



The Weekly Hash, 1/3/22

Miner Economics Normalizing, While Speculative Net Length on CME Improves to Short 39 Lots

Bitcoin dropped 6.8% week-on-week (WoW), settling at \$47,352 as of midnight UTC on 1/2. Christmas day's reset saw a minor difficulty increase of 0.32%, equivalent to a target Hashrate of ~174 EH/s. Over the past week, most bitcoin miners underperformed Bitcoin, with just Iris and Terawulf up in absolute terms.

The ProShares BITO ETF trails BTC by 2.1% since fund inception; the fund launch correlates strongly with increased CME open interest, as AUM increased rapidly in the first week from launch. Share count has held fairly steady since then at 40.1mm shares, indicating minimal fund flows, in or out.

The CME Futures curve has flattened all the way through June. Current open interest fell 13% WoW to 10,677 lots. The Commitment of Traders data from 12/21 shows that spreading positions increased, while commercial players reduced their longs. The non-commercial player net length on the CME is now short 39 lots, compared with short 257 lots two weeks prior and short 729 lots (the 2021 low) just before Thanksgiving (11/23).

Total BTC earnings per PH/s are ~5.23 mBTC, unchanged from last week's (1mBTC or milliBTC = 1/1000 BTC). Transaction fees remain at 0.9% of miner rewards, or 0.06 BTC per block. The "Mempool" shows low congestion levels, with 3,473 pending transactions. We continue to assess congestion will likely stay low for a while.

Bitcoin mining revenue fell to \$248 / PH/s per day and \$270/MWh, owing to a lower

BTC price, low Tx fees and modestly higher network Hashrate. Our YE 2022 Hashrate estimate remains 334EH/s, although we plan to update our network Hashrate forecasts shortly.

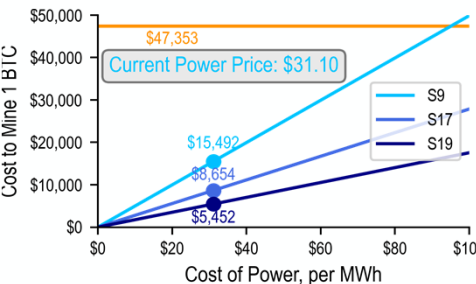
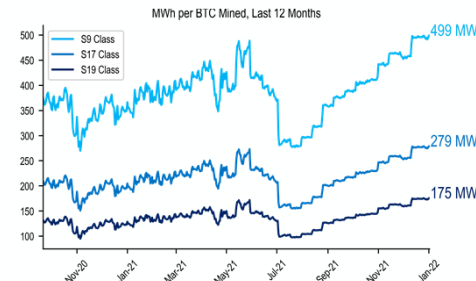
The BitOoda North American Hash Spread™ fell 10.0% from \$265 to \$239.

We define the BitOoda Hash Spread™ as the difference between the cost of power per MWh and the Bitcoin mining revenue per MWh. This gives miners a quick sense of the surplus generated by their business to cover personnel, overhead, depreciation, and profit. The weighted average around the clock U.S. wholesale industrial power price (5 markets) of \$31.10 / MWh leads to an aggregate spread of \$239.

| | S9 Class | S17 Class | S19 Class |
|--------------|----------|-----------|-----------|
| Hash Spread | \$64 | \$139 | \$239 |
| Week on Week | -17.8% | -12.2% | -10.0% |

Older-gen S9-class devices saw their Hash Spread™ down ~18% to \$64/MWh. S17-class devices, the bulk of the installed base, saw a hash spread of about \$139/ MWh.

It now takes 175 MWh to mine 1 BTC using S19-class rigs, while S17-class machines would consume 279 MWh, and S9-class, 499 MWh. This translates into \$5,452 in power expense to mine 1 BTC with S19 class rigs, and \$15,492 using S9 rigs, a ~67% contribution margin, excluding labor.



Takeaways

- Mining margins are attractive, but are mean reverting
- Our recent YE 2022 Hashrate estimate remains ~334 EH/s, which needs to be considered when evaluating investment opportunities in the space
- Unsurprisingly, as a leveraged play on Bitcoin, most miners continue to underperform Bitcoin
- CME Futures net length improved to just short 39 lots
- Overall, it is still a good time to be a miner, but the excess returns of the past few months continue to normalize

Research

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BTC Price \$47,314
(1/3 at 10am EDT)

Obs Hashrate 167 EH/s

Bitcoin Miners 7 Day Performance

| | |
|---------------|--------|
| Terawulf | 2.6% |
| Iris Energy | 2.5% |
| S&P | -0.4% |
| Stronghold | -2.3% |
| Northern Data | -2.3% |
| Canaan | -3.5% |
| Bitcoin | -8.1% |
| Cipher | -9.2% |
| Mawson | -10.5% |
| Cathedral | -10.9% |
| Digihost | -11.8% |
| Hut8 | -12.0% |
| Riot | -12.6% |
| Ebang | -12.9% |
| Bit Digital | -13.1% |
| Greenidge | -13.8% |
| Bitfarms | -15.2% |
| Marathon | -15.4% |
| Hive | -16.1% |
| Argo | -17.4% |



BitOoda 2022 Hash Estimates

~334 EH/s by Year End

- On September 16, we estimated a ~198EH/s year end (YE) 2021 target Hashrate
- Since then, target Hashrate continues to recover, although it is slightly lower than we had expected at this point and currently stands at 173.7 EH/s
- Our prior estimates from 9/16/2021 have network target Hashrate hit 334 EH/s by year end 2022. We expect to update these estimates in the coming days.

