elevated level.

However, with the price decline in 2025, funding rates have pulled back significantly, signalling waning investor interest, and a meaningful reduction in long-side speculation.

Funding Rates vs 3m Rolling Basis



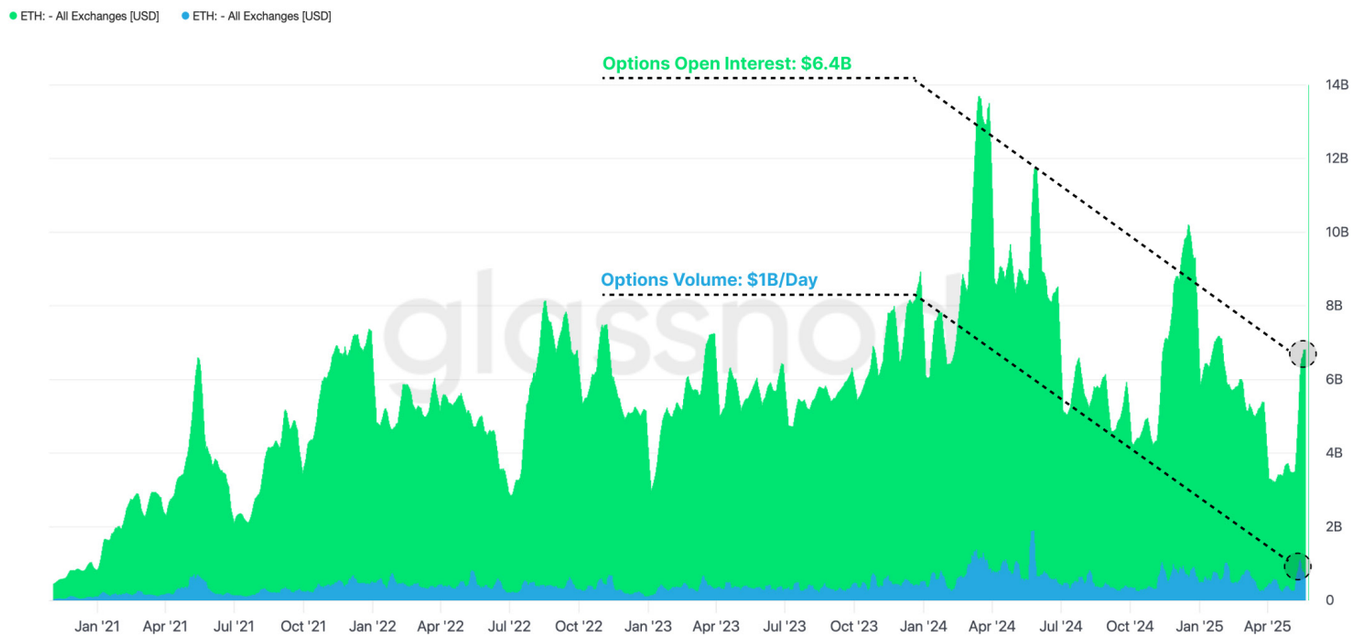
Source: Glassnode

The options markets for Ether and other digital assets have expanded dramatically as the digital asset ecosystem matures and attracts more institutional participation. This growth stems primarily from the flexibility options provide for investors seeking to deploy sophisticated trading strategies and calibrate their risk management tools.

Options open interest experienced explosive growth in 2024, reaching an all-time high of $13.7B in March. Whilst options open interest has since declined to $6.4B, it remains elevated relative to historical norms. Notably, options markets have now grown to a comparable size to futures markets in terms of open interest. This underscores the maturity and deepening liquidity of options markets over time.

Similarly, options trade volumes reached new record highs in 2024, peaking at $1.9B/day, before contracting to a current level of $1B.

