



Bitcoin and the Public Markets

\$291mm in YTD Fund Outflows; Inverted Term Structure of BTC Volatility at 11% Realized less Implied

This report has four sections: Bitcoin vs broader markets, the public miners, institutional fund flows, and CME Futures.

The correlation of Bitcoin to the Nasdaq is ~52%, dropping slightly from last week. As we noted, a large down day in the Nasdaq is a strong predictor of large Bitcoin price declines. We do not expect the relationship to stay uncorrelated when investors need it to be uncorrelated. This is consistent with our view that Bitcoin is still a risk-on asset, notwithstanding the prevalent inflation hedge / digital gold / uncorrelated asset narratives in the space. It can get there, but it is not there yet.

BTC drawdowns are deep and prolonged. [Slide 7](#) shows that Bitcoin is only rarely within 20% of all time highs since 2014. In the same period, the S&P and Nasdaq have had only two short-lived bear markets.

The 18 publicly listed mining stocks trade at an average adjusted Enterprise Value per YE 2022 PH/s of planned capacity of \$150k, down \$10k since last week. Adjusted EV = Market Cap + Debt – Cash – Market Value of Crypto Holdings. Technically, pending capital expenditures needed to pay for future deliveries of announced rig purchases and ancillary equipment should be added back, but the lack of data led us to exclude this adjustment for consistency.

Notably, miners like Hive that have relatively modest expansion plans, or Greenidge and Riot that have low power and operating costs, trade at a premium to

the group. We also examined financials based on Bloomberg analyst consensus, finding that the companies that do have estimates trade at 3.5x 2022E EBITDA and 7.5x 2022E Contribution (Gross Profit + Depreciation). Considering our 327EH/s year end network Hashrate estimate, we suspect that consensus EBITDA estimates may need downward revisions unless Bitcoin price accelerates to new highs. The multiples now look reasonably accommodative of a downward EBITDA recalibration.

Our new [institutional fund flow section](#) covers 19 funds with \$28B of AUM. GBTC, an ETP, is 75%+ of the group, and has seen no inflows recently. The others are mostly crypto-exposed equity ETFs with a broader innovation focus – ProShares BITO Bitcoin futures fund excepted.

Over the past year, funds have seen a \$587mm in net inflows ([slide 19](#)), with BITO (+1.7B and BLOK (+675mm) and Others (+941mm) offsetting \$2.7B redemptions for ARKW ([slide 20](#)). Year-to-date, ARKW had \$411mm redemptions, though inflows elsewhere helped the category see just \$291mm in outflows ([slide 21](#)).

Realized volatility of 69.5% is now 11% above implied volatility ([slide 25](#)). While we expect these occasional inversions to occur in the depths of a selloff, the disconnect between a somewhat illiquid, regulated US institutional asset (CME Futures) and a global, liquid, largely retail driven asset (Bitcoin) suggests these inversions are reactive in

nature rather than, as yet, predictive of price turning points.

The futures curve is flat through April, and then in backwardation – but with no liquidity ([slide 26](#)). Non-commercial net length declined to 189 lots, with Other Reportables shifting to a 288 lot net short position per the 2/8 Commitment of Traders report, vs. 620-lot net long position on 2/1 ([slide 27](#)).

Key Takeaways

- *Bitcoin's correlation to the Nasdaq dipped to 51%; the relationship is strongest when the Nasdaq is down a lot*
- *On our preferred adjusted EV per PH/s metric, the miners trade at an average of \$150k, down \$10k from last week*
- *Our YE network Hashrate estimate of 327 EH/s implies that either BTC price needs to accelerate, or that consensus EBITDA estimates need to be recalibrated down – but a modest 3.5x Adj EV / EBITDA multiple should be accommodative*
- *Over the past year, funds have seen \$587mm in flows, but \$291mm in outflows year-to-date, led largely by ARKW (outflows of \$2.7B over 12 months / \$411mm YTD)*
- *Implied volatility (100% moneyness for the active contract) is now 11% below realized 30-day volatility, although we don't view it as predictive of price turning points*
- *Overall non-commercial net length on the CME fell to 189 lots, while Other Reportable investors swung from a 620 lot long to a 288 lot net short position*

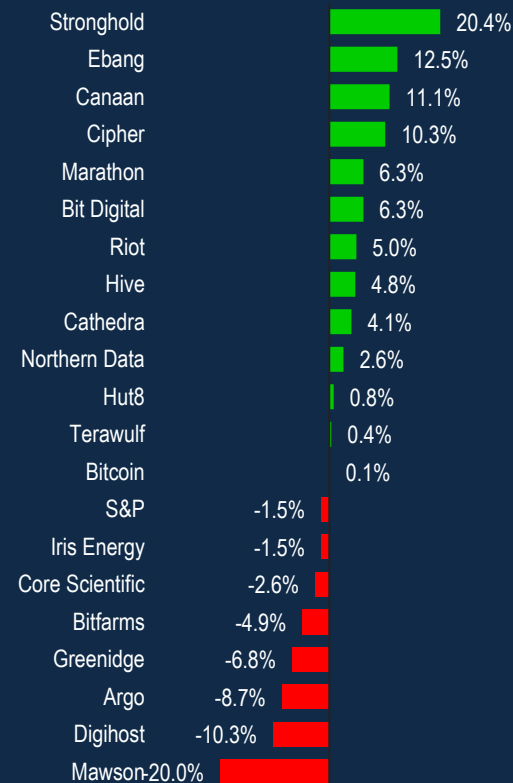
Research

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BTC Price \$44,238
 (2/15 at 11am ET)

Obs Hashrate 227 EH/s

7 Day Performance





Bitcoin and Broader Markets

When the Nasdaq Sneezes Bitcoin Catches a Cold

- As shown below, when the Nasdaq performance is in the bottom quartile of its range (since the BTC peak), Bitcoin’s return is usually also in the bottom quartile
- This relationship holds in the second quartile of Nasdaq performance as well
- However, the relationship is much weaker when the Nasdaq is doing well
- Later in this report, we also show performance by decile since 1/1/2020

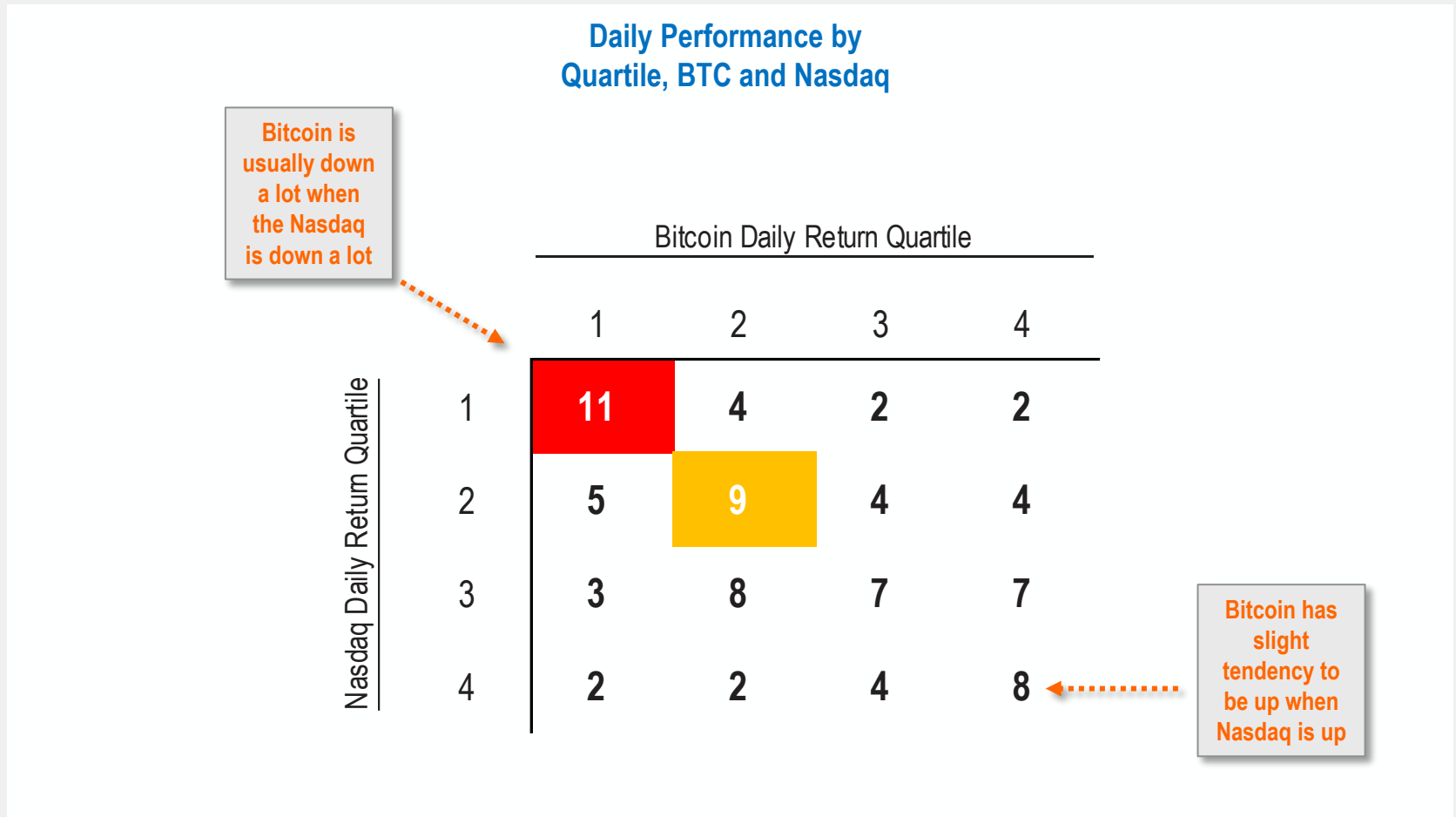


Figure: Sample count of daily returns by quartile, Bitcoin and Nasdaq Note Since 11/10/21