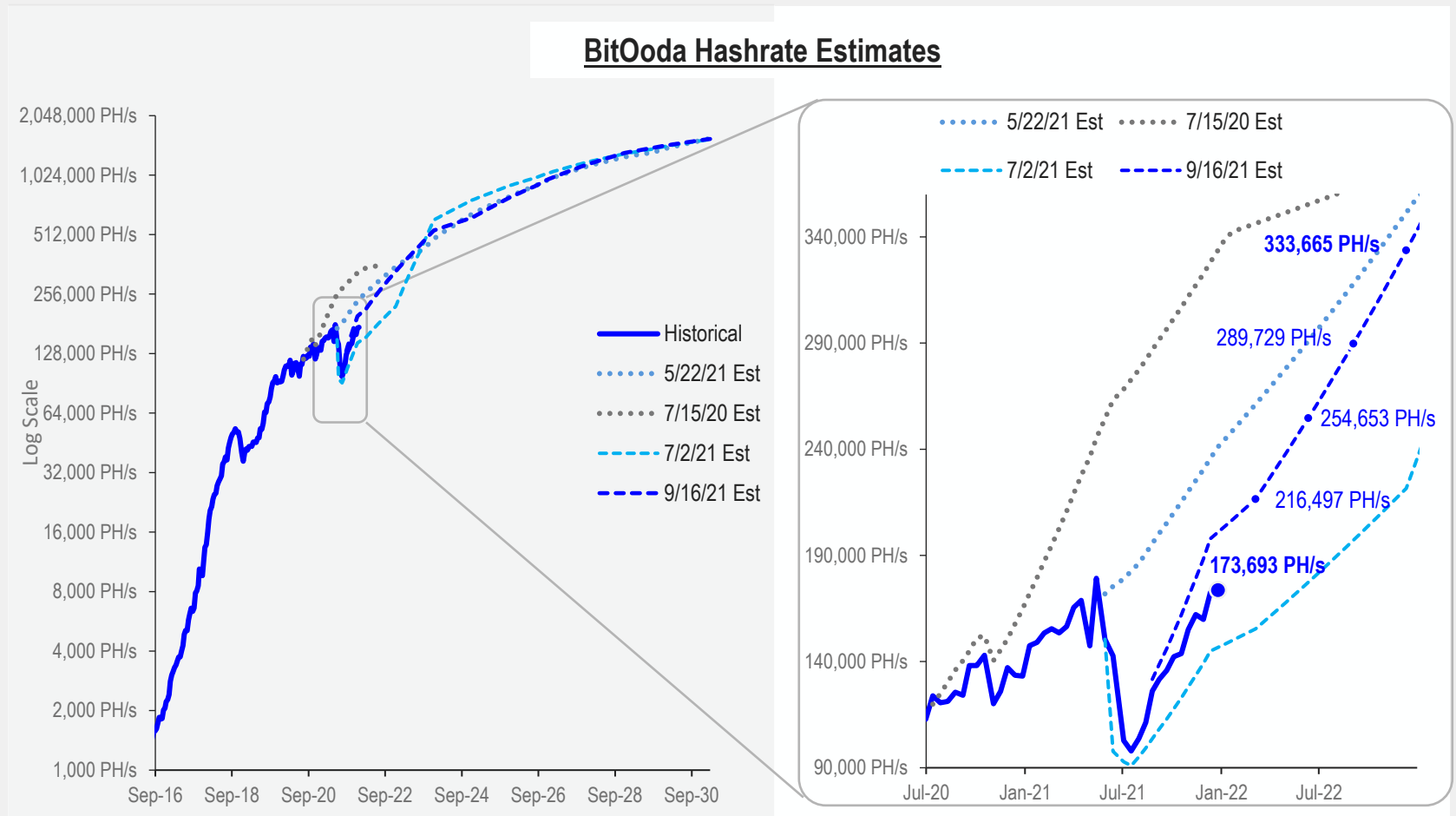


Figure: Historical and Estimated Target Hashrate 2017-2030
 Historical as of 12/25/21; Estimates as of 9/16/21, 7/2/21, 5/22/21, and 7/15/20

