

December 2024

Monthly Market Recap

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Market Performance

Santa Claus Rally Stumbles on Fed Outlook



Market Summary

Bitcoin surged to a new record high, with our CME CF Bitcoin Real Time Index briefly breaching \$108,000, fueled by \$6.1 billion in crypto-related fund inflows and regulatory optimism. However, the Federal Reserve's more hawkish stance at its December meeting, signaling a slower path for future rate cuts, triggered a sell-off in risk assets, including digital assets. Despite heightened volatility, crypto fund flows remained resilient, most notably into Ether ETFs. Discussions continued surrounding a U.S. strategic Bitcoin reserve, which highlights the increasing institutional and governmental acceptance of Bitcoin as a long-term store of value.

The CF DeFi Index emerged as the only index to finish the month in positive territory (+8.69%), rising as much as 38.6% mid-month before retracing lower. Conversely, the CF Blockchain Infrastructure Index and CF Digital Culture Index lagged, falling 17.1% and 14.8%, respectively, after sharp sell-offs in the latter half of the month. Year-to-date, the CF Ultra Cap 5 Index led with 103.79% growth, followed by the CF Free-Float Broad Cap Index (99.16%). The CF Digital Culture Index lagged, gaining just 30.61%.

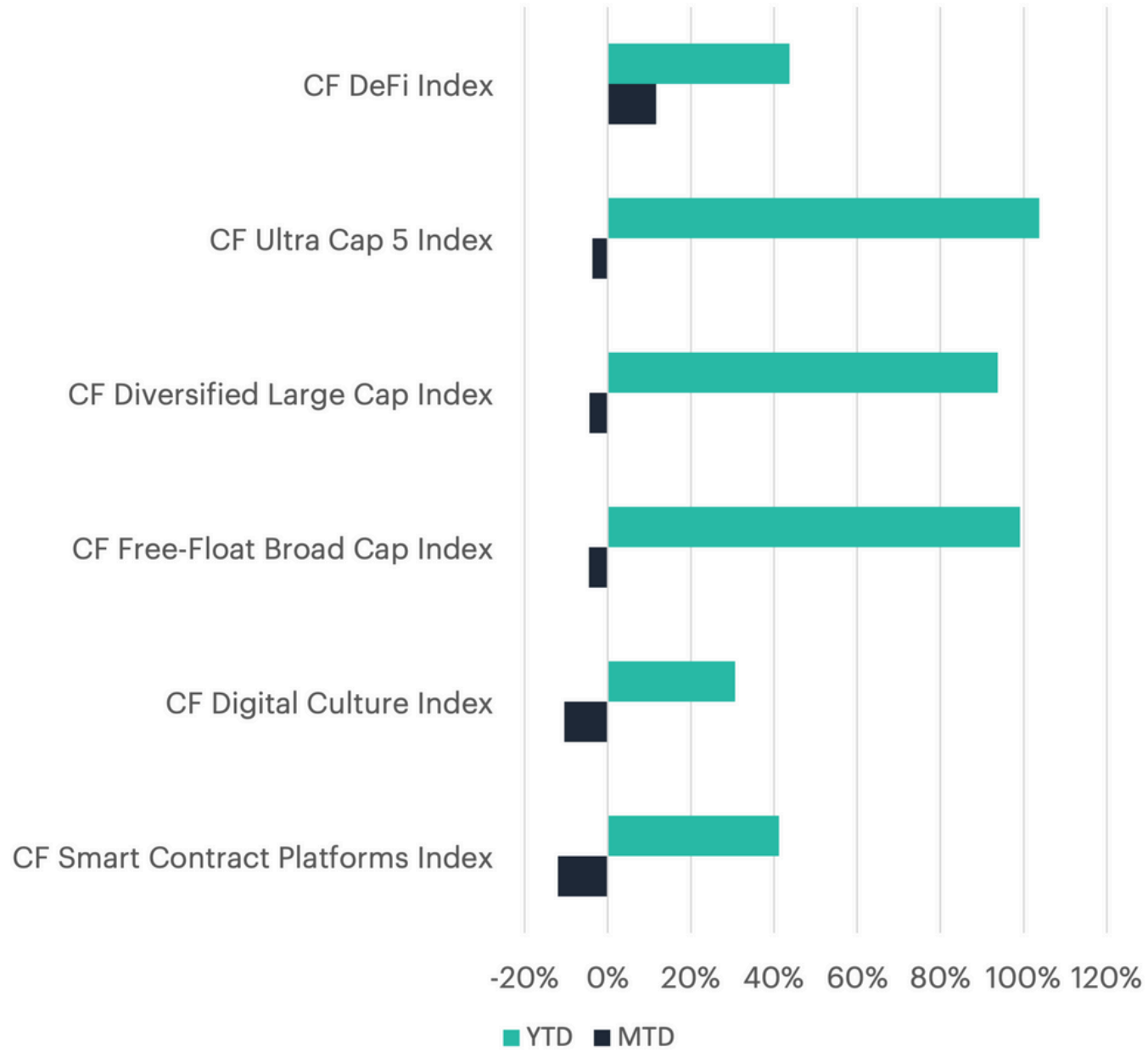


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Benchmark Performance



All index performance is rebased to 100.
Source: CF Benchmarks, Bloomberg, as of December 31, 2024

Major Crypto-Pairs



Name	Category	Sub-Category	Segment	1 Month	3 Month	1 Year	30 D Volatility
Synthetic	Sectors	Finance	Derivatives	78.8%	210.0%	40.9%	202.47
Hedera	Settlement	Programmable	General Purpose Smart Contract Platforms	57.5%	367.6%	212.1%	128.08
Aave	Sectors	Finance	Borrowing & Lending	45.3%	99.5%	183.7%	124.47
Curve DAO Token	Sectors	Finance	Trading	30.9%	221.9%	43.8%	140.43
Ripple	Settlement	Non-Programmable	Store of Value and Payment	9.0%	235.8%	238.4%	84.20
Chainlink	Services	Utility	Oracles	4.2%	66.6%	32.2%	112.39
Uniswap	Sectors	Finance	Trading	3.3%	76.7%	81.2%	102.36
Litecoin	Settlement	Non-Programmable	Store Of Value And Payment	0.6%	53.8%	40.6%	91.88
Bitcoin	Settlement	Non-Programmable	Store Of Value And Payment	-3.2%	46.9%	120.5%	37.07
Tezos	Settlement	Programmable	General Purpose Smart Contract Platforms	-7.2%	80.3%	28.0%	88.06
Ether	Settlement	Programmable	General Purpose Smart Contract Platforms	-10.1%	28.0%	46.6%	56.17
Chiliz	Sectors	Culture	Social	-13.3%	26.9%	-5.6%	146.60
EOS	Settlement	Programmable	General Purpose Smart Contract Platforms	-16.9%	48.4%	-9.0%	112.31
Bitcoin Cash	Settlement	Non-Programmable	Store Of Value And Payment	-17.1%	27.1%	67.3%	70.69
Apecoin	Sectors	Culture	Social	-19.5%	56.2%	-25.6%	109.63
Maker	Sectors	Finance	Stablecoin Issuance & Management	-20.0%	-5.1%	-12.3%	85.55
Avalanche	Settlement	Programmable	General Purpose Smart Contract Platforms	-20.5%	28.5%	-7.5%	99.54
Internet Computer	Settlement	Programmable	General Purpose Smart Contract Platforms	-20.8%	9.6%	-25.9%	99.33
Solana	Settlement	Programmable	General Purpose Smart Contract Platforms	-21.2%	22.9%	85.5%	59.78
Cardano	Settlement	Programmable	General Purpose Smart Contract Platforms	-22.1%	123.5%	41.4%	81.26
Ethereum Classic	Settlement	Programmable	General Purpose Smart Contract Platforms	-23.2%	28.2%	14.4%	100.03
Algorand	Settlement	Programmable	General Purpose Smart Contract Platforms	-24.8%	148.8%	45.3%	111.08
Polygon	Services	Infrastructure	Scaling	-25.3%	12.6%	-54.1%	82.71
Cosmos	Settlement	Programmable	General Purpose Smart Contract Platforms	-25.4%	33.1%	-42.8%	126.51
Dogecoin	Settlement	Non-Programmable	Store Of Value And Payment	-25.9%	167.4%	253.5%	75.51
Polkadot	Settlement	Programmable	General Purpose Smart Contract Platforms	-26.6%	47.2%	-19.6%	98.56
Decentraland	Sectors	Culture	Vr And Ar	-28.4%	54.4%	-10.5%	105.03
Filecoin	Services	Utility	Information & Data Management	-30.1%	26.6%	-28.6%	105.50
Stacks	Services	Infrastructure	Computing	-34.8%	-16.7%	2.1%	104.82
Fantom	Settlement	Programmable	General Purpose Smart Contract Platforms	-36.4%	-4.5%	43.3%	123.02
Stellar	Settlement	Non-Programmable	Store Of Value And Payment	-36.8%	237.0%	157.3%	114.47