Source: BitOoda, Bloomberg

53% BTC / Nasdaq Correlation Stronger when Nasdaq Weak

- The scatter plot below shows the daily performance of Bitcoin against the Nasdaq, grouped by quartile of Nasdaq returns, since the BTC peak on 11/10/21
- We see that Bitcoin returns cluster on the negative side when the Nasdaq is weakest
- Further, the worst daily returns coincide with some of the worst Nasdaq returns

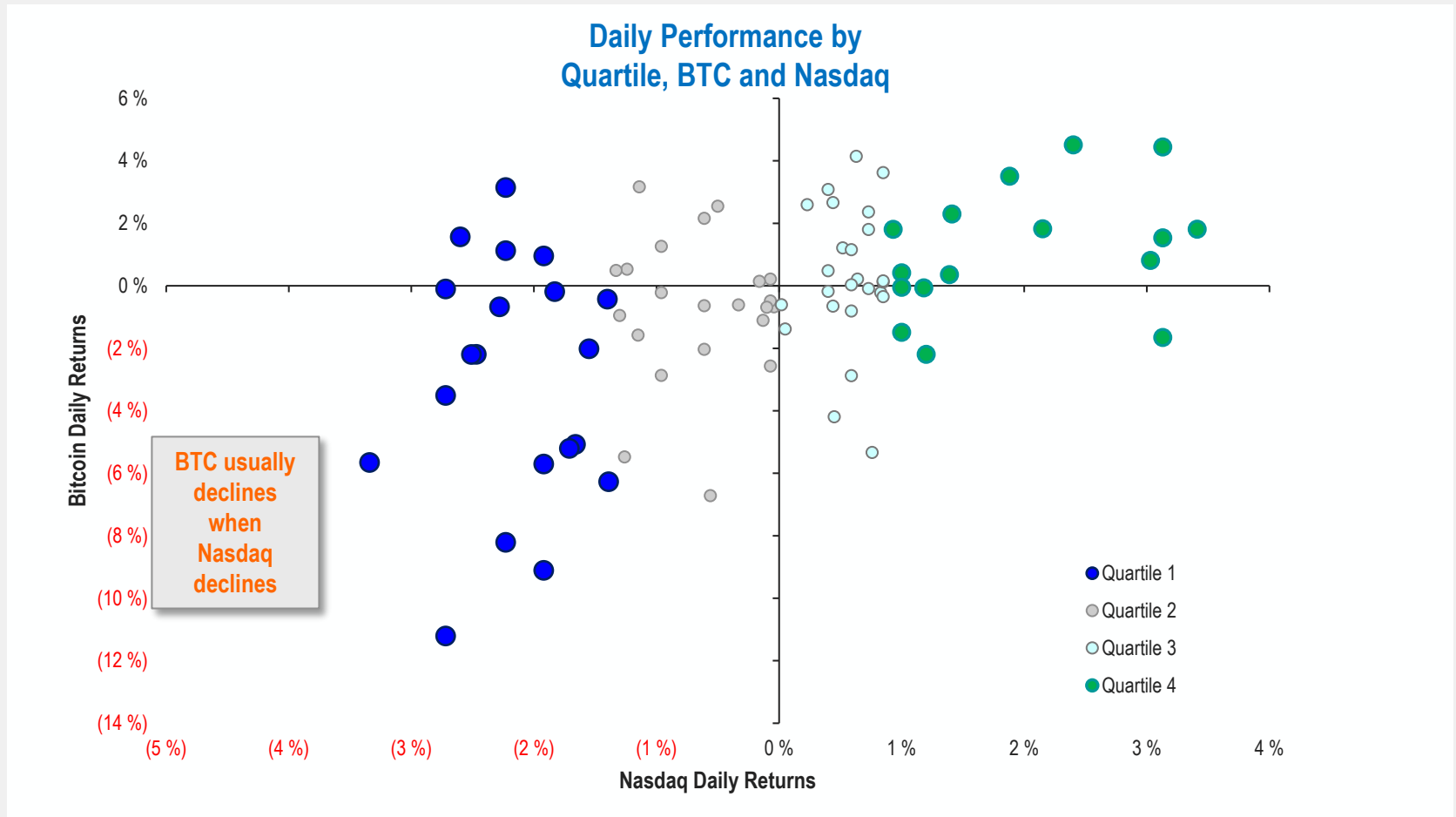


Figure: Bitcoin miner drawdowns
Note Lowest quartile is weakest 25% of daily returns

Source: BitOoda, Bloomberg

Worst Decile of BTC Returns Most Likely When Nasdaq Weakest

- BTC is likely to perform poorly when the Nasdaq is underperforming, based on performance data since Jan 2020
- With the larger sample size, we looked at deciles of daily returns for both Bitcoin and the Nasdaq
- The single largest sample frequency is when both Bitcoin and the Nasdaq have returns in the bottom decile – 20 instances
- This relationship holds in the top decile of Nasdaq performance as well

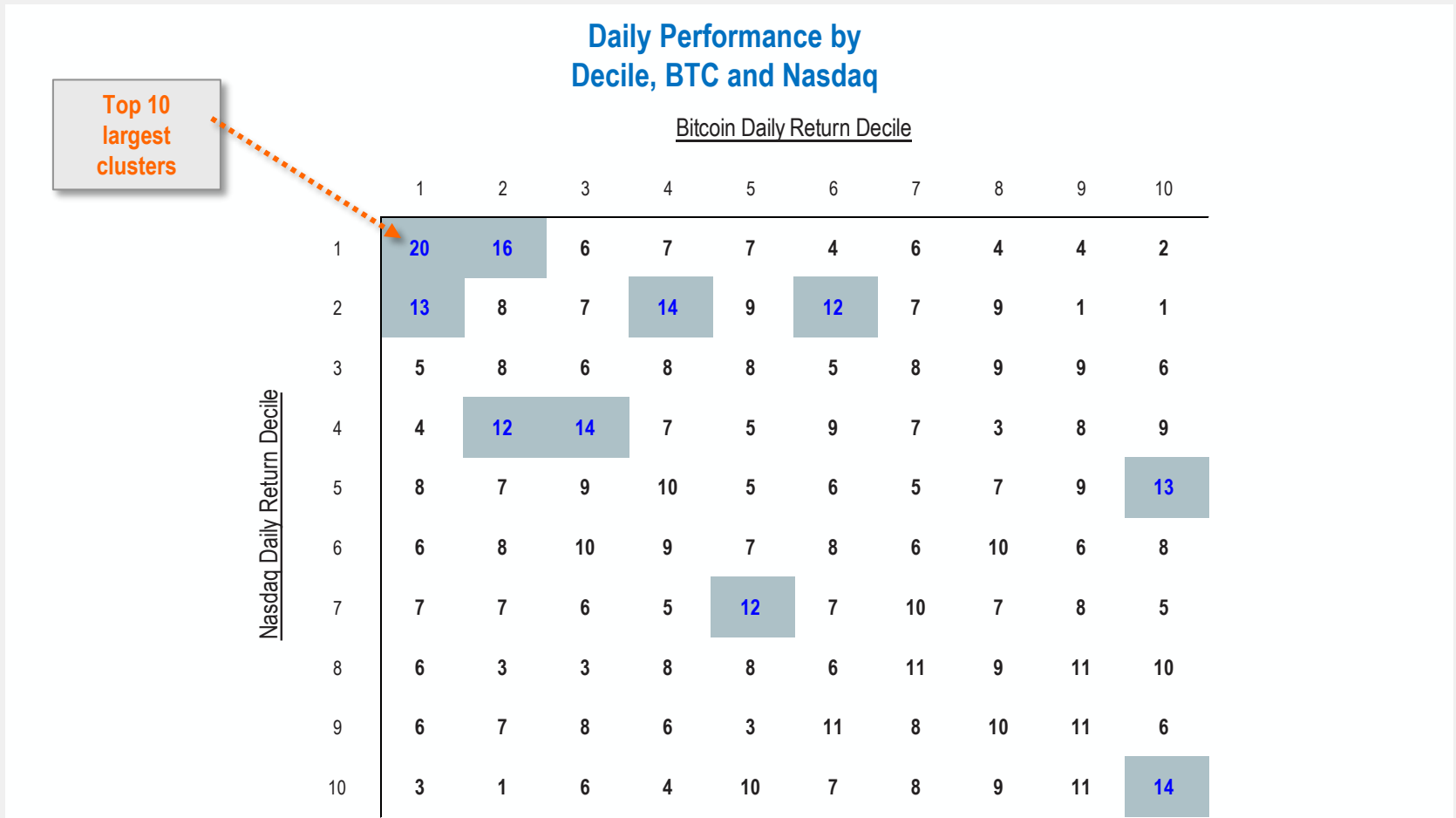


Figure: Sample count of daily returns by quartile, Bitcoin and Nasdaq Note Since 1/1/20