Source: BitOoda estimates, CoinMetrics

Bitcoin Miners: Performance Map

Year to Date Quarter to Date Month to Date 30 Day 7 Day 1 Day

| | | | | | |
|---------------------|---------------------|---------------------|------------------------|-----------------------|---------------------|
| | | | | | Digihost, 3.3% |
| | | | | | Northern Data, 2.3% |
| | | | | | Greenidge, 1.8% |
| | | | | | Marathon, 1.5% |
| | | | | | Riot, 1.2% |
| | | | | | Canaan, 0.8% |
| | | | | | Ebang, 0.6% |
| | | | | Terawulf, 2.6% | Iris Energy, 0.4% |
| | | | | Iris Energy, 2.5% | S&P, 0.1% |
| Digihost, 3.3% | Digihost, 3.3% | Digihost, 3.3% | | | Bitfarms, 0.1% |
| Northern Data, 2.3% | Northern Data, 2.3% | Northern Data, 2.3% | Greenidge, 20.7% | S&P, (0.4%) | Argo, 0.1% |
| Greenidge, 1.8% | Greenidge, 1.8% | Greenidge, 1.8% | Iris Energy, 5.2% | Stronghold, (2.3%) | Cathedra, 0.0% |
| Marathon, 1.5% | Marathon, 1.5% | Marathon, 1.5% | S&P, 5.1% | Northern Data, (2.3%) | Terawulf, (0.1%) |
| Riot, 1.2% | Riot, 1.2% | Riot, 1.2% | Digihost, 4.2% | Canaan, (3.5%) | Bit Digital, (1.0%) |
| Bitcoin, 1.2% | Bitcoin, 1.2% | Bitcoin, 1.2% | Bitcoin, (3.9%) | Bitcoin, (8.1%) | Hut8, (1.2%) |
| Canaan, 0.8% | Canaan, 0.8% | Canaan, 0.8% | Canaan, (14.4%) | Cipher, (9.2%) | Mawson, (1.8%) |
| Ebang, 0.6% | Ebang, 0.6% | Ebang, 0.6% | Cathedra, (16.5%) | Mawson, (10.5%) | Hive, (2.1%) |
| Iris Energy, 0.4% | Iris Energy, 0.4% | Iris Energy, 0.4% | Hive, (16.9%) | Cathedra, (10.9%) | Cipher, (2.3%) |
| S&P, 0.1% | S&P, 0.1% | S&P, 0.1% | Hut8, (17.2%) | Digihost, (11.8%) | Stronghold, (3.4%) |
| Bitfarms, 0.1% | Bitfarms, 0.1% | Bitfarms, 0.1% | Northern Data, (18.8%) | Hut8, (12.0%) | |
| Argo, 0.1% | Argo, 0.1% | Argo, 0.1% | Bitfarms, (19.1%) | Riot, (12.6%) | |
| Cathedra, 0.0% | Cathedra, 0.0% | Cathedra, 0.0% | Marathon, (19.9%) | Ebang, (12.9%) | |
| Terawulf, (0.1%) | Terawulf, (0.1%) | Terawulf, (0.1%) | Ebang, (20.3%) | Bit Digital, (13.1%) | |
| Bit Digital, (1.0%) | Bit Digital, (1.0%) | Bit Digital, (1.0%) | Argo, (20.6%) | Greenidge, (13.8%) | |
| Hut8, (1.2%) | Hut8, (1.2%) | Hut8, (1.2%) | Riot, (21.1%) | Bitfarms, (15.2%) | |
| Mawson, (1.8%) | Mawson, (1.8%) | Mawson, (1.8%) | Mawson, (25.0%) | Marathon, (15.4%) | |
| Hive, (2.1%) | Hive, (2.1%) | Hive, (2.1%) | Bit Digital, (26.9%) | Hive, (16.1%) | |
| Cipher, (2.3%) | Cipher, (2.3%) | Cipher, (2.3%) | Stronghold, (31.4%) | Argo, (17.4%) | |
| Stronghold, (3.4%) | Stronghold, (3.4%) | Stronghold, (3.4%) | Cipher, (37.5%) | | |
| | | | Terawulf, (47.9%) | | |

- Most public Bitcoin miners have underperformed the asset over the past month, seven days and MTD / QTD
- Bitcoin fell 3.9% over the past 30 days, and 8.1% over the past week



Futures Curve Flat

Open Interest Dropped 13% WoW

- The futures curve is essentially flat through June, with slight backwardation for the active contract.
- Liquidity is limited to the front two months, and dries up rapidly thereafter
- CME open interest fell 13.5% vs. last week and 18.9% vs. two weeks ago to 10,677 lots
- Open interest for January is down over 400 lots vs. December OI two weeks ago, pre-roll. February OI is just 2,017 lots, down from the 4,970 Jan OI a week ago, but up vs the 920 lots of Feb OI last week (prior to the Dec expiry)