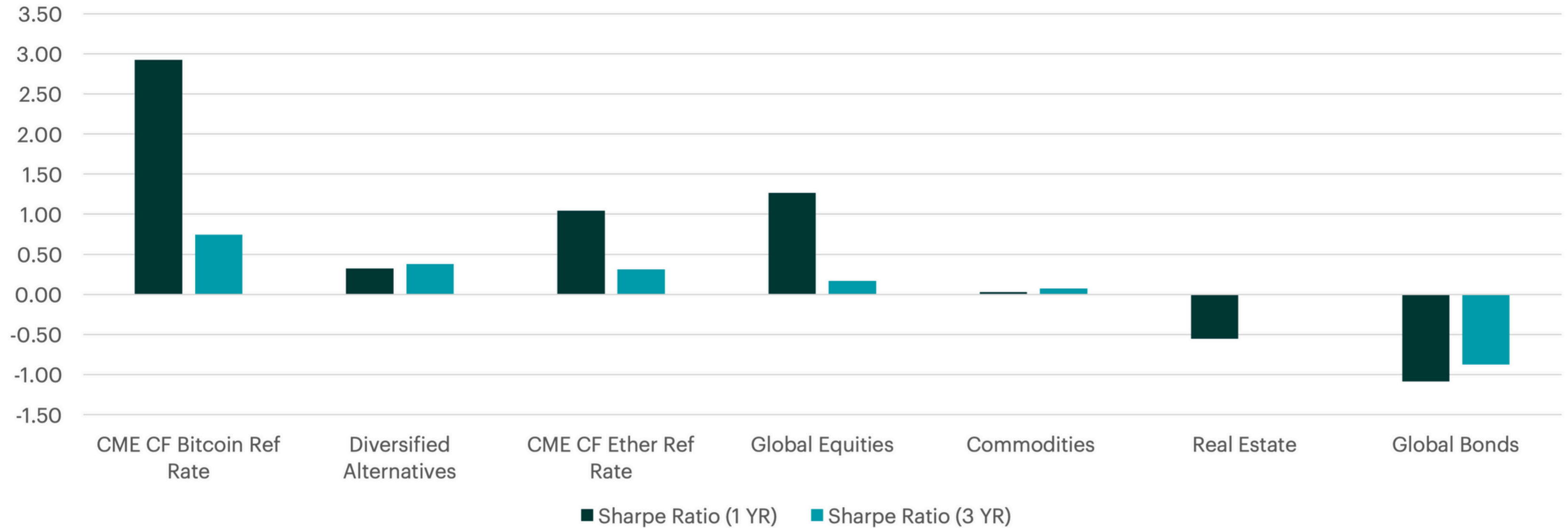
Leaders

Synthetic (SNX) led the gains with a 78.8% increase after launching multi-collateral perpetuals on Base, which boosted its TVL and DEX volumes. Hedera (HBAR) followed with a 57.5% gain, driven by a partnership with SpaceX for space data management and a collaboration with Chainlink to provide secure on-chain data feeds for DeFi developers.

Laggards

Stellar (-36.8%) and Fantom (-36.4%) underperformed this month as investors shifted away from small-cap tokens following Bitcoin's mid-month correction.

Trailing Risk-Adjusted Returns

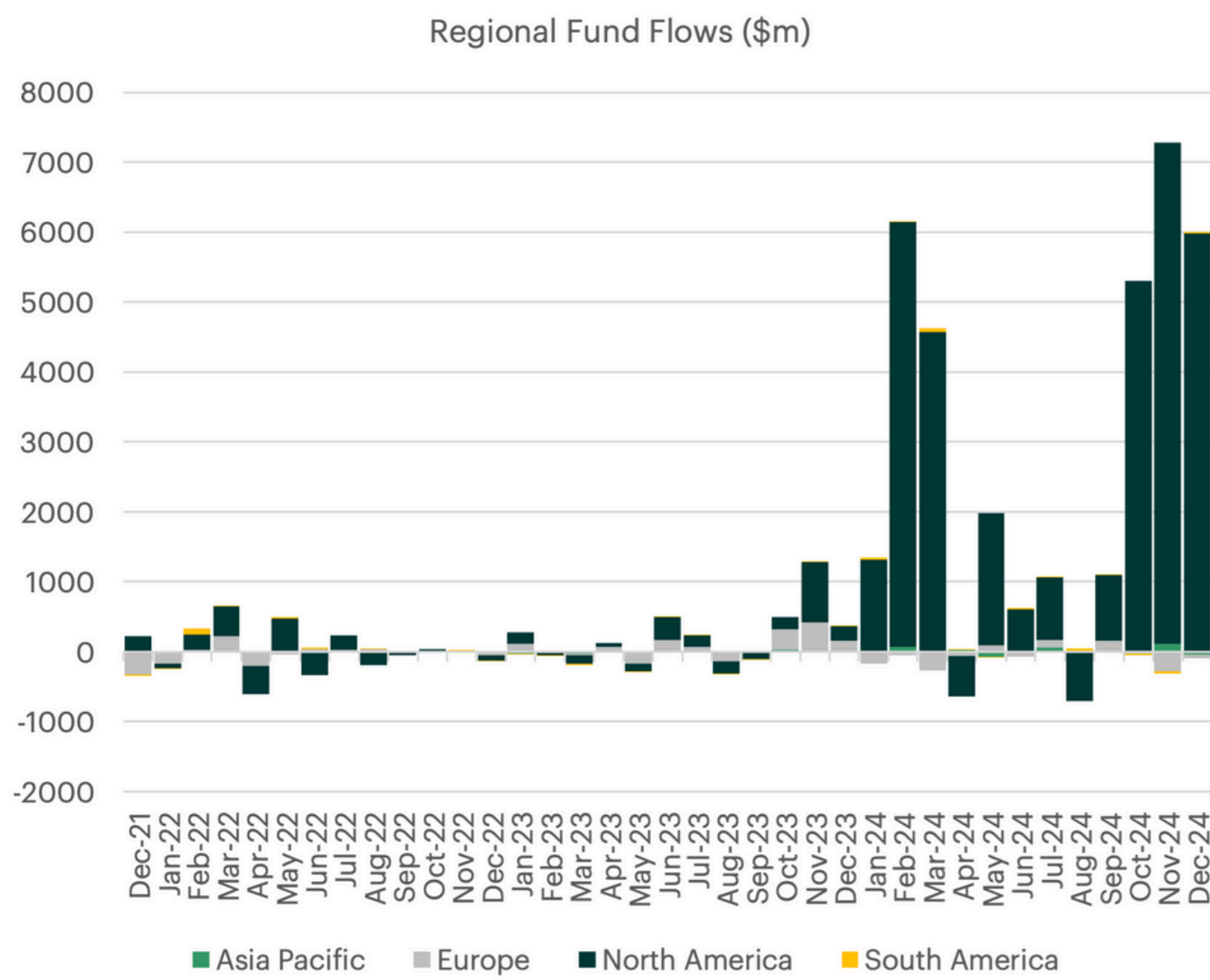
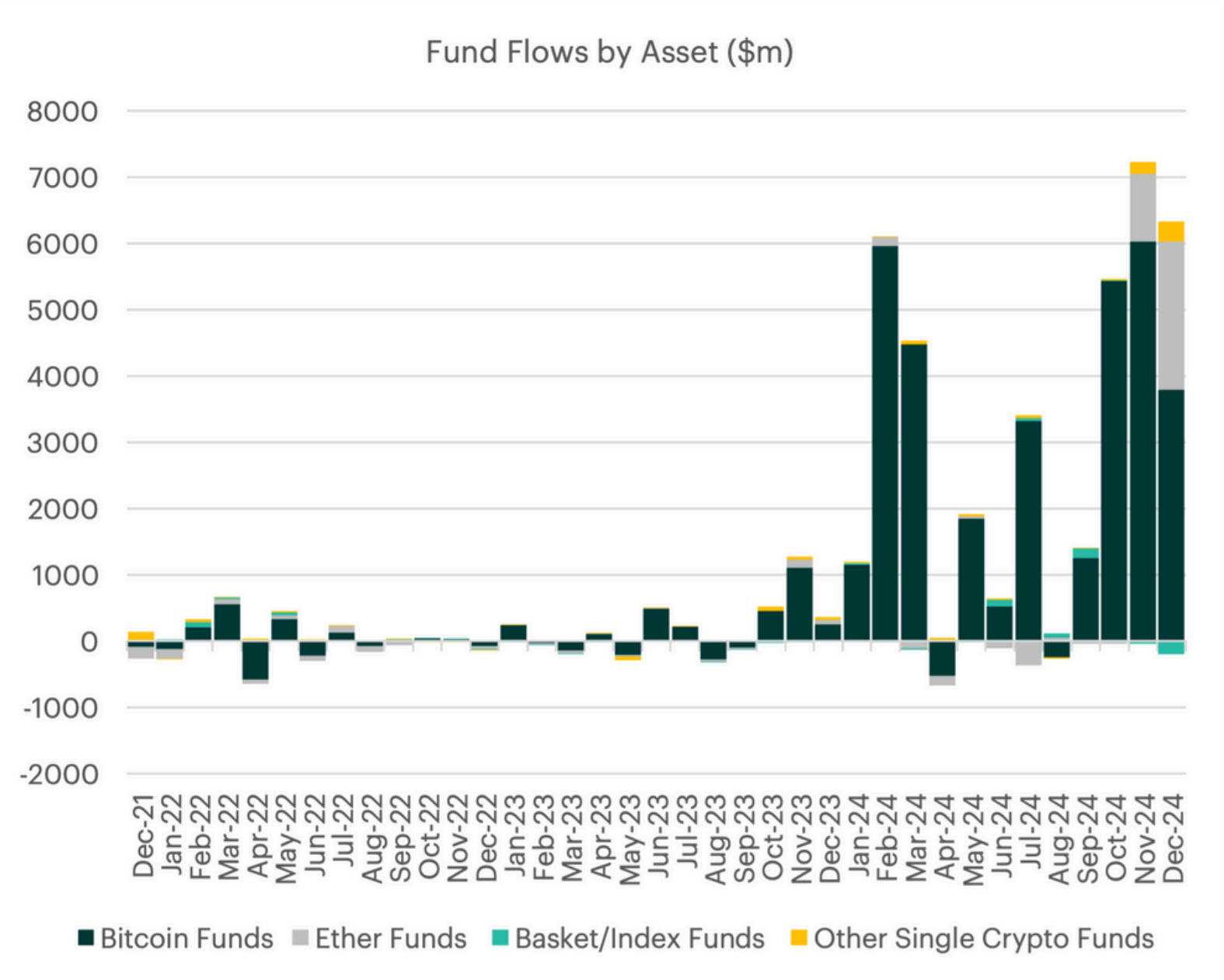


- When compared to traditional asset classes, both Bitcoin and Ether have delivered above average risk-adjusted performance over both shorter and longer time horizons.