Options Open Interest and Volume

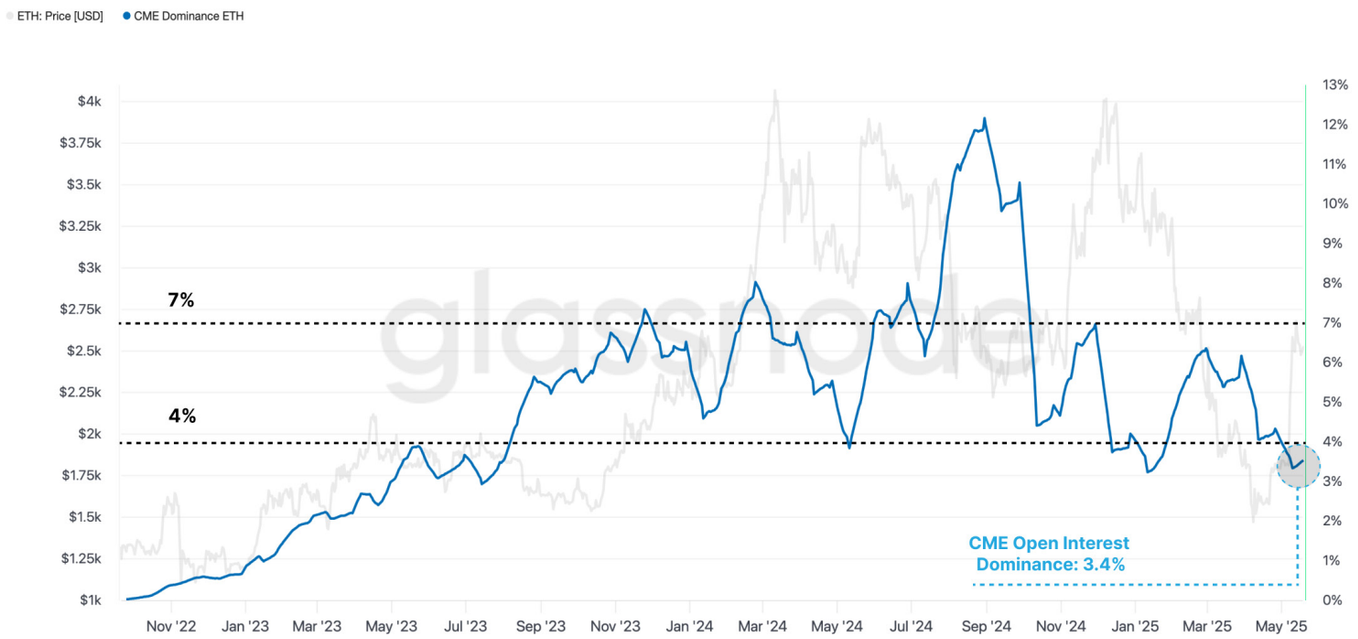


Source: Glassnode

CME Group instruments for Ether have seen a significant increase in market share during the second half of 2024, accounting for 12% of all open interest for the Ether option market. This is a notable achievement given the overall expansion of the options landscape over the same period.

However, this dominance has tapered off slightly in recent months, stabilizing at a more modest 4%–7% market share.