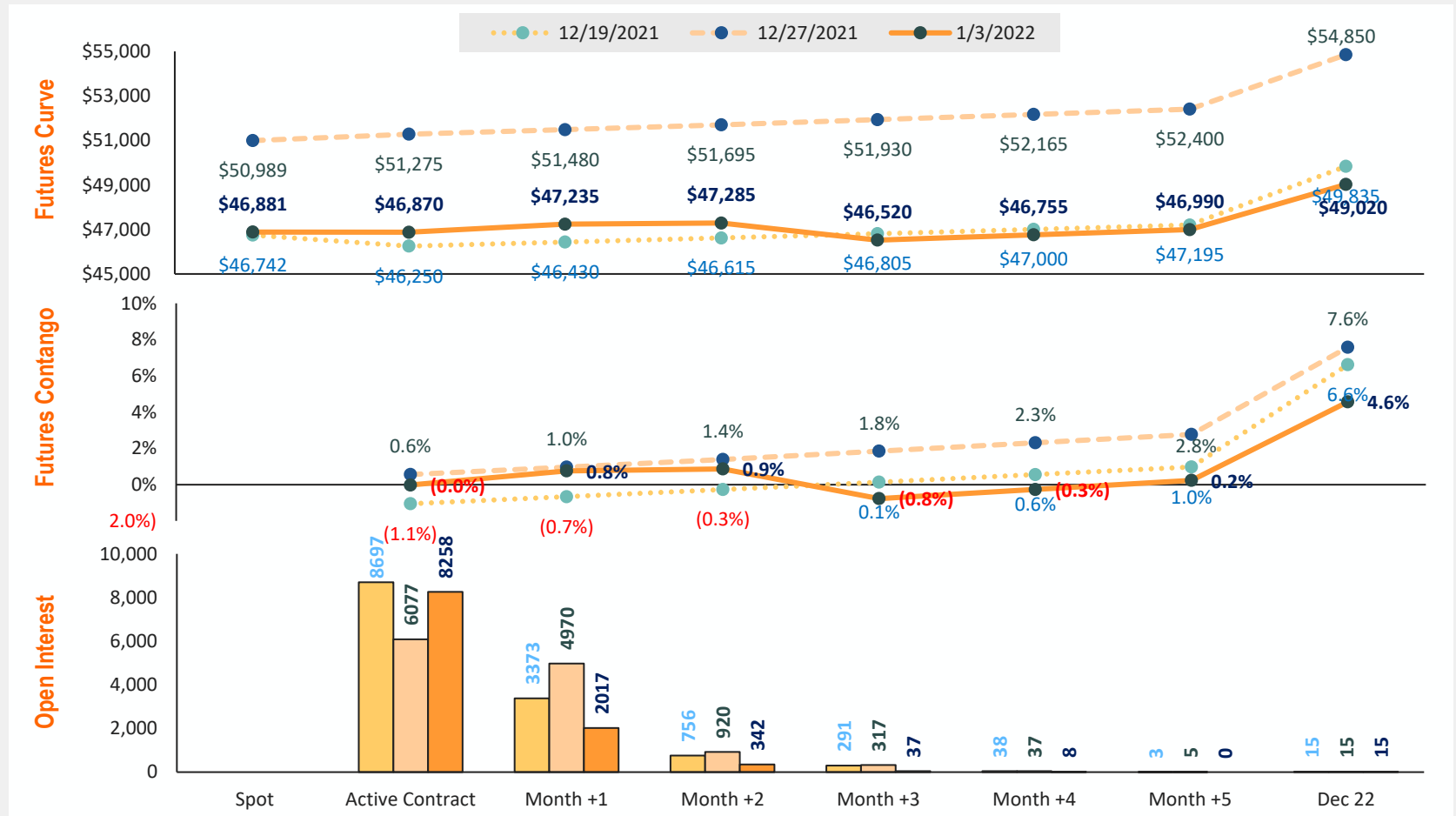


Figure: Bitcoin futures metrics

Source: BitOoda, CME, Bloomberg



CME Open Interest Down to Pre-BITO Level

- CME Bitcoin Futures open interest increased significantly ahead of the launch of the ProShares Bitcoin Futures ETF BITO
- It fell back recently to the pre-ETF launch levels in the last week of December, although we expect OI to climb again heading out of the holidays