Source: BitOoda, Bloomberg

Long Term BTC / Nasdaq Correlation

- The scatter plot below shows the daily performance of Bitcoin against the Nasdaq, grouped by the top / bottom decile of Nasdaq returns, since 1/1/2020
- We see that Bitcoin returns cluster on the negative side when the Nasdaq is weakest
- Equally, there is a visible relationship when the Nasdaq is strongly positive
- Further, the worst daily returns coincide with some of the worst Nasdaq returns
- The overall correlation is close to zero ($R^2 = 0.08$), making Bitcoin an “uncorrelated asset”, but the relationship is stronger at the extremes – so it is correlated when investors need it to be uncorrelated

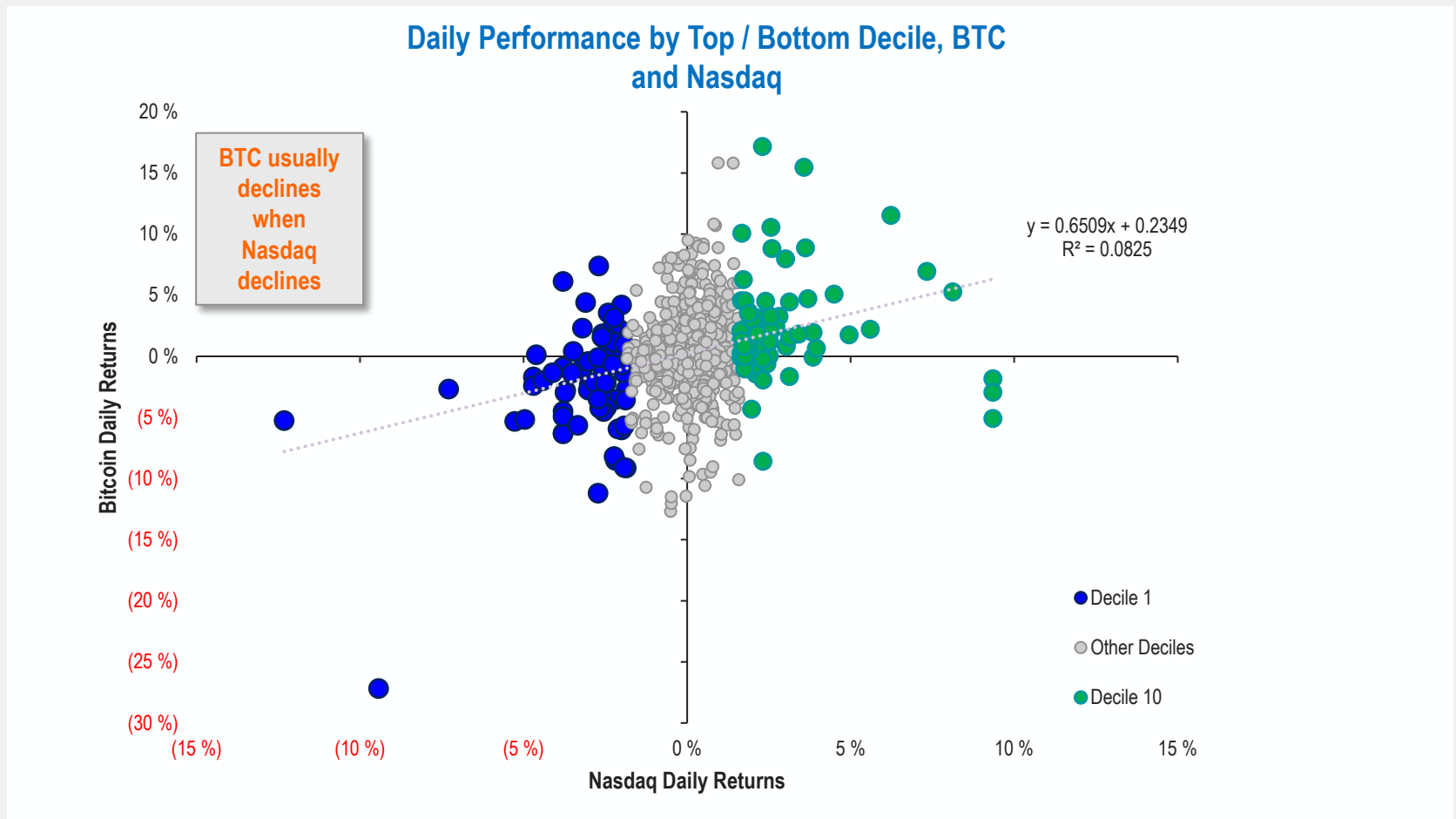


Figure: Bitcoin miner drawdowns
Note Lowest decile is weakest 10% of daily returns, since 1/1/2020

Source: BitOoda, Bloomberg

Bitcoin Drawdowns Much Deeper and Longer than Equity

- Bitcoin is in its fourth major drawdown since 2014
- Over the same period, equities have exhibited frequent small drawdowns, but have exceeded 10% into correction territory only a handful of times
- There have been only two short-lived bear markets in equities since 2014, including early in the pandemic
- Bitcoin is only intermittently within 10-20% of all time highs