Source: CF Benchmarks, Bloomberg, total return indices are referenced in USD, as of December 31, 2024

Investor Activity & Sentiment Positioning

Currency of Flows

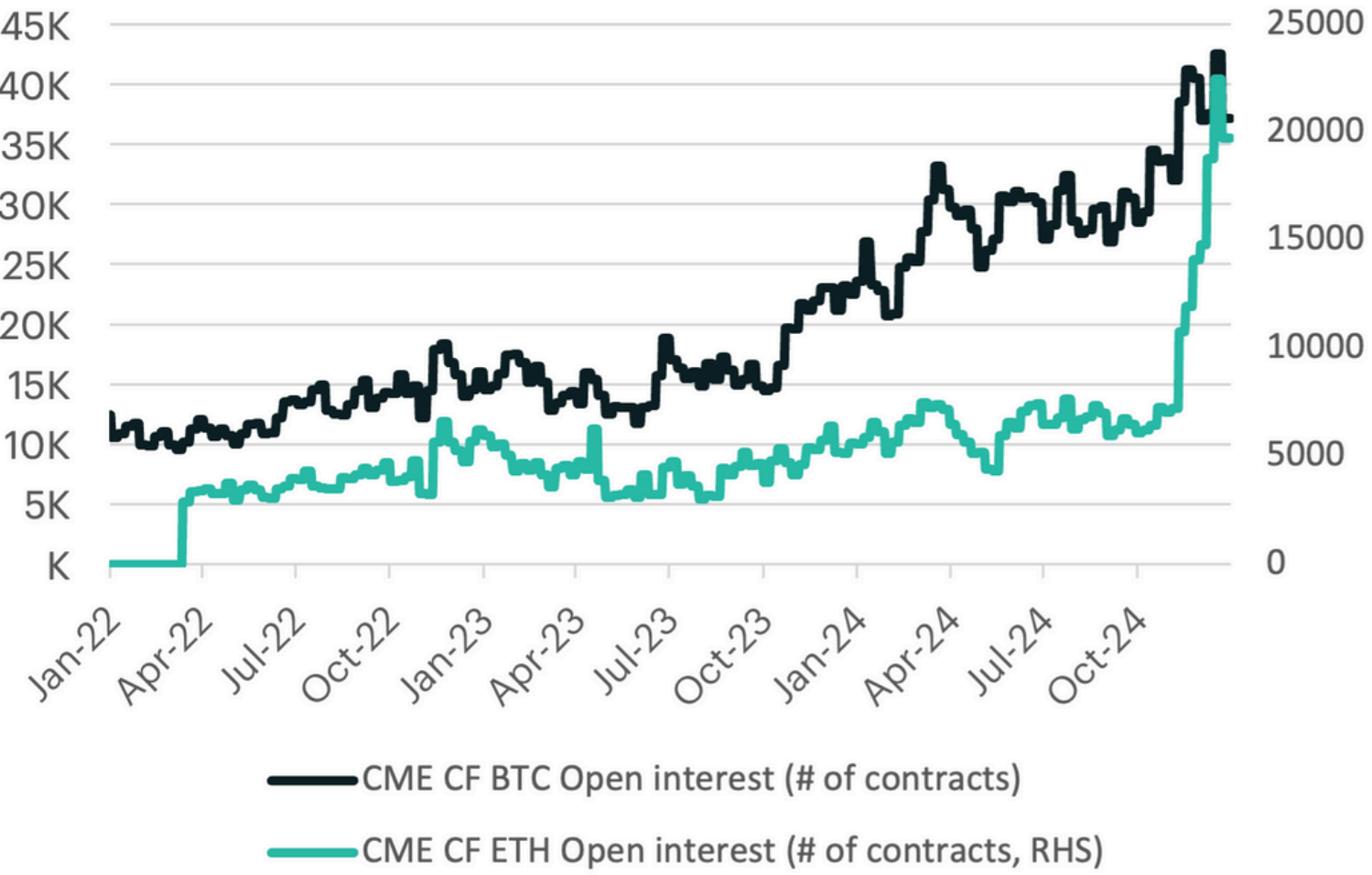
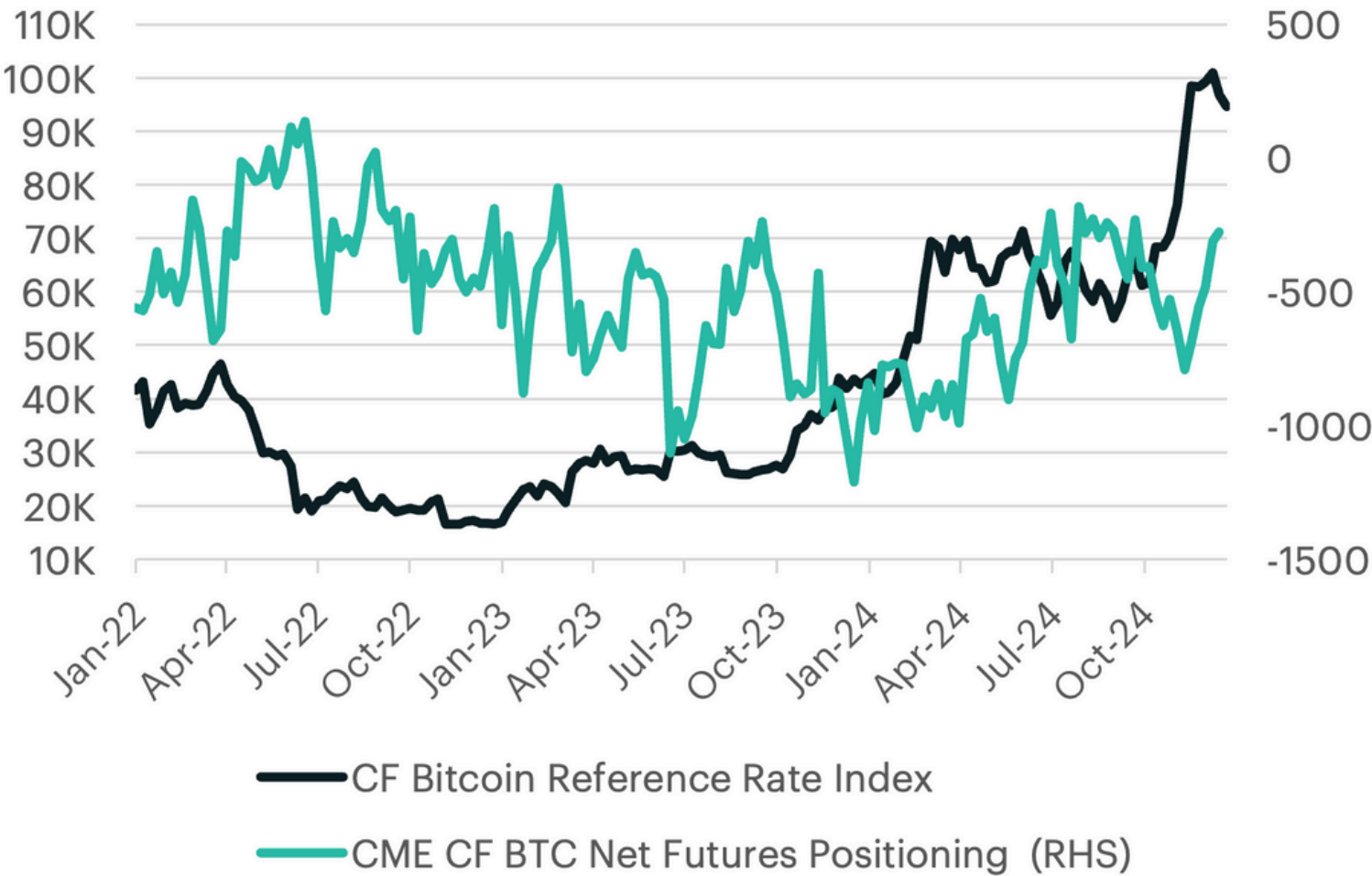


- Fund flows into digital assets continued in December, with investors allocating over \$6.1 billion. Ether saw record-breaking monthly fund flows, surpassing the \$2 billion mark for the first time.

- From a regional perspective, fund inflows remained concentrated in North America (\$6.0 billion), while the South America region saw investor demand recover modestly (\$32 million).