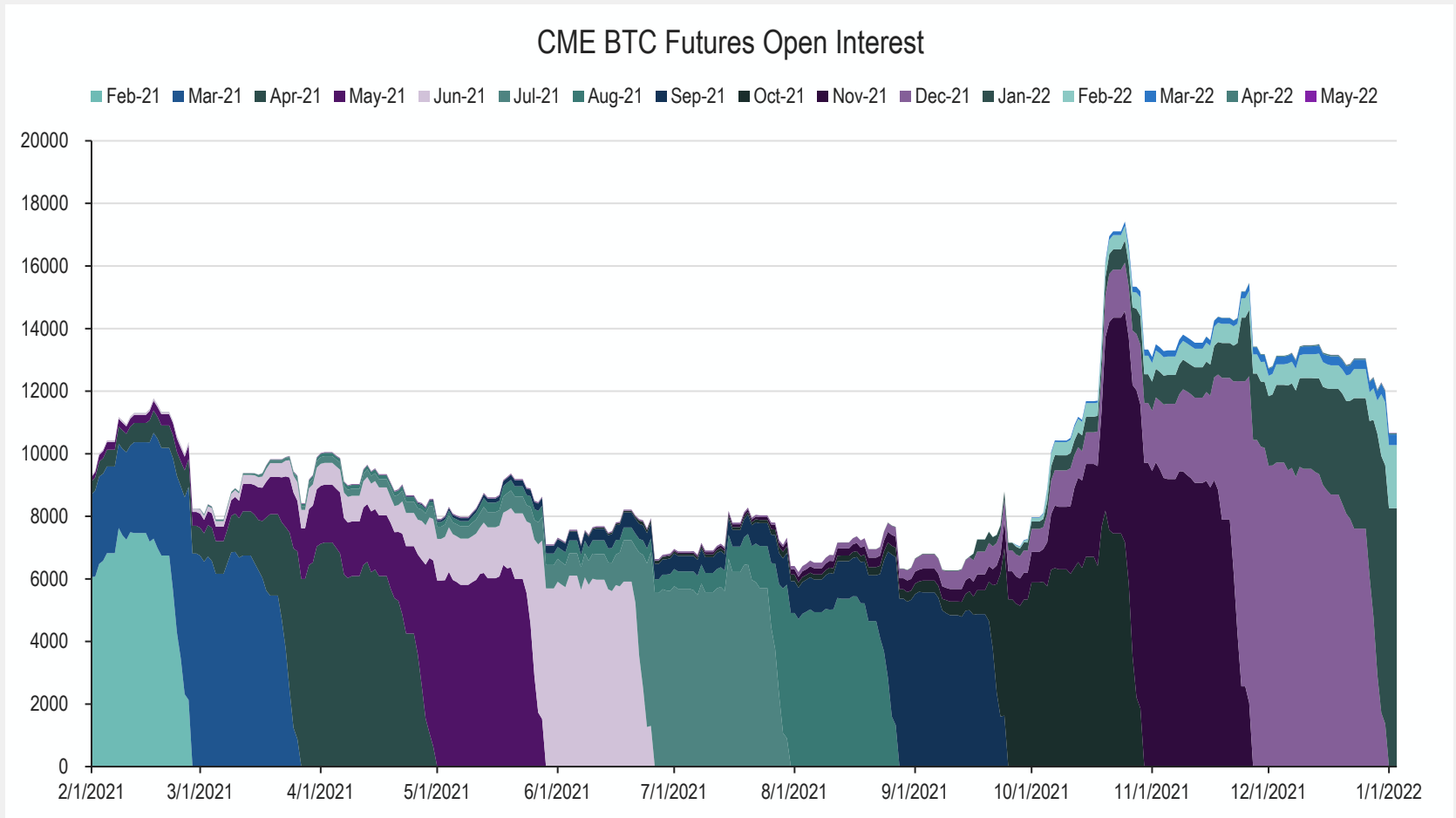


Figure: CME BTC Futures Open Interest history

Source: BitOoda, Bloomberg



ProShares Futures ETF BITO Slightly Below BTC

- The ProShares ETF BITO currently has a market cap of \$1.2 billion
- The ETF has underperformed Bitcoin by 2.1%, declining by 29.4% since launch vs. a 27.2% decline in the price of BTC in the same timeframe