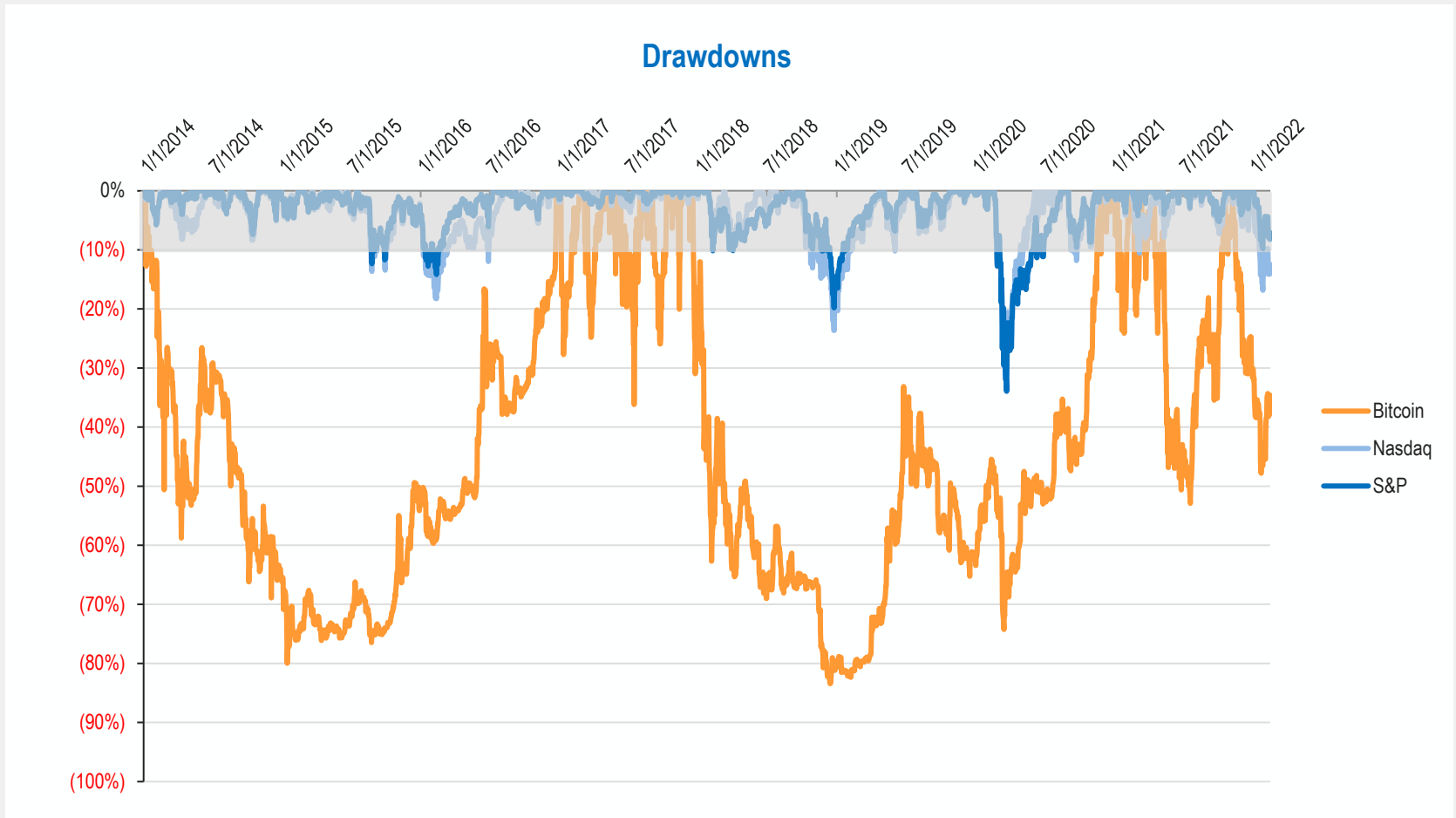


Figure: Drawdowns comparisons: Bitcoin vs the S&P and Nasdaq Since 1/1/2014

Source: BitOoda, Bloomberg

Public Miners



Bitcoin Miners Performance Map

Year to Date	Quarter to Date	Month to Date	30 Day	7 Day	1 Day
					Marathon, 9.5%
					Hive, 9.5%
				Stronghold, 20.4%	Canaan, 8.3%
				Ebang, 12.5%	Hut8, 7.5%
				Canaan, 11.1%	Bit Digital, 7.3%
				Cipher, 10.3%	Core Scientific, 7.2%
		Ebang, 63.1%		Marathon, 6.3%	Riot, 7.1%
		Stronghold, 36.3%		Bit Digital, 6.3%	Argo, 6.6%
		Hut8, 24.7%		Riot, 5.0%	Greenidge, 6.0%
		Core Scientific, 22.1%		Hive, 4.8%	Stronghold, 5.8%
		Canaan, 21.9%	Ebang, 48.8%	Cathedral, 4.1%	Northern Data, 5.4%
Ebang, 44.2%	Ebang, 44.2%	Bit Digital, 21.2%	Iris Energy, 14.6%	Northern Data, 2.6%	Mawson, 5.2%
Canaan, 1.8%	Canaan, 1.8%	Riot, 20.5%	Hut8, 11.9%	Hut8, 0.8%	Bitfarms, 5.2%
Core Scientific, (3.2%)	Core Scientific, (3.2%)	Marathon, 18.9%	Core Scientific, 5.7%	Terawulf, 0.4%	Terawulf, 5.1%
Bitcoin, (4.5%)	Bitcoin, (4.5%)	Bitcoin, 15.1%	Bitcoin, 3.0%	Bitcoin, 0.1%	Bitcoin, 4.8%
Stronghold, (5.3%)	Stronghold, (5.3%)	Terawulf, 11.7%	Stronghold, 2.3%	S&P, (1.5%)	Cathedral, 4.3%
Hut8, (5.6%)	Hut8, (5.6%)	Bitfarms, 10.9%	Marathon, (2.1%)	Iris Energy, (1.5%)	Digihost, 4.1%
S&P, (6.5%)	S&P, (6.5%)	Hive, 10.1%	Digihost, (3.5%)	Core Scientific, (2.6%)	Cipher, 3.1%
Cathedral, (9.6%)	Cathedral, (9.6%)	Iris Energy, 7.4%	S&P, (4.5%)	Bitfarms, (4.9%)	S&P, 1.2%
Iris Energy, (12.5%)	Iris Energy, (12.5%)	Digihost, 6.4%	Cathedral, (4.6%)	Greenidge, (6.8%)	Ebang, 1.0%
Terawulf, (13.3%)	Terawulf, (13.3%)	Northern Data, 6.1%	Cipher, (6.1%)	Argo, (8.7%)	Iris Energy, 0.3%
Riot, (14.0%)	Riot, (14.0%)	Cathedral, 5.2%	Riot, (7.2%)	Digihost, (10.3%)	
Marathon, (14.9%)	Marathon, (14.9%)	Cipher, 4.1%	Canaan, (7.7%)	Mawson, (20.0%)	
Digihost, (16.8%)	Digihost, (16.8%)	Greenidge, 2.0%	Mawson, (7.8%)		
Hive, (17.0%)	Hive, (17.0%)	S&P, (1.4%)	Argo, (8.8%)		
Argo, (17.8%)	Argo, (17.8%)	Argo, (1.7%)	Hive, (9.5%)		
Bitfarms, (19.6%)	Bitfarms, (19.6%)	Mawson, (18.5%)	Bitfarms, (11.0%)		
Northern Data, (22.0%)	Northern Data, (22.0%)		Terawulf, (13.0%)		
Bit Digital, (24.7%)	Bit Digital, (24.7%)		Greenidge, (18.9%)		
Greenidge, (26.3%)	Greenidge, (26.3%)		Northern Data, (19.1%)		
Mawson, (30.0%)	Mawson, (30.0%)		Bit Digital, (21.4%)		
Cipher, (31.6%)	Cipher, (31.6%)				

- Relatively few public Bitcoin miners have outperformed Bitcoin YTD
- However, most miners are outperforming Bitcoin today, 2/15. With Bitcoin being up almost 5%, investors factor in operating leverage in bidding up most miners



Source: BitOoda, Bloomberg

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Trading Comparables

Miners Trade at an Adj EV of \$150k per PH/s of 2022YE Hashrate, Down \$10k WoW

- We analyze enterprise value per PH/s of capacity as the clearest comparable metric across all the players
- Our adjusted EV measure factors in the current value of announced Bitcoin holdings, as opposed to balance sheet value at acquisition cost
- Thus, adjusted EV is Market Cap + Debt – Cash – USD value of crypto holdings
- We exclude future capex commitments: for many miners, part of the balance sheet will be used to pay for delivery of future Hashrate, boosting fair EV
- However, a lack of data for most companies makes this adjustment imprecise in practice
- On our preferred valuation metric, the group trades at an average of \$580k per current operating PH/s and \$150k per YE 2022 expected PH/s, down \$10k vs. last week