Source: CF Benchmarks, Bloomberg, as of December 31, 2024

Futures Positioning and Open Interest

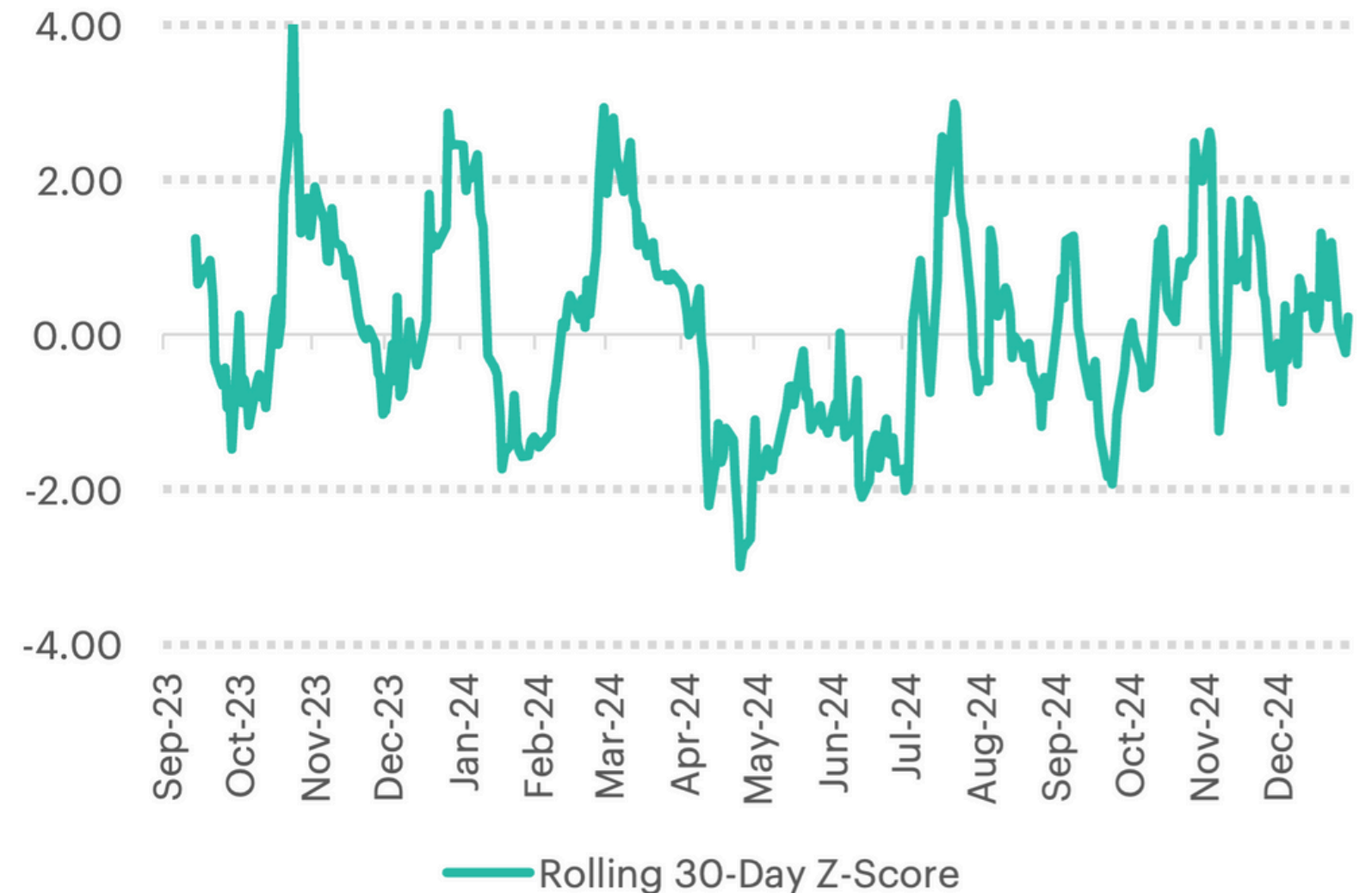


- Net sentiment positioning in Bitcoin increased in December, with long positions outpacing shorts. This resulted in net futures positioning on the CME increasing to -275 from -627 contracts.

- Total open interest in CME Ether futures continued to grow in December, increasing by nearly 40% from the previous month and reaching new all-time highs. Bitcoin futures open interest also hit record highs earlier in the month but ended December with a modest decline of 8.4%.

Source: CF Benchmarks, CFTC, Bloomberg, as of December 31, 2024

CF Bitcoin Volatility Index (BVX)

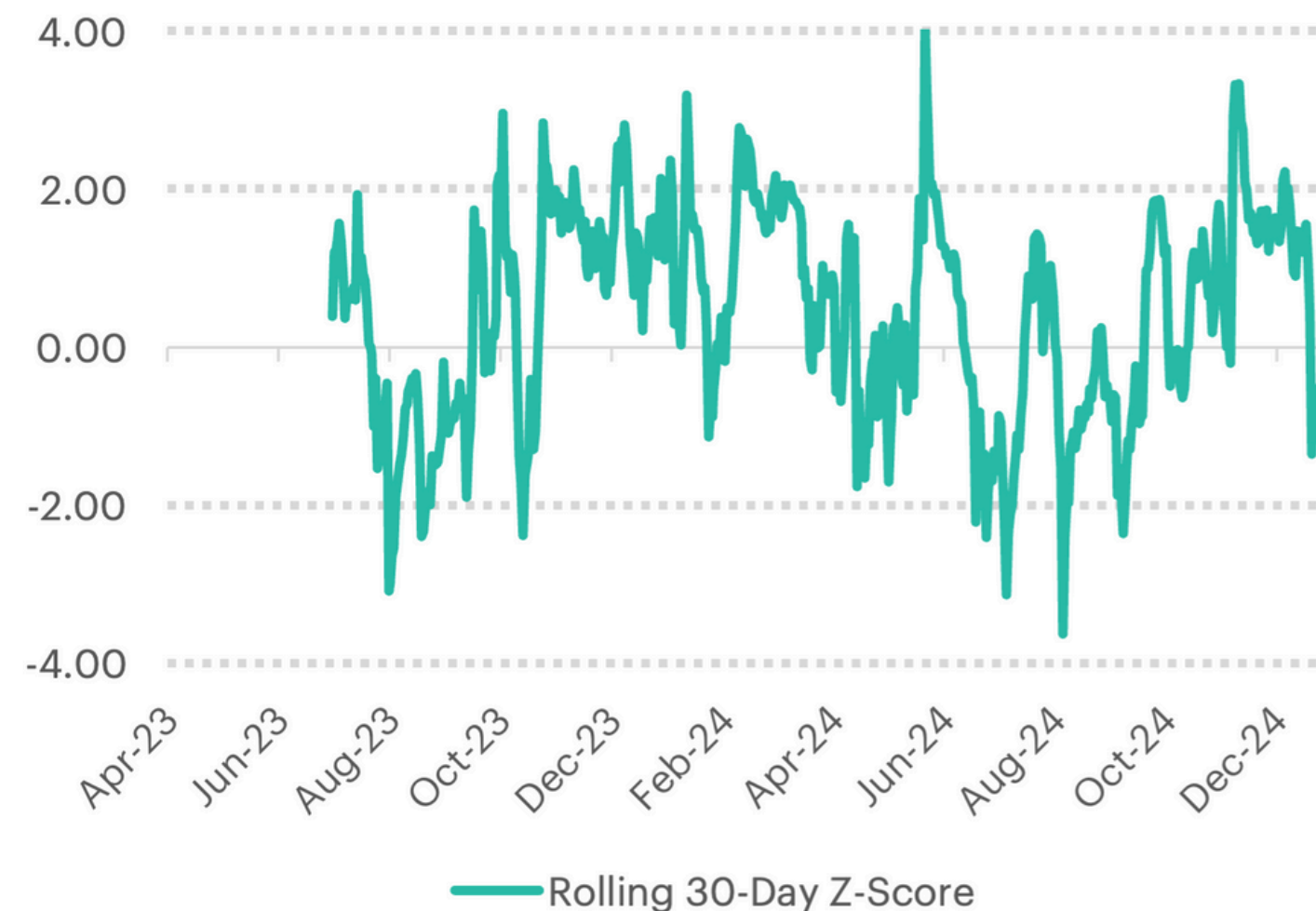
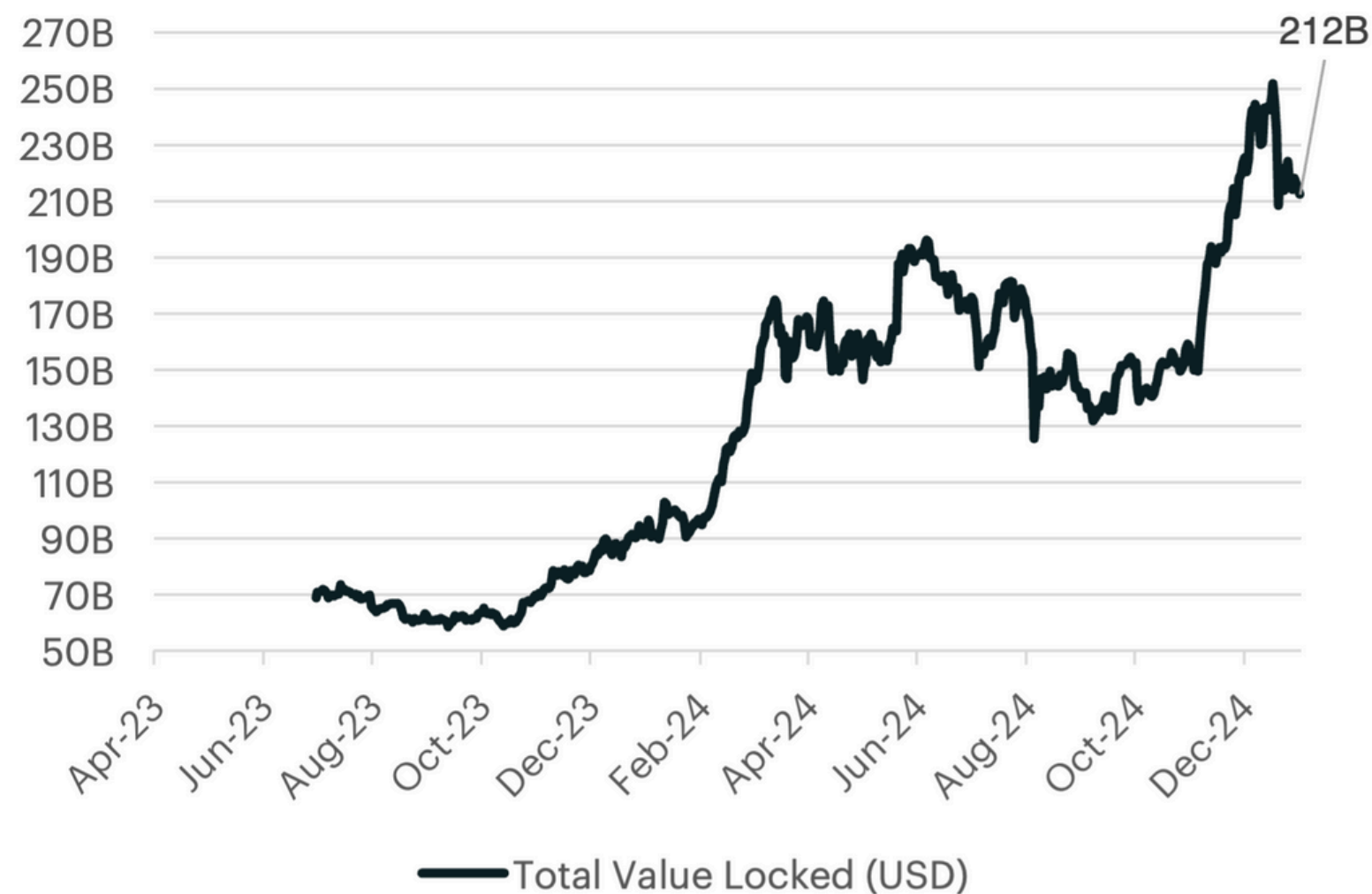