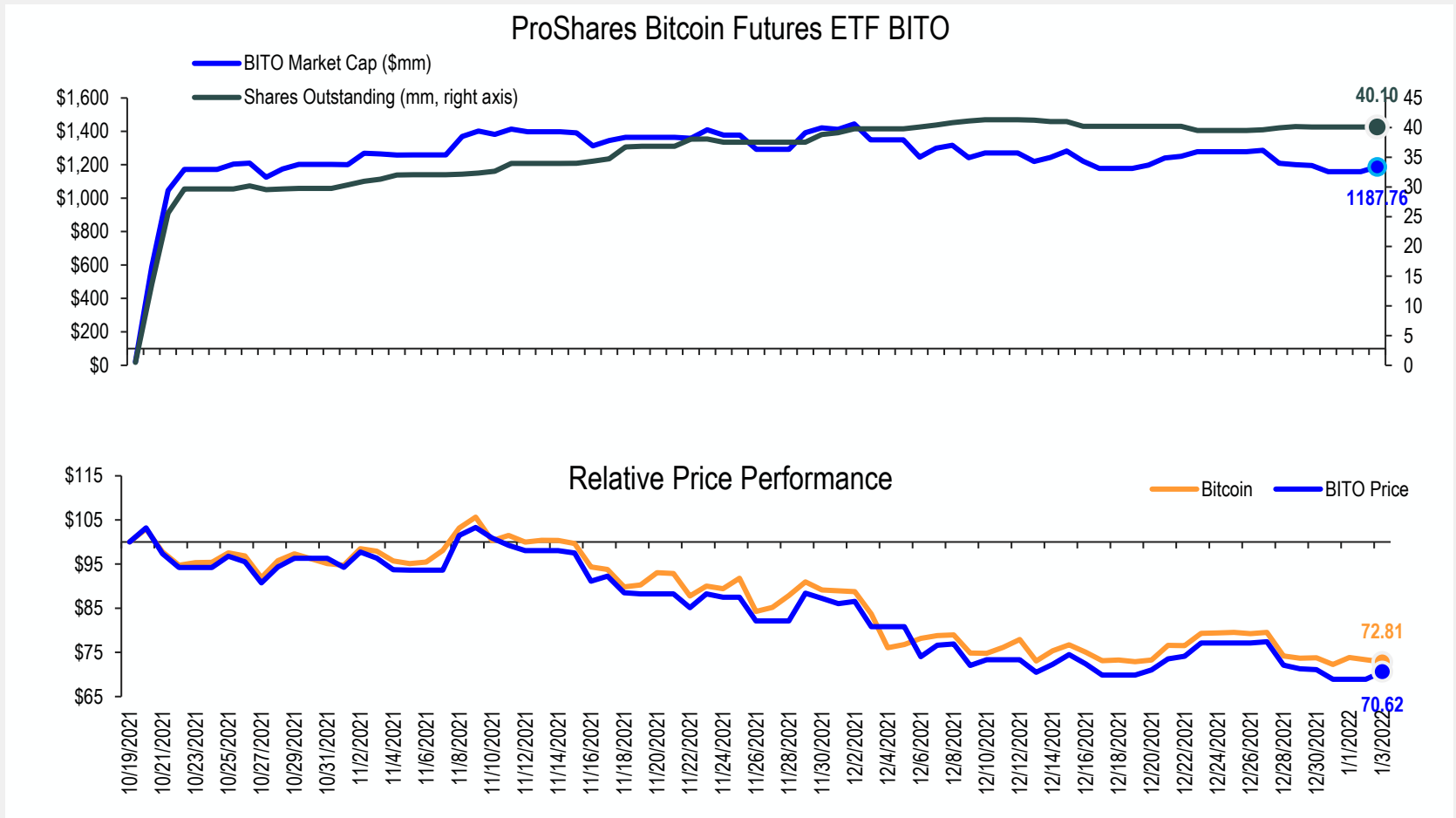


Figure: ProShares Bitcoin Strategy Futures ETF market cap and price performance compared to Bitcoin

Source: BitOoda, Bloomberg

CME Commitment of Traders 12/21 Open Interest Fell Despite Spreading Position Growth

- The CME Bitcoin Commitment of Traders report shows that open interest decreased slightly to 12/21
- Data shows 12,852 lots on 12/21, compared with 13,518 lots on 12/14
- Spreading positions increased to 2,095 lots vs 1,737 lots the week prior
- Other Reportable players covered both their longs and their short positions
- Dealers and Non-Reportables reduced their net short positions, while Commercial players increased their shorts