Trading Comparables

Name	Ticker	Name	Price	52-week Range		Market Cap	Cash	Debt	Bitcoin on BS	Bitcoin on BS (USD)	Adj EV	Hashrate			EV/ PH/s		
				Low	High							Current	2022 Deliveries	YE 2022	Current	2022YE	
Bitcoin	XBTUSD	Currency Xbt-Usd Cross Rate	\$44,260.49	\$28,824.32	\$68,991.85	\$839,138											
S&P	SPX	S&P 500 Index	4387.36	3723.3	4818.6	\$38,782,949											
Nasdaq	CCMP	Nasdaq Composite	13771.93	12397.1	16212.2	\$23,514,783											
Public Miners																	
Argo	ARBK	Argo Blockchain Plc	\$10.00	\$7.90	\$21.00	\$444.7	\$0.0	\$0.0	2317 BTC	\$102.6	\$342.1	1605 PH/s	2000 PH/s	3700 PH/s	\$0.21	\$0.09	
Bit Digital	BTBT	Bit Digital Inc	\$4.59	\$3.37	\$30.68	\$300.1	\$26.5	\$0.0	627 BTC	\$27.8	\$245.9	1603 PH/s	1000 PH/s	2603 PH/s	\$0.15	\$0.09	
Bitfarms	BTF	Bitfarms Ltd/Canada	\$4.07	\$2.81	\$9.36	\$756.6	\$43.3	\$21.1	2973 BTC	\$131.6	\$602.8	2100 PH/s	5900 PH/s	8000 PH/s	\$0.29	\$0.08	
Cathedrala	CBIT	Cathedrala Bitcoin Inc	\$0.47	\$0.28	\$1.01	\$37.1	\$5.7	\$0.6	129 BTC	\$5.7	\$26.2	161 PH/s	566 PH/s	727 PH/s	\$0.16	\$0.04	
Cipher	CIFR	Cipher Mining Inc	\$3.17	\$2.54	\$15.39	\$763.0	\$282.3	\$0.0	0 BTC	\$0.0	\$480.8	0 PH/s	8000 PH/s	8000 PH/s	\$0.06	\$0.06	
Cleantalk	CLSK	Cleantalk Inc	\$9.52	\$5.47	\$40.50	\$357.9	\$6.0	\$2.2	838 BTC	\$37.1	\$317.0	1300 PH/s	2458 PH/s	3758 PH/s	\$0.24	\$0.08	
Core Scientific	CORZ	Core Scientific Inc	\$10.60	\$5.82	\$14.98	\$3,137.9	\$1.6	\$0.0	2816 BTC	\$124.6	\$3,011.7	2640 PH/s	12360 PH/s	15000 PH/s	\$1.14	\$0.20	
Digihost	DGHI	Digihost Technology Inc	\$3.85	\$2.44	\$14.25	\$97.2	\$17.3	\$2.5	523 BTC	\$23.1	\$59.2	0 PH/s	2400 PH/s	2400 PH/s	\$0.02	\$0.02	
Greenidge	GREE	Greenidge Generation Holding	\$11.83	\$9.85	\$60.00	\$460.9	\$51.6	\$26.3	0 BTC	\$0.0	\$435.6	1200 PH/s	1900 PH/s	3100 PH/s	\$0.36	\$0.14	
Hive	HIVE	Hive Blockchain Technologies	\$2.19	\$1.50	\$5.75	\$828.2	\$24.4	\$17.0	2891 BTC	\$127.9	\$692.8	2000 PH/s	1000 PH/s	3000 PH/s	\$0.35	\$0.23	
Hut 8	HUT	Hut 8 Mining Corp	\$7.42	\$3.15	\$16.57	\$1,177.8	\$223.2	\$10.3	5053 BTC	\$223.6	\$741.3	1700 PH/s	2800 PH/s	4500 PH/s	\$0.44	\$0.16	
Iris Energy	IREN	Iris Energy Ltd	\$14.15	\$8.55	\$28.25	\$763.2	\$118.6	\$0.0	0 BTC	\$0.0	\$644.7	1452 PH/s	5671 PH/s	7123 PH/s	\$0.44	\$0.09	
Marathon	MARA	Marathon Digital Holdings In	\$28.03	\$18.32	\$83.45	\$2,658.1	\$32.9	\$0.0	7453 BTC	\$329.9	\$2,295.4	3200 PH/s	20100 PH/s	23300 PH/s	\$0.72	\$0.10	
Mawson	MIGI	Mawson Infrastructure Group	\$4.67	\$2.00	\$17.25	\$306.7	\$32.4	\$3.8	0 BTC	\$0.0	\$278.1	800 PH/s	3350 PH/s	4150 PH/s	\$0.35	\$0.07	
Northern Data	NB2	Northern Data Ag	\$59.90	\$40.20	\$143.00	\$1,324.7	\$0.0	\$0.0	0 BTC	\$0.0	\$1,324.7	660 PH/s	2600 PH/s	3260 PH/s	\$2.01	\$0.41	
Riot	RIOT	Riot Blockchain Inc	\$19.24	\$12.90	\$79.50	\$2,107.8	\$71.5	\$8.4	4464 BTC	\$197.6	\$1,847.1	3000 PH/s	6000 PH/s	9000 PH/s	\$0.62	\$0.21	
Stronghold	SDIG	Stronghold Digital Mining-A	\$12.17	\$7.26	\$35.80	\$552.7	\$41.4	\$54.5	56 BTC	\$2.5	\$563.3	470 PH/s	7600 PH/s	8070 PH/s	\$1.20	\$0.07	
Terawulf	WULF	Terawulf Inc	\$13.05	\$8.36	\$43.98	\$1,139.2	\$1.5	\$0.0	0 BTC	\$0.0	\$1,137.7	0 PH/s	2100 PH/s	2100 PH/s	\$0.54	\$0.54	
Total						\$17,213.8	\$980.2	\$146.8	30139 BTC	\$1,334.0	\$15,046.5	23891 PH/s	87805 PH/s	111791 PH/s	\$0.63	\$0.13	
Average						\$956.3	\$54.5	\$8.2	1674 BTC	\$74.1	\$835.9	1327 PH/s	4878 PH/s	6211 PH/s	\$0.58	\$0.15	
Median						\$759.8	\$29.4	\$1.4	575 BTC	\$25.4	\$583.1	1376 PH/s	2700 PH/s	3954 PH/s	\$0.36	\$0.09	

Figure: Comparable analysis: Adjusted Enterprise Value per PH/s of YE 2022 Capacity

Source: BitOoda, Bloomberg

Adj EV / 2022YE PH/s Average of \$150k

- The chart shows the adjusted EV per PH/s of expected 2022 YE Hashrate valuation
- The group trades at an average of \$150k per future PH/s

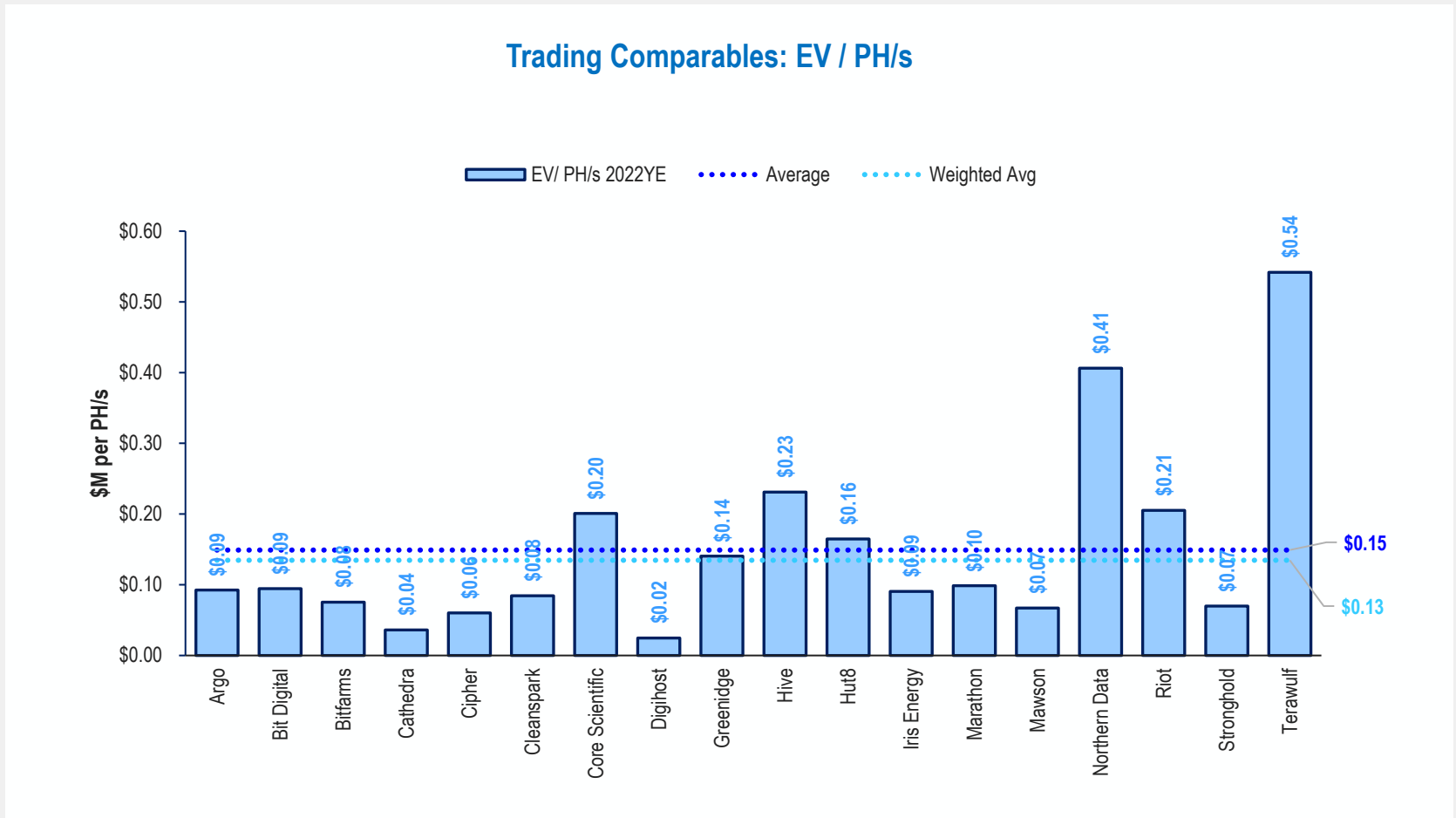


Figure: Comparable analysis: Adjusted Enterprise Value per PH/s of YE 2022 Capacity

Source: BitOoda, Bloomberg

Valuations are Higher The More YE 2022 Hashrate Comes Online

- Markets give a premium to operational capacity
- The more year end 2022 capacity is already online, the higher the valuation
- This supports the notion that the market recognizes the drop off in Bitcoin production over time
- Thus, the less growth is in the future, the higher the multiple; this is quite unlike most traditional equities