- The CF Bitcoin Volatility Index Settlement Rate (BVXS) is a once a day benchmark representing a forward looking, 30-day constant maturity measure of implied volatility based on CFTC regulated Bitcoin option contracts traded on the CME. The BVX represents the fair strike of a variance swap.
- Over the past month, the BVX fluctuated between a low of 58.13 and a high of 64.66. This period experienced a slight increase in volatility, with the index registering a 0.22 sigma move (as measured by our rolling 30-day z-score) near the end of the month, following its monthly low on December 4.

Source: CF Benchmarks, Bloomberg, as of December 31, 2024

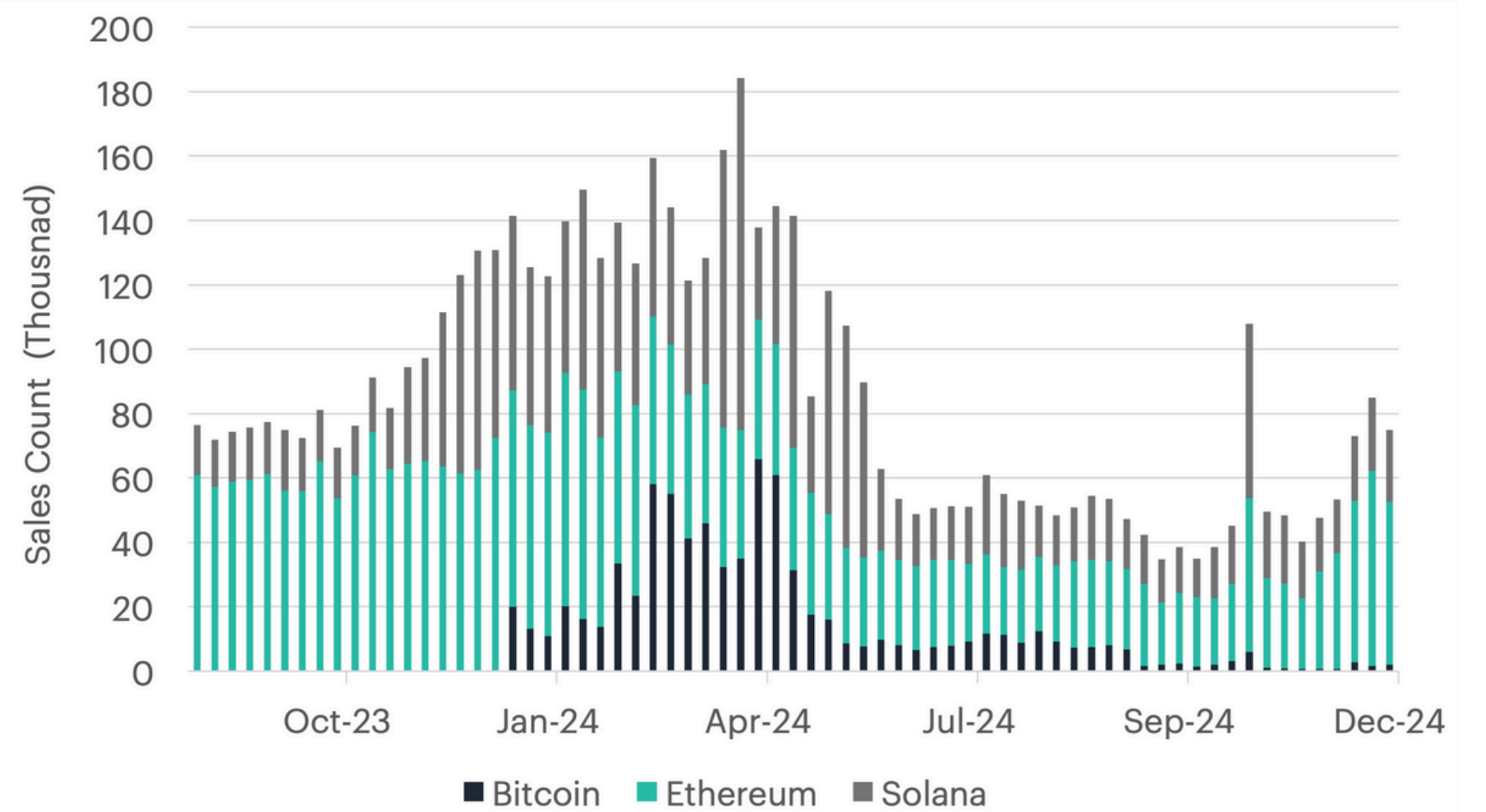
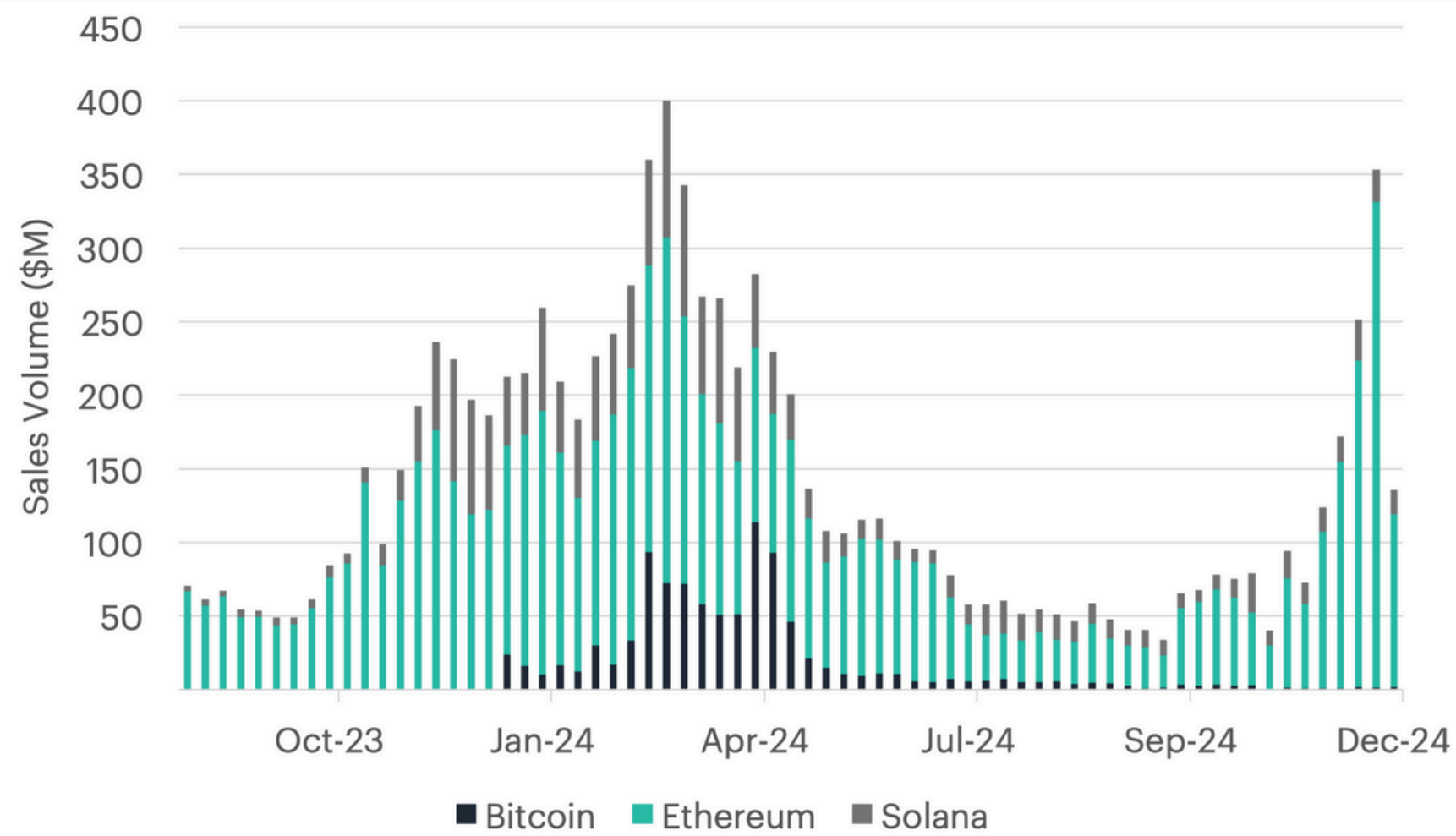
Network Fundamentals & Reward Rates

Total Value Locked (TVL) in DeFi Protocols



- TVL (Total Value Locked) in DeFi represents the total amount of assets deposited in decentralized finance protocols expressed in USD. It serves as a key metric to gauge the health and growth of the DeFi ecosystem.
- Total Value Locked (TVL) in decentralized finance (DeFi) protocols decreased by 4.3% over the past month, dropping to approximately \$214 billion. This decline was largely attributed to the reduced value of tokens locked in liquid staking protocols on Ethereum and Solana.