Options Open Interest CME Dominance



Source: Glassnode

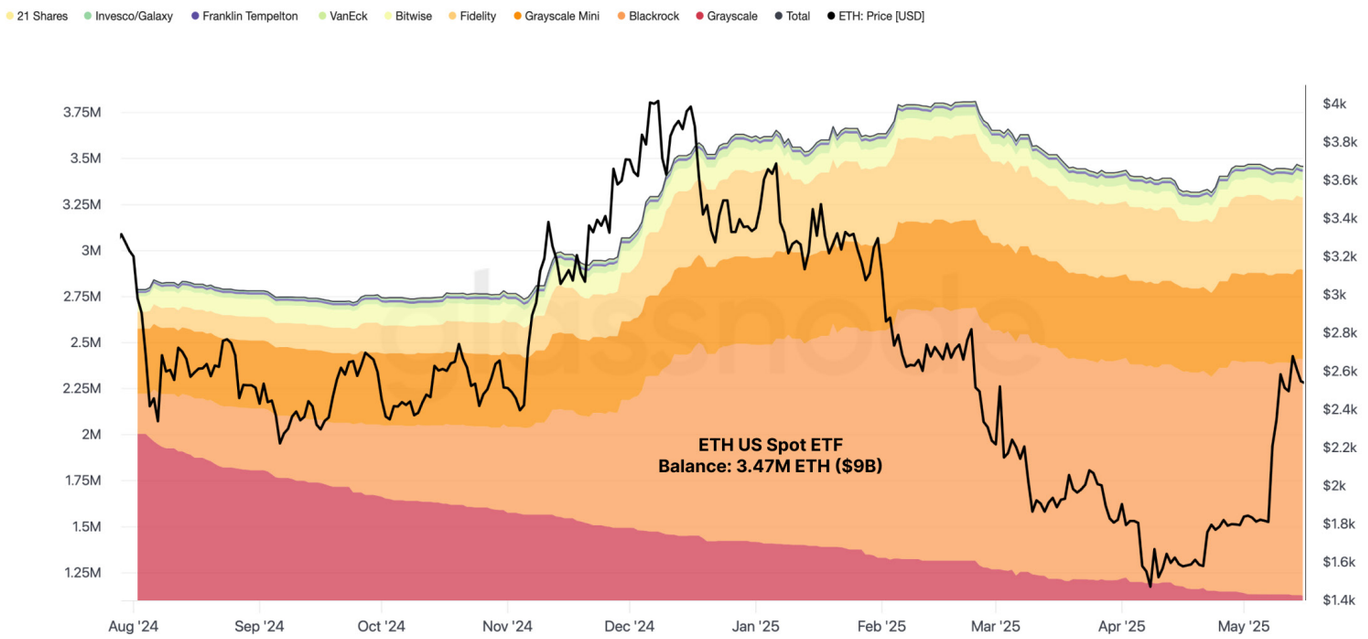
ETFs

On 23-July-2024, regulators approved the first tranche of US Spot ETFs for Ether, expanding the range of regulated investment vehicles that provide direct market access to the major two digital assets. These ETF products offer regulated, institutional-grade spot exposure to Ether, opening a gateway for institutional demand which was unable to access it via spot markets.

In contrast to the US Bitcoin Spot ETFs, which were launched into an uptrending market, the Ethereum ETFs were launched into markedly less energetic conditions. The ETF complex also experienced significant outflows from the existing Grayscale Trust (ETHE) product, as many holders moved away from the comparatively high fee structure of 2.5%. These factors resulted in an initially weak performance for the Ethereum ETFs, with limited AUM growth during the first 5 months of trading.

Despite a relatively tumultuous start, institutional demand for Ether exposure started to pick-up in mid Nov-2024, and has increased modestly since then. Currently, the combined assets under management across all ETF instruments have reached 3.47M Ether, equivalent to $9B and representing 2.9% of the Ether circulating supply.

US ETFs AUM



Source: Glassnode

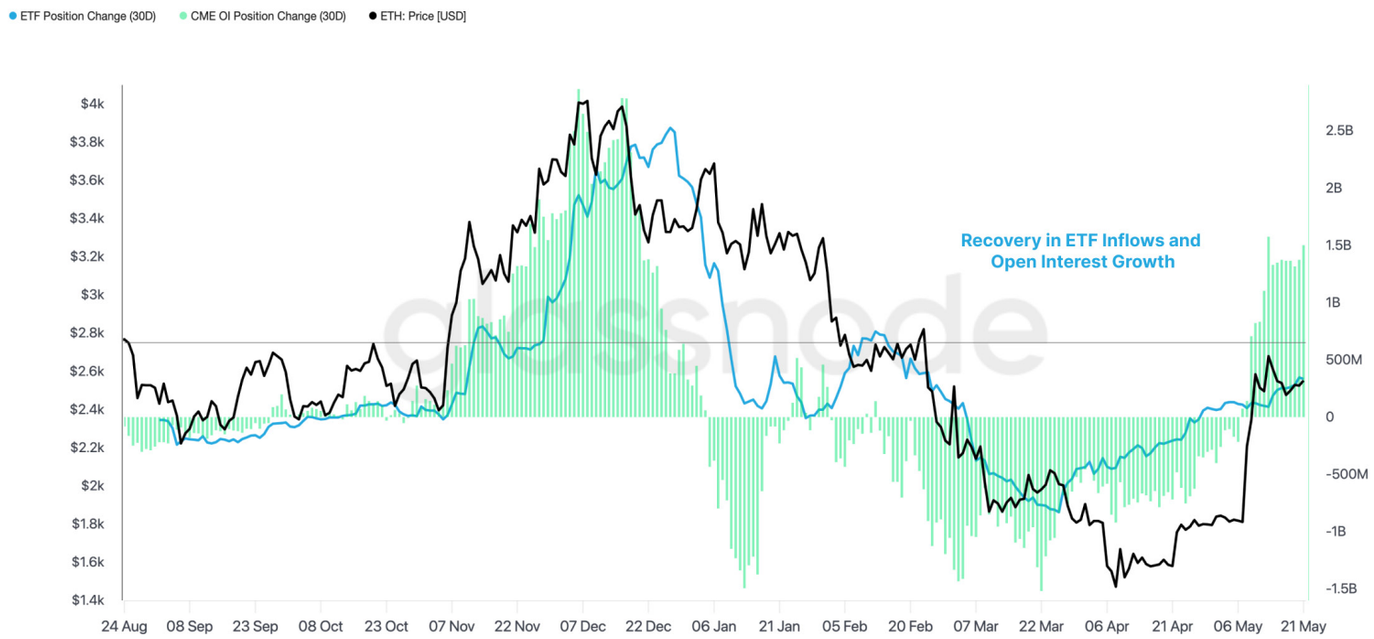
The launch of the US Spot ETFs has provided institutional investors with the appropriate tooling to conduct both legs of a cash-and-carry trade. By combining long positions in the Ethereum ETFs with short positions in CME Group futures contracts, traders are now able to arbitrage differences between the spot and futures markets.