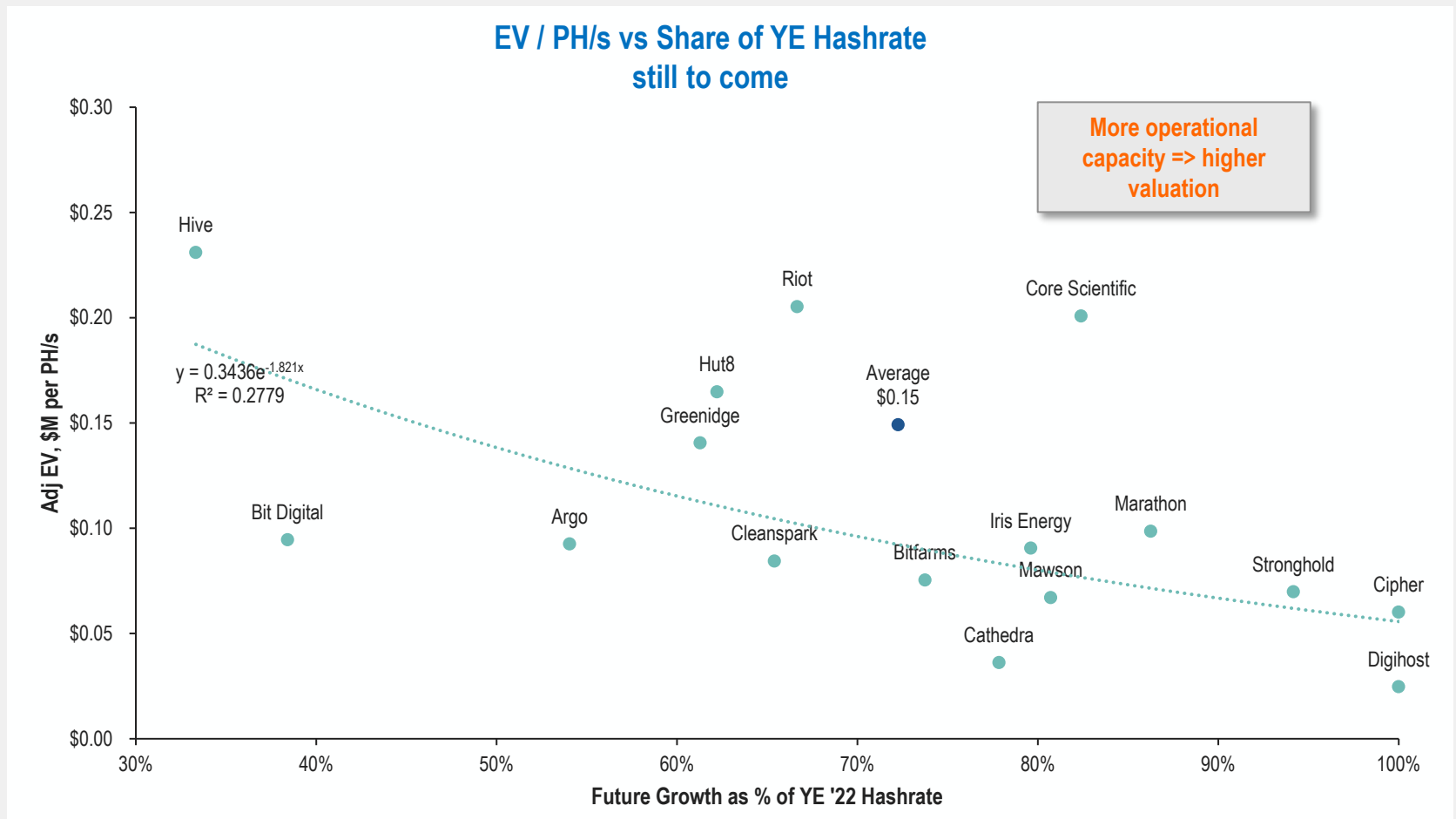


Figure: Public miner adjusted EV per PH/s vs. percentage of YE 22 Hashrate already operational
Note: Terawulf and Northern Data excluded as outliers

Source: BitOoda, Bloomberg

Valuation Differentials Aided by Power / Hosting Costs

- Entities with the lowest direct operating cost, such as Greenidge and Riot, exhibit a premium to the group
- However, for most other companies, the relationship is weaker
- Hive, which has the highest valuation in the group, has a higher estimated all-in direct operating cost (based on BitOoda’s estimates)
- Hive also has the largest share of YE 2022 Hashrate already operational, which may explain the higher valuation

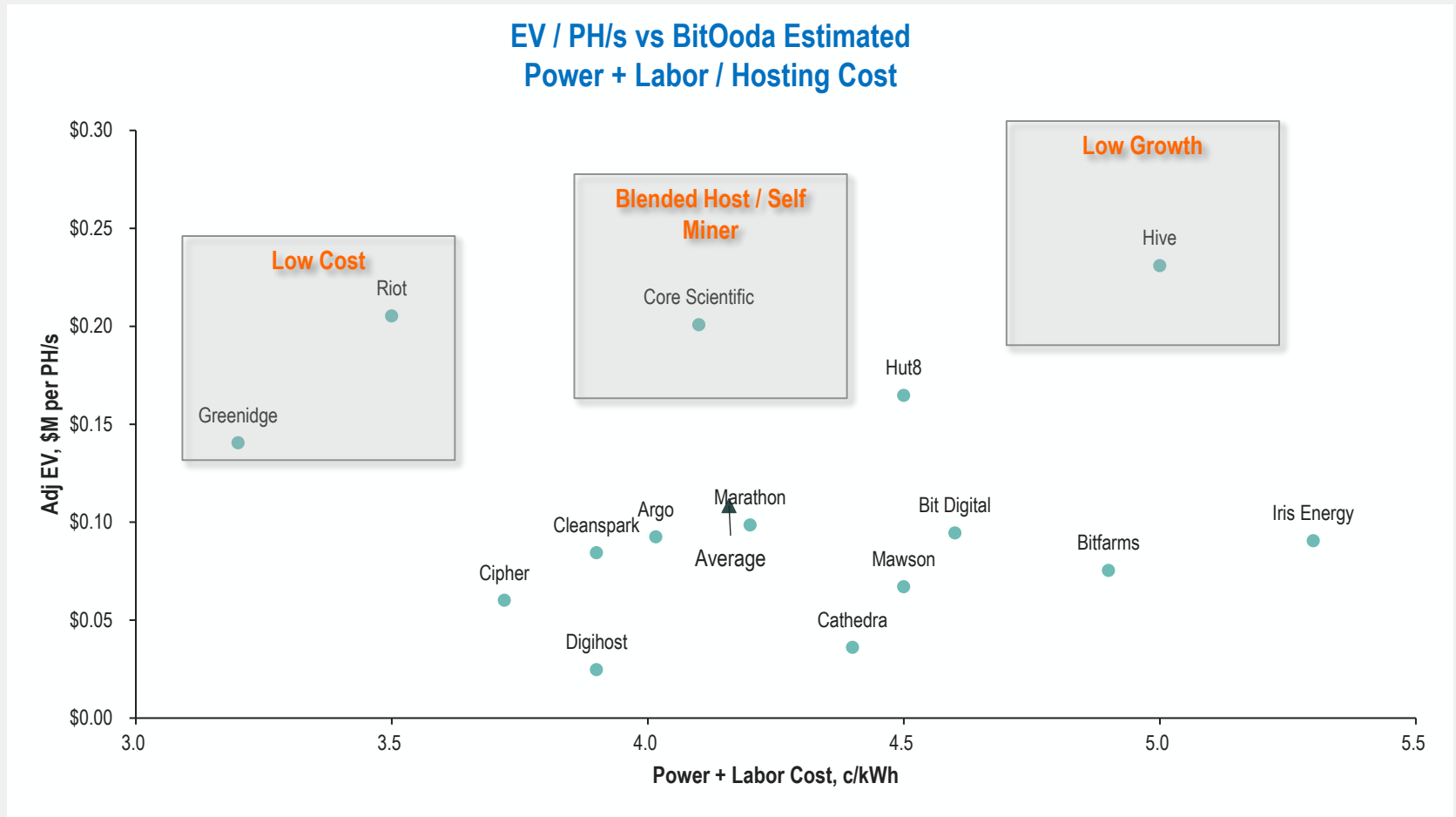


Figure: Adjusted EV per PH/s vs all in power + labor or hosting cost, cents per kWh

Source: BitOoda, Bloomberg

Note: 1. BitOoda estimates based on publicly available information; may not fully reflect actual all-in cost. 2. Excludes Terawulf and Northern Data