Weekly NFT Sales by Blockchain

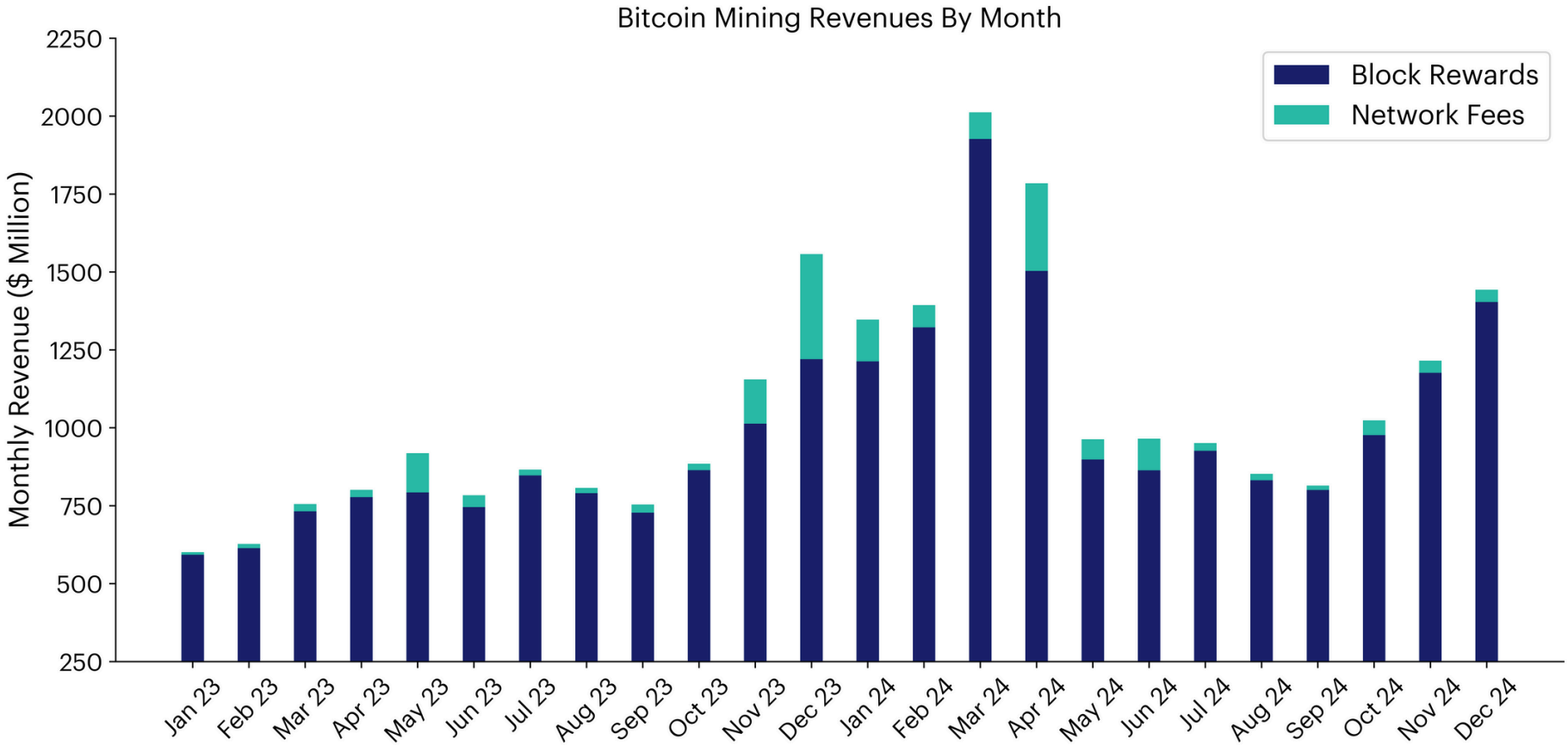
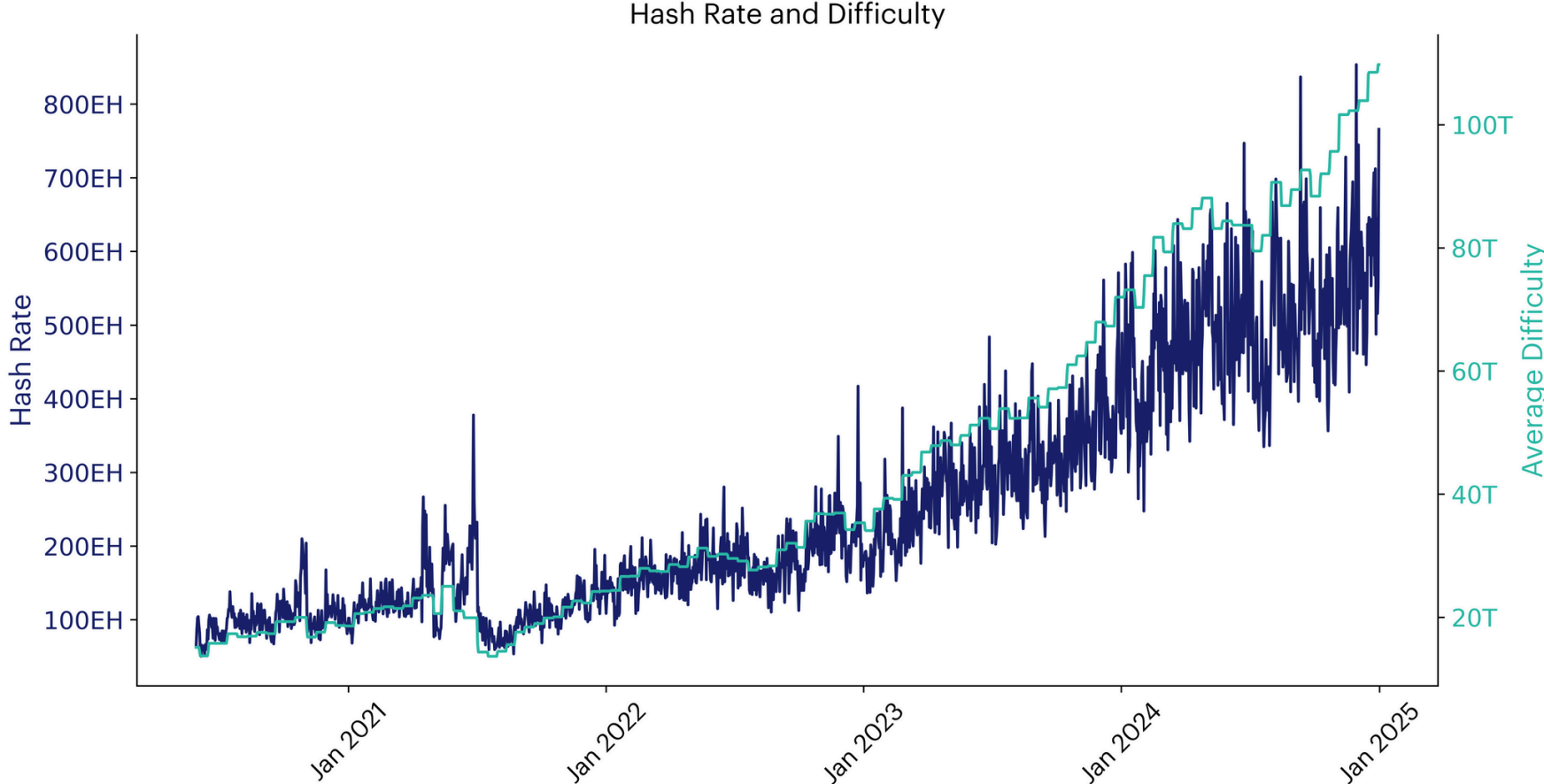


- In December, Ethereum secured the top position on the NFT sales volume leaderboard, recording a 107% increase in volume. This surge was driven by heightened trading activity ahead of the highly anticipated PENGU airdrop, which led to an 85.4% rise in transaction counts.
- The Bitcoin network also saw impressive growth, with sales volumes increasing by 72.7% as the number of transactions surged by 112%. Meanwhile, Solana's sales volume rose by 39.1%, accompanied by a 7.2% uptick in transaction count.