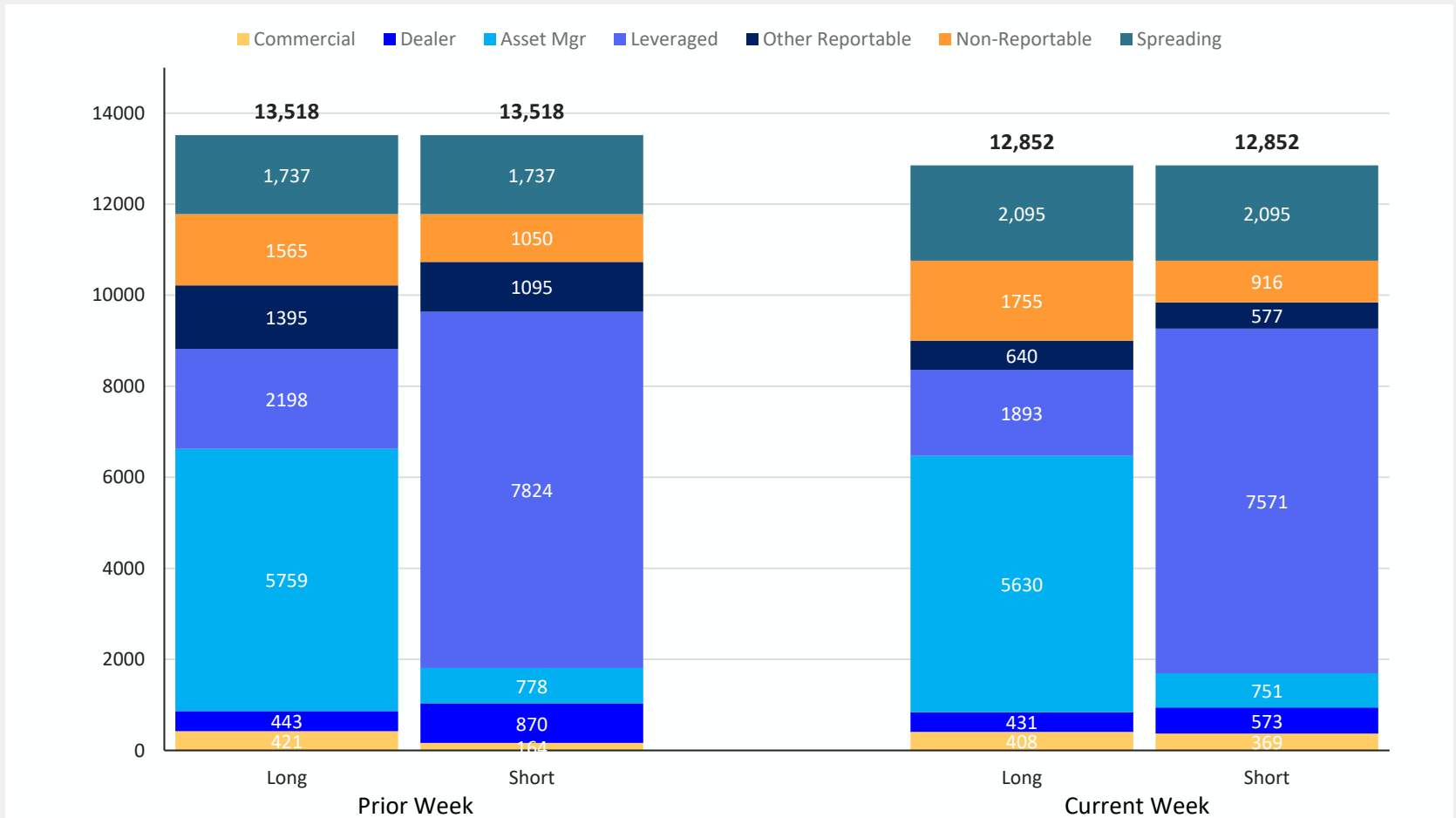


Figure: CME Bitcoin Commitment of Traders, 12/21/2021 and 12/14/2021

Source: BitOoda, Bloomberg, CME





Non-Commercial Net Length Short just 39 Lots

- Commercial Bitcoin players are not very active in the options space, participating mainly in the futures arena
- Commercial positioning has been largely long futures
- As a result, the net position for non-commercial market participants has been largely short
- The net length for non-commercial participants is now short 39, a significant increase in net length (or reduction in net short) from about a 729 lot net short at the end of November



Figure: CME Bitcoin Future Non-Commercial Net Length, YTD

Source: Bloomberg

BitOoda Hash™ Dashboard

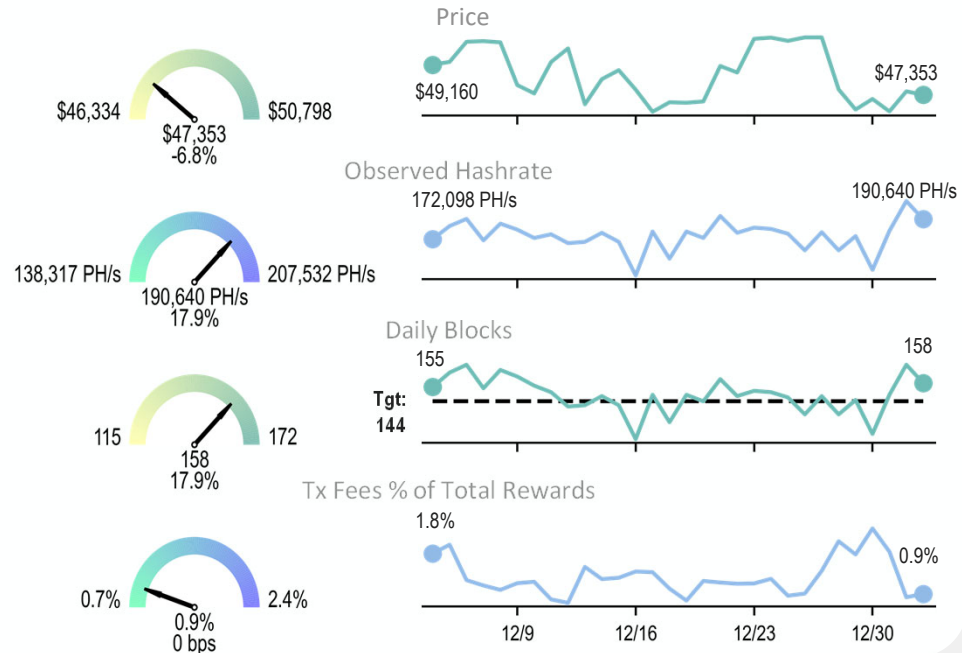
January 3, 2022

Definitions

Hash Spread: the difference between the revenue per MWh from mining BTC and the weighted average cost of peak and off-peak power across 8 US zones. It is a quick measure of the profitability of US-based latest-generation mining rigs.