Select Financials

Few Analyst Estimates For Industry Aggregate Metrics

- The median trailing gross margin was 62%, with a 43% EBITDA margin
- As a group, the miners are expected to generate \$3.3B in 2022 EBITDA on over \$5B in revenue, based on Bloomberg consensus
- The group trades at an average 7.5x 2022E contribution (defined as cash cost of sales, adding back D&A to gross profit) and 3.5x Adj EV to 2022E EBITDA

Select Miner Financials

Name	Ticker	LTM Margins		Revenue		Gross Margin			EBITDA			D&A	EBIT			Contribution CY22E	Multiple of Contribution	Adj EV / 2022E EBITDA		
		Gross	EBITDA	LTM	CY21E	CY22E	LTM	CY21E	CY22E	LTM	CY21E	CY22E	CY22E	LTM	CY21E				CY22E	
Argo	ARBK				99.75	154.30	79.67	79.67		74.44	132.91	36.95		57.93	95.96	116.42	2.9x	2.6x		
Bit Digital	BTBT				109.00	112.00	73.30	73.30						35.40	37.00		—	—		
Bitfarms	BITF			121.22	172.00	244.00	69.80	69.80						86.60	112.00		—	—		
Cathedrala	CBIT CN	31.04	260.07	3.08					31.04				4.64				—	—		
Cipher	CIFR			0.00													—	1.8x		
Cleanspark	CLSK	75.76	(0.87)	88.42	45.55	182.50	75.76	73.20	73.20	1.16	(4.90)	88.50	36.05	(17.75)	52.45	69.39	4.6x	3.6x		
Core Scientific	CORZ				471.33	1014.33	58.10	58.10						199.00	578.67	149.33	7.1x	5.2x		
Digihost	DGHI																—	—		
Greenidge	GREE				125.00	231.00								49.70	124.00	42.70	(43.00)	81.30	—	3.5x
Hive	HIVE	65.94	122.50	240.03	193.69	160.49	65.94	69.60	69.60	196.80			166.41	123.33	63.09		—	—		
HuB	HUT	42.37	47.17	129.39	139.67	339.09	42.37	53.15	53.15	47.13	81.30	230.18	49.56	29.40	49.35	180.61	123.80	6.0x	3.2x	
Iris Energy	IREN				68.00	327.20		83.00	83.00		41.86	241.40	49.40		155.33	192.00	105.84	6.1x	2.7x	
Marathon	MARA	75.08	(331.22)	92.83	151.00	717.00	75.08	79.25	79.25	(93.86)	119.75	541.25	57.92	(111.67)	56.70	483.33	177.58	12.9x	4.2x	
Mawson	MIGI																	—	—	
Northern Data	NB2 GY				231.05	807.52		66.30	66.30		117.81	602.78	218.47		36.60	384.32	371.65	3.6x	2.2x	
Riot	RIOT	62.15	43.49	127.64	211.00	450.13	62.15	65.40	65.40	20.11	109.15	275.33	125.63	(2.84)	48.39	149.70	263.63	7.0x	6.7x	
Stronghold	SDIG				33.68	302.40		4.00	4.00		9.49	216.00	30.40		(2.89)	185.60	31.75	17.7x	2.6x	
Terawulf	WULF	33.76	(4.61)	16.30			33.76			(0.76)								—	—	
Total				818.91	2050.73	5041.96				175.23	792.60	3302.02	796.41	13.20	744.32	2446.70	187.03	7.5x	3.5x	
Average		55.16	19.50	90.99	157.75	387.84	55.16	64.56	64.56	25.03	72.05	300.18	79.64	1.47	57.26	188.21	187.03	6.1x	3.2x	
Median		62.15	43.49	92.83	139.67	302.40	62.15	69.70	69.70	4.64	74.44	241.40	49.48	(2.84)	49.35	149.70	123.80	6.1x	3.2x	

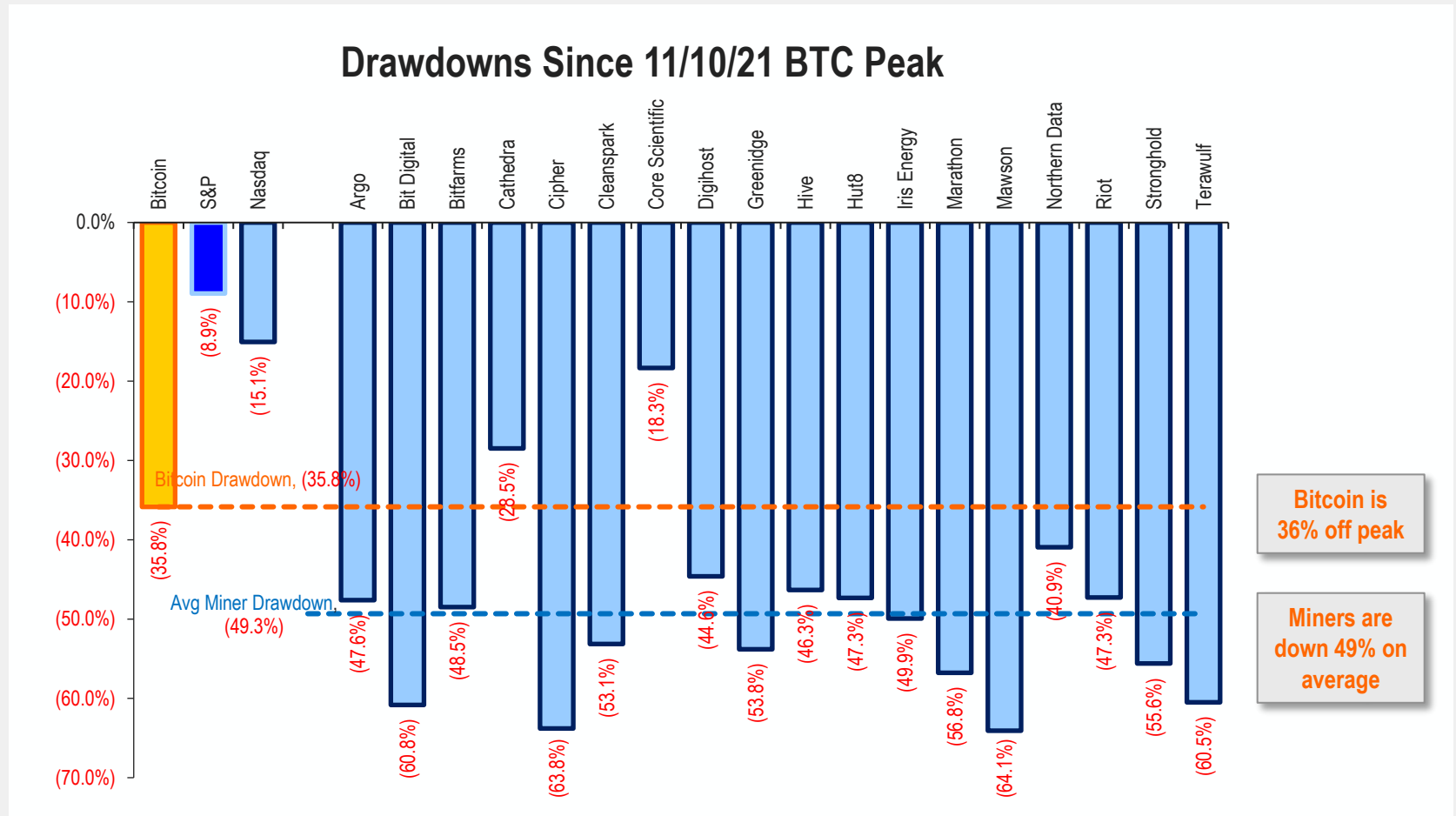
Figure: Select financial metrics – Bloomberg consensus revenue and EBITDA estimates
 Note: Contribution is BitOoda estimate of gross profit less depreciation

Source: BitOoda, Bloomberg

Drawdowns From BTC Peak

Miners Underperforming Bitcoin

- Bitcoin is off 36% from its peak on November 10, 2021
- Over the same period, the S&P 500 is down 9% and the Nasdaq 15%
- Most miners underperformed Bitcoin since then by an average additional 13%



Bitcoin is 36% off peak

Miners are down 49% on average

Figure: Bitcoin miner drawdowns
 Notes: 1. Iris Energy's drawdown measured from 11/17/21

Source: BitOoda, Bloomberg

Beta & Correlation

Not All Miners Are Equal

- We expect most miners to exhibit a Beta > 1 relative to Bitcoin
- Bitcoin is off 36% from its November 2021 peak, Hashrate is up, and transaction fees are flattish, so miners should experience both falling revenue and margin compression
- Interestingly, although most miners have underperformed Bitcoin, both the beta to Bitcoin and correlation to Bitcoin show much more dispersion
- The correlation of Bitcoin to the S&P and Nasdaq is quite high, at 46% & 52%, respectively
- **The correlation to equities is falling back down, though**