Source: CF Benchmarks, Dune Analytics, as of December 31, 2024

Mining Metrics

Bitcoin's Hash Rate & Mining Revenue

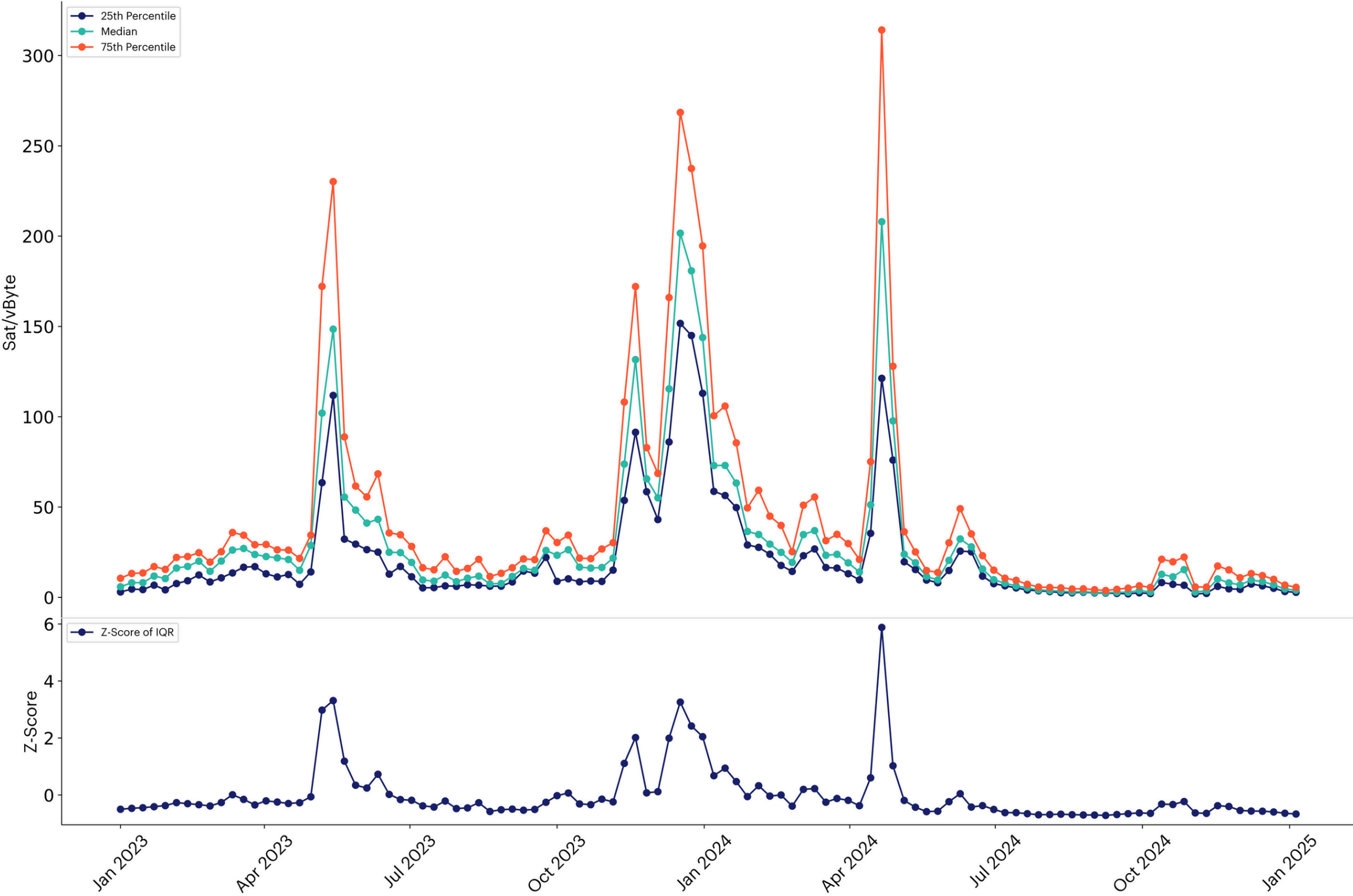


- Bitcoin's average monthly hash rate increased in December, rising by 2.5% to reach 594 exahashes per second. Mining difficulty, which measures the computational effort required to mine a new block and adjusts to ensure consistent block creation times, climbed by 7.3% over the month. The next difficulty adjustment is anticipated in the second week of January.

- Bitcoin's price increase led to a 19.3% rise in mining revenues in December. Of the total miner rewards for the month, 2.7% came from fees, a decrease from 3.2% in November. Despite a continued decline in on-chain activity, the price gains boosted miners' earnings to their highest levels since the April halving.

Source: CF Benchmarks, Dune Analytics as of December 31, 2024

Bitcoin Network Fees



- As Bitcoin’s block subsidy decreases, network fees make up a larger share of miners’ revenue. The behavior of these fees, especially during periods of high demand for block space, can provide insights into the sustainability of fee increases.
- The data shows that during periods of high demand, the 75th percentile transaction fees surge significantly higher than the median and 25th percentile fees, indicating a subset of transactions paying much higher fees to ensure prompt inclusion in blocks.
- When the Z-score of the interquartile range exceeds 2, it signals substantial increases in the 75th percentile relative to the 25th percentile, highlighting times of significant network congestion and temporarily elevated fees.

Source: CF Benchmarks, Dune Analytics, as of December 31, 2024

Bitcoin Mining Matrix



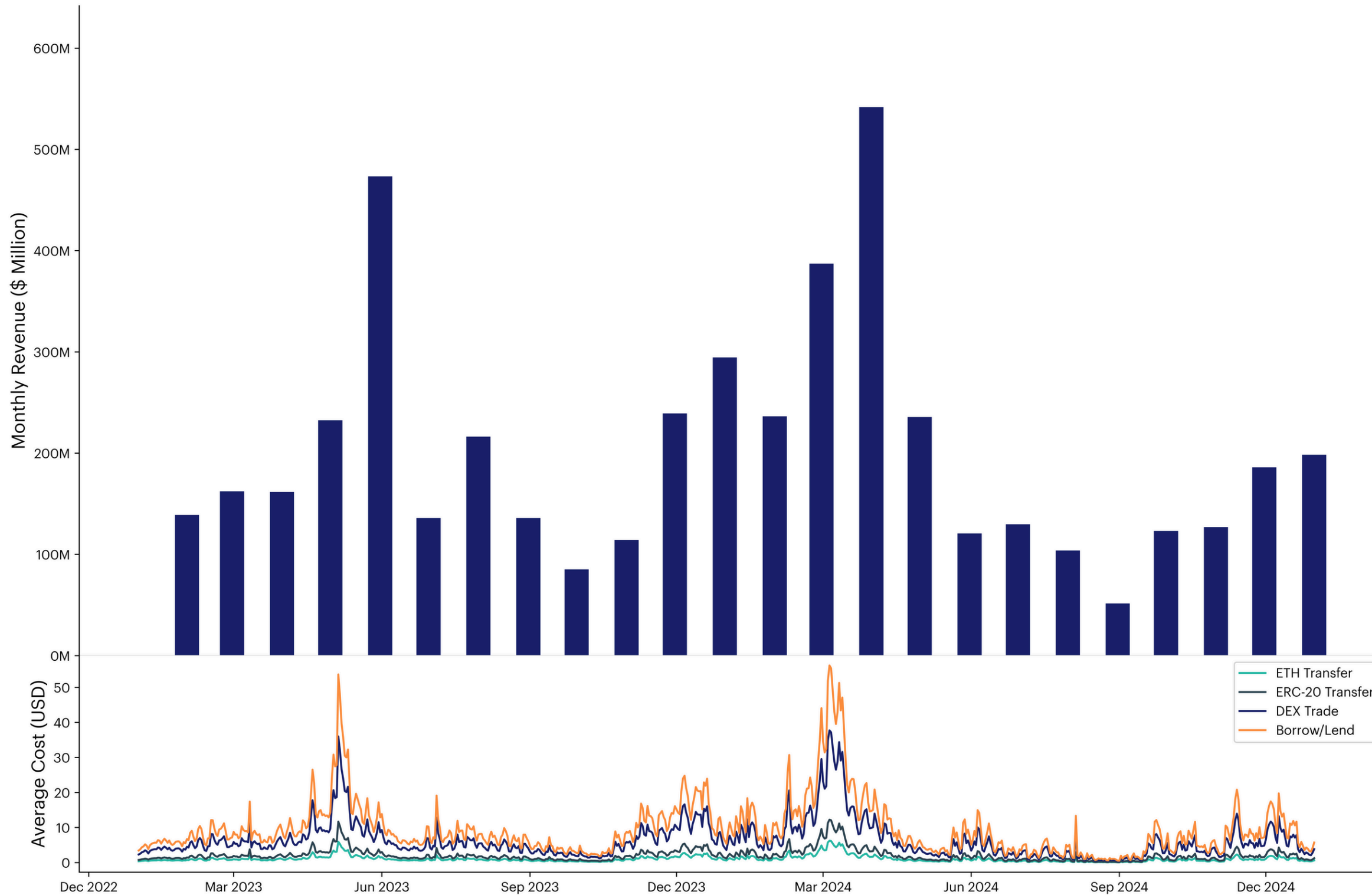
		Bitcoin Price (USD)								
		\$76,343.96	\$80,362.06	\$84,591.64	\$89,043.83	\$93,730.35	\$98,416.87	\$103,337.71	\$108,504.60	\$113,929.83
Efficiency (Watts /TH)	34.0	\$54.34	\$57.20	\$60.21	\$63.38	\$66.72	\$70.05	\$73.55	\$77.23	\$81.09
	29.5	\$62.63	\$65.93	\$69.40	\$73.05	\$76.89	\$80.74	\$84.77	\$89.01	\$93.46
	24.0	\$76.98	\$81.03	\$85.30	\$89.79	\$94.51	\$99.24	\$104.20	\$109.41	\$114.88
	21.5	\$85.93	\$90.46	\$95.22	\$100.23	\$105.50	\$110.78	\$116.32	\$122.13	\$128.24
	18.5	\$99.87	\$105.13	\$110.66	\$116.48	\$122.61	\$128.74	\$135.18	\$141.94	\$149.04
	17.5	\$105.58	\$111.13	\$116.98	\$123.14	\$129.62	\$136.10	\$142.91	\$150.05	\$157.55
	15.0	\$123.17	\$129.66	\$136.48	\$143.66	\$151.22	\$158.78	\$166.72	\$175.06	\$183.81
	13.5	\$136.86	\$144.06	\$151.64	\$159.62	\$168.03	\$176.43	\$185.25	\$194.51	\$204.24