An indicator that cash-and-carry strategies are being deployed can be seen by examining the 30-day inflows into the ETFs alongside the 30-day change in CME Group futures open interest. Both of these metrics showed similar increases during the upwards trend between Oct and Dec 2024 as the Ether price returned to $4k.

From Dec 2024 onwards however, we can see that open interest for CME Group futures contracts started to decline, combined with an acceleration in ETF outflows. As the Ether spot price fell, the long-bias and premium in futures markets compressed accordingly. This suggests that a degree of unwind in the cash-and-carry trade has taken place in 2025, which created headwinds to market liquidity for Ether.

Notably, this trend has begun to reverse in recent weeks, marked by growing open interest in CME Futures and increasing ETF inflows. These developments suggest that continued upward price momentum could reignite interest in the cash-and-carry trade.

ETFs vs CME Cash and Carry Trade



Source: Glassnode

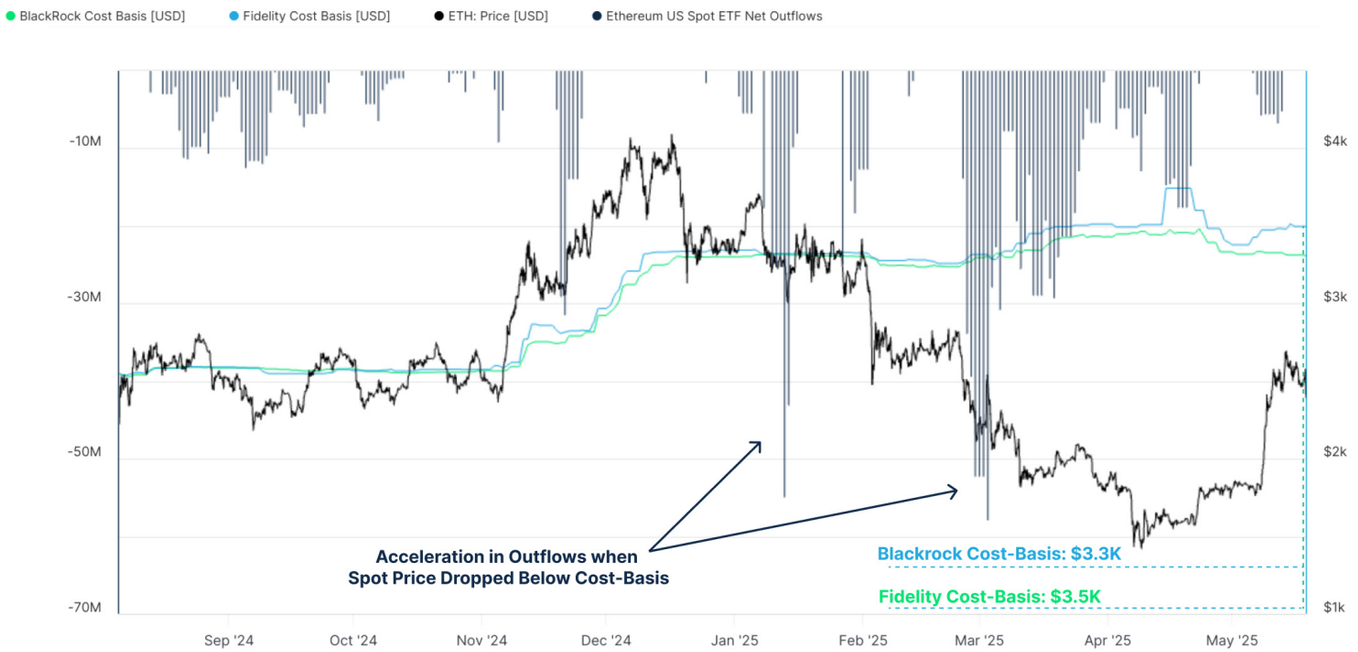
By tracking both the price and the volume at which Ether is deposited into ETFs, we can estimate an average inflow price for investors. Similar to the MVRV Ratio, this allows us to approximate a cost-basis for the average Ethereum ETF investor. This can provide insight into the paper gains or losses ETF holders are carrying on average.