MWh: Megawatt hour
PH/s: Petahash per second
Tx Fees: Fees for BTC transactions

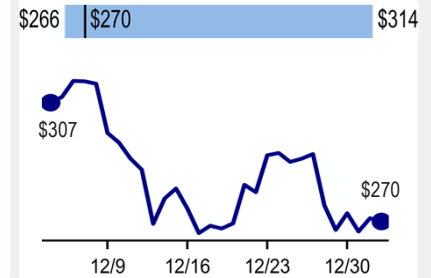
30 Day Range and 7-day % change



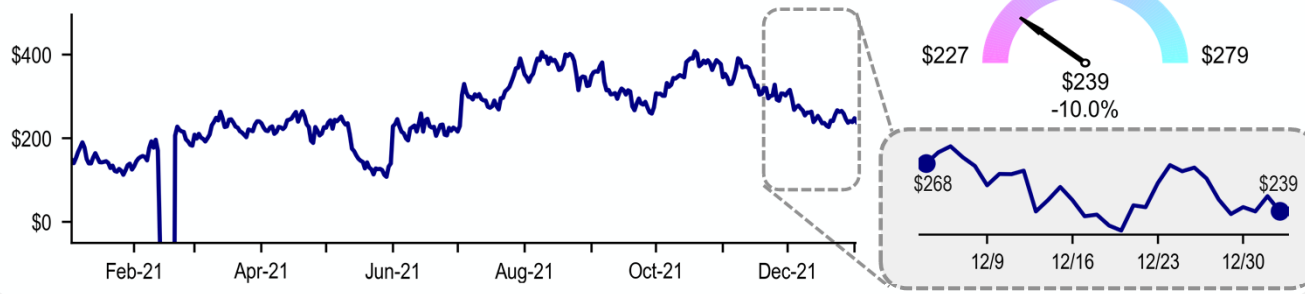
Daily Revenue per PH/s



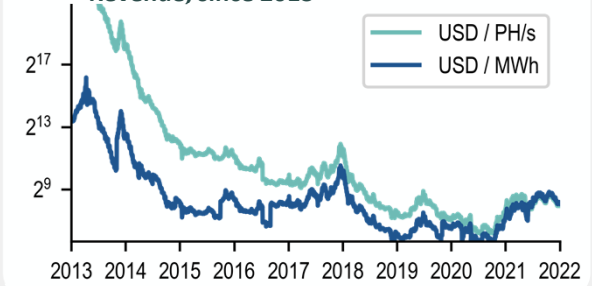
Revenue per MWh (\$19 Class)



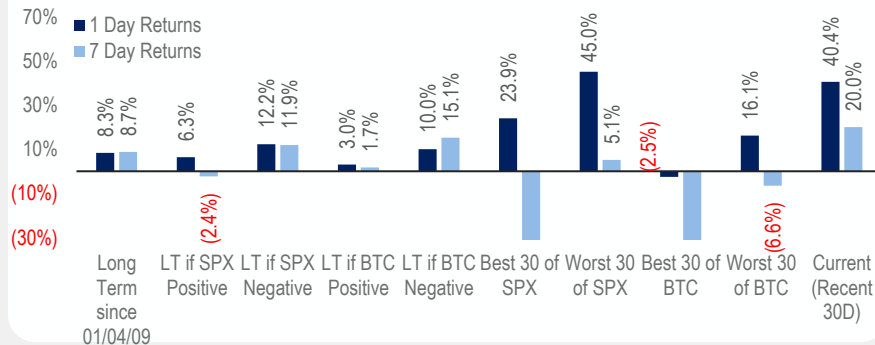
BitOoda North American Hash Spread™



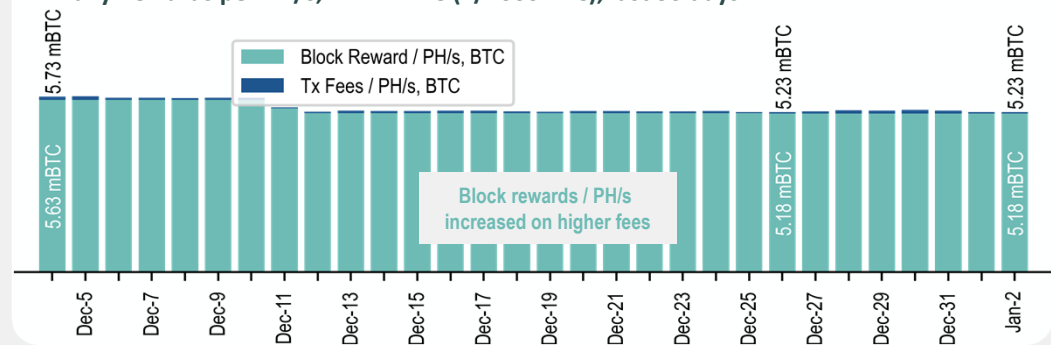
Revenue, since 2013



Historical BTC Correlation to S&P500



Daily Rewards per PH/s, in milliBTC (1/1000 BTC), last 30 days





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