- The following sensitivity table illustrates the revenue a miner will generate per megawatt hour consumed at the current difficulty, considering different levels of miner efficiency and varying Bitcoin prices, providing a comprehensive view of potential earnings under different market conditions. The table is color-coded to reflect profitability based on the 10th percentile industrial electricity rate in the United States of \$63.10 per MWh, as reported by the EIA in October 2024.
- This table helps miners compare revenues under various operational conditions, aiding in evaluating the useful life of their equipment. By comparing projected revenues at different Bitcoin prices to electricity costs, miners can determine whether they can continue running their current fleet or if they need to upgrade to maintain profitability.
- As income per MWh increases, miners are more likely to fund additional capital expenditures, which can increase the overall network hashrate. However, this increase in hashrate can subsequently reduce the income each individual miner earns.

Source: CF Benchmarks, Dune Analytics, as of December 31, 2024
 EIA.gov as of October 31, 2024

Network & On-chain Updates

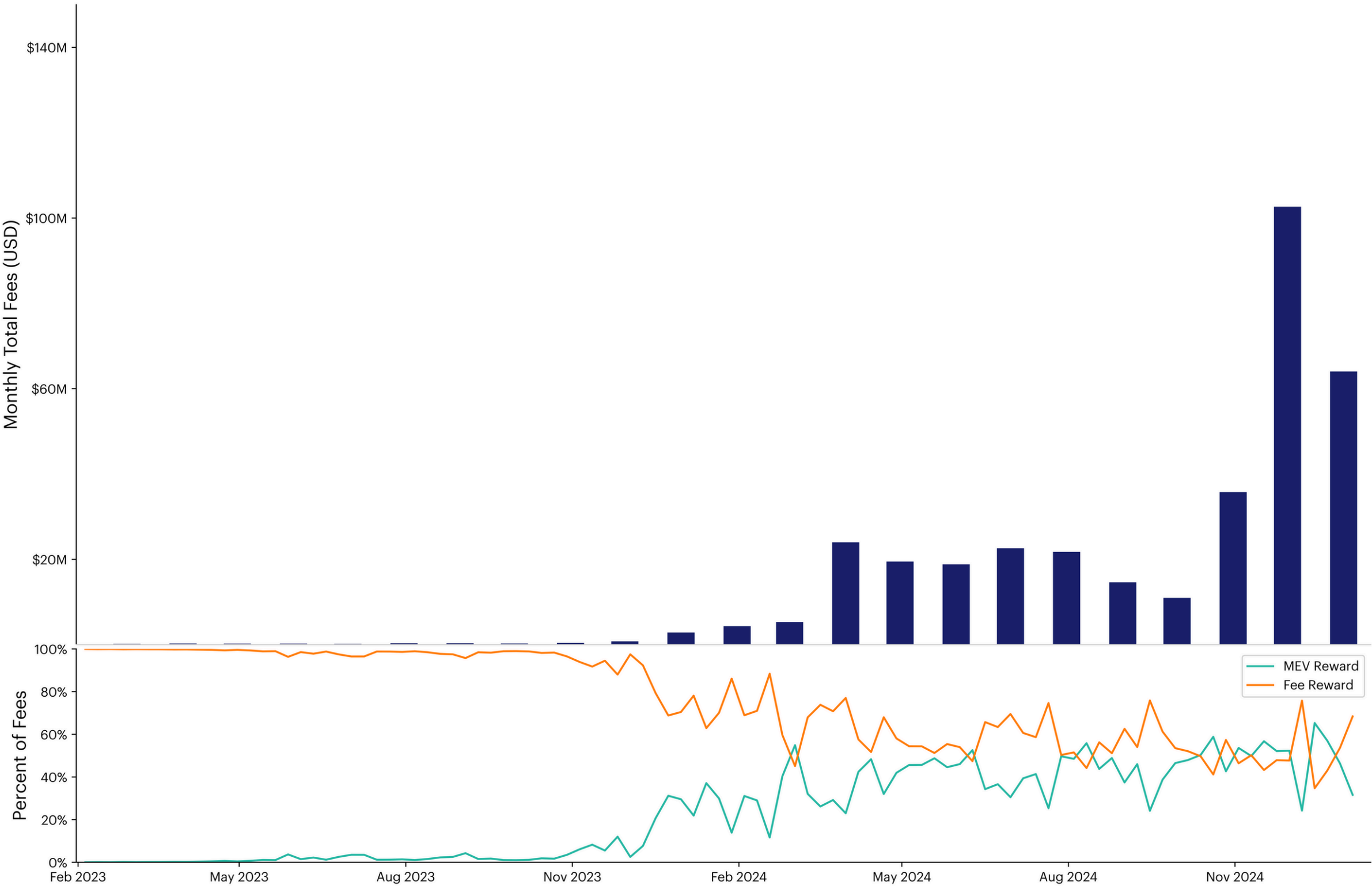
Ethereum Network Fees & Revenue



Source: CF Benchmarks, Dune Analytics as of December 31, 2024

- Ethereum's block space is the capacity to include transactions in each block. When more transactions are posted to the blockchain than can be processed, fee rates increase as users compete to have their transactions included in the next block.
- By comparing average fee rates to total fee revenue, we can evaluate Ethereum's scalability. If fee rates remain low while total revenue remains stable or increases, it indicates effective scaling.
- In December, total fees paid on the Ethereum network rose by 6.7% from the previous month, reaching \$198.4 million. While total fees grew, the 10% decline in average fees per interaction suggests that the network's throughput continues to grow.

Solana Network Fees & Revenue



- Solana’s block space is the capacity to include transactions in each block. When more transactions are posted to the blockchain than can be processed, fee rates increase as users compete to have their transactions included in the next block.
- By analyzing the percentage of fees derived from MEV (Maximum Extractable Value) versus base fees, we can gauge the health of Solana's fee market. A higher proportion of MEV fees may indicate increasing competition and demand for block space.
- In December, total fees paid on the Solana network fell -37.6% from the previous month to \$64.0 million. MEV accounted for approximately 53.3% of the total fees, reflecting strong demand for block space driven by competitive on-chain activities.

Source: CF Benchmarks, Dune Analytics as of December 31, 2024

Staking Rewards & Inflation Rates



Network	Staking Reward Rate	Inflation Rate	Participation Rate	Real Reward Rate
Ethereum <i>(1-Month Change)</i>	2.92% <i>0.01%</i>	0.16% <i>-0.06%</i>	28.13% <i>-0.16%</i>	2.76% <i>0.07%</i>
Solana <i>(1-Month Change)</i>	6.84% <i>0.33%</i>	5.69% <i>0.40%</i>	65.98% <i>0.26%</i>	1.15% <i>-0.07%</i>
Cardano <i>(1-Month Change)</i>	2.69% <i>0.02%</i>	2.01% <i>-0.02%</i>	60.21% <i>-2.28%</i>	0.68% <i>0.04%</i>

- The reward rate for a Proof of Stake (PoS) blockchain represents the annual return validators earn for staking their tokens, often expressed as a percentage. This rate is determined by factors such as the total number of staked tokens, the network's overall staking yield, and any additional incentives provided by the blockchain protocol.
- Inflation rate and staking participation rate significantly influence real staking rewards. A higher inflation rate typically increases the nominal reward rate but can dilute the value of staked tokens, resulting in lower real returns. The staking participation rate, which is the proportion of tokens being staked, also impacts rewards: as more tokens are staked, the rewards per validator may decrease, potentially lowering individual returns but contributing to network security and decentralization.

Appendix

CF Digital Asset Classification Structure



CF Digital Asset Classification Structure



The CF Digital Asset Classification Structure (CF DACS) classifies coins and tokens based on the services that the associated software protocol delivers to end users, grouping assets by the role they play in delivering services to end users. The CF DACS powers CF Benchmarks' sector composite and category portfolio indices and allows users to perform attribution analysis to better understand the fundamental drivers of returns within their digital asset portfolios.

CF Digital Asset Classification Structure



Additional Resources

For more information about our CF Benchmark indices and our methodologies, please visit the respective web links below:

- [CF Diversified Large Cap Index](#)
- [CF DeFi Composite Index](#)
- [CF Web 3.0 Smart Contract Platforms Index](#)
- [CF Digital Culture Composite Index](#)
- [CF Blockchain Infrastructure Index](#)
- [CF Cryptocurrency Ultra Cap 5 Index](#)
- [CF Broad Cap Index Market Cap Weight](#)
- [CF Broad Cap Index Diversified Weight](#)

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