- BlackRock IBIT Cost-Basis: $3.3K
- Fidelity FBTC Cost-Basis: $3.5K

The average investor in the BlackRock and Fidelity Ethereum ETFs are now substantially underwater on their position, holding an unrealized loss of approximately -21% on average. We can see that net outflows begin to accelerate when the spot price dropped below this average ETF investor cost-basis level in August 2024 and January and March of 2025.

This dynamic helps to highlight that not all ETF outflows are likely to be associated with an unwind of cash-and-carry trades, and that a meaningful portion of these outflows stem from investors rotating capital out of the Ethereum ETFs in 2025.

US ETF Cost-Basis

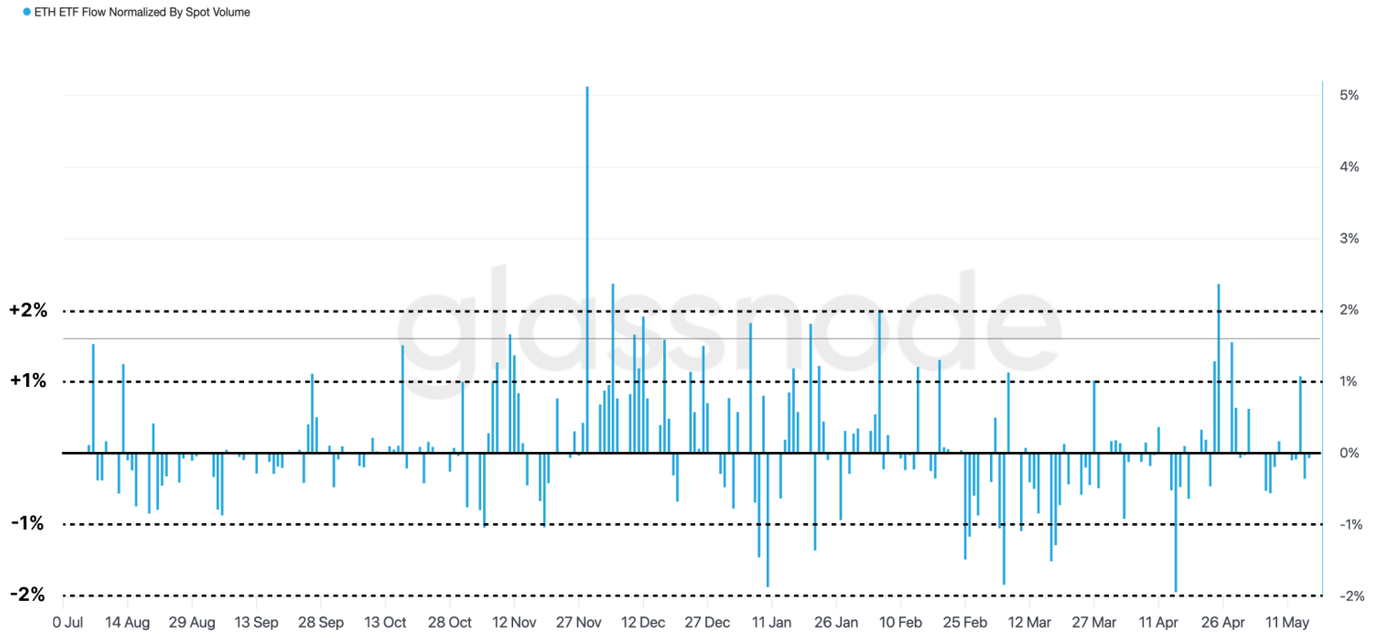


Source: Glassnode

One measure we can utilize to gauge the relative scale and influence of the ETFs on the wider Ether market is to compare ETF netflow volume to spot volumes traded on centralized spot exchanges.

The Ethereum ETFs initially accounted for just ±1.5% of the trade volume in spot markets, suggesting a relatively lukewarm reception on launch. The ETFs experienced a period of stronger growth in Nov 2024, where this measure increased to over 2.5%, however has since declined back towards 1.5% for 2025.

BTC ETF Market Size



Source: Glassnode

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- Ether Euro (ETE)
- Micro Ether Euro (EEM)
- Spot-Quoted Ether (QETH)**
- Ether/Bitcoin Ratio (EBR)
- SOL (SOL)
- Micro SOL (MSL)
- XRP (XRP)
- Micro XRP (MXP)

*Both futures and options are available.
**Spot-Quoted futures will launch on June 30, 2025, pending regulatory review.

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