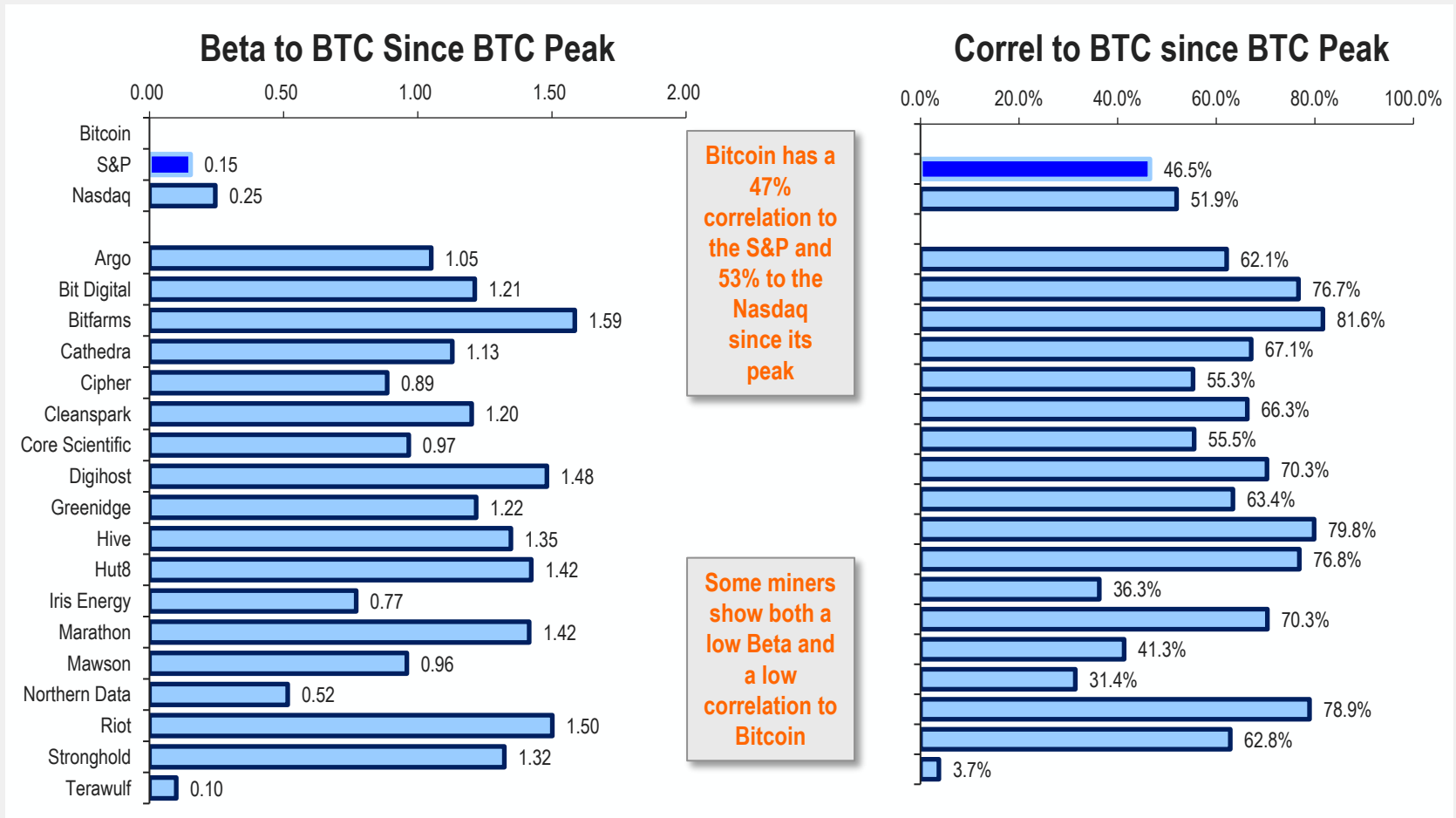


Figure: Bitcoin miner drawdowns
 Note 1. Iris Energy's drawdown measured from 11/17/21

Source: BitOoda, Bloomberg

Institutional Fund Flows



Select Fund Analysis

GBTC is Largest; Most are Small

- GBTC, an ETP, has the largest Assets Under Management (AUM) in our select group below, representing \$21.5B of the \$28B AUM for the group
- Some of the other large-ish funds with crypto exposure include ARKW, BITO, BLOK and BITW
- Of these, GBTC appears not to have raised any capital in recent times
- Please let us know of any funds you would like to see included in the data

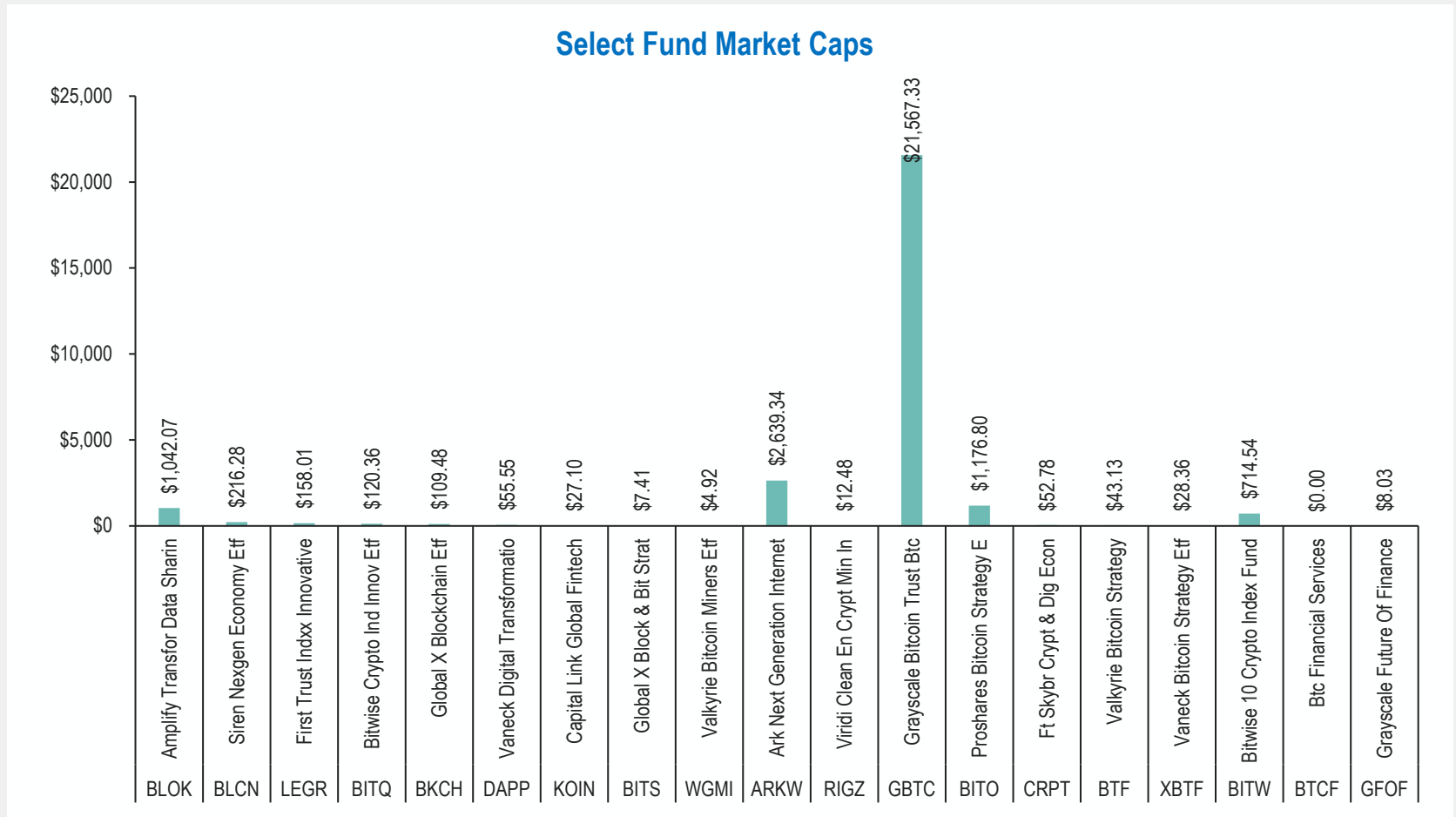


Figure: Select fund markets caps
As of 2/15/2022

Source: BitOoda, Bloomberg

Cumulative Flows: BITO Launch Helped Offset ARKW Outflows

- Over the past year, total inflows into our selected funds have been \$571mm
- Cumulative flows peaked at \$1B on 12/8/21, and troughed at outflows of \$853mm on 10/11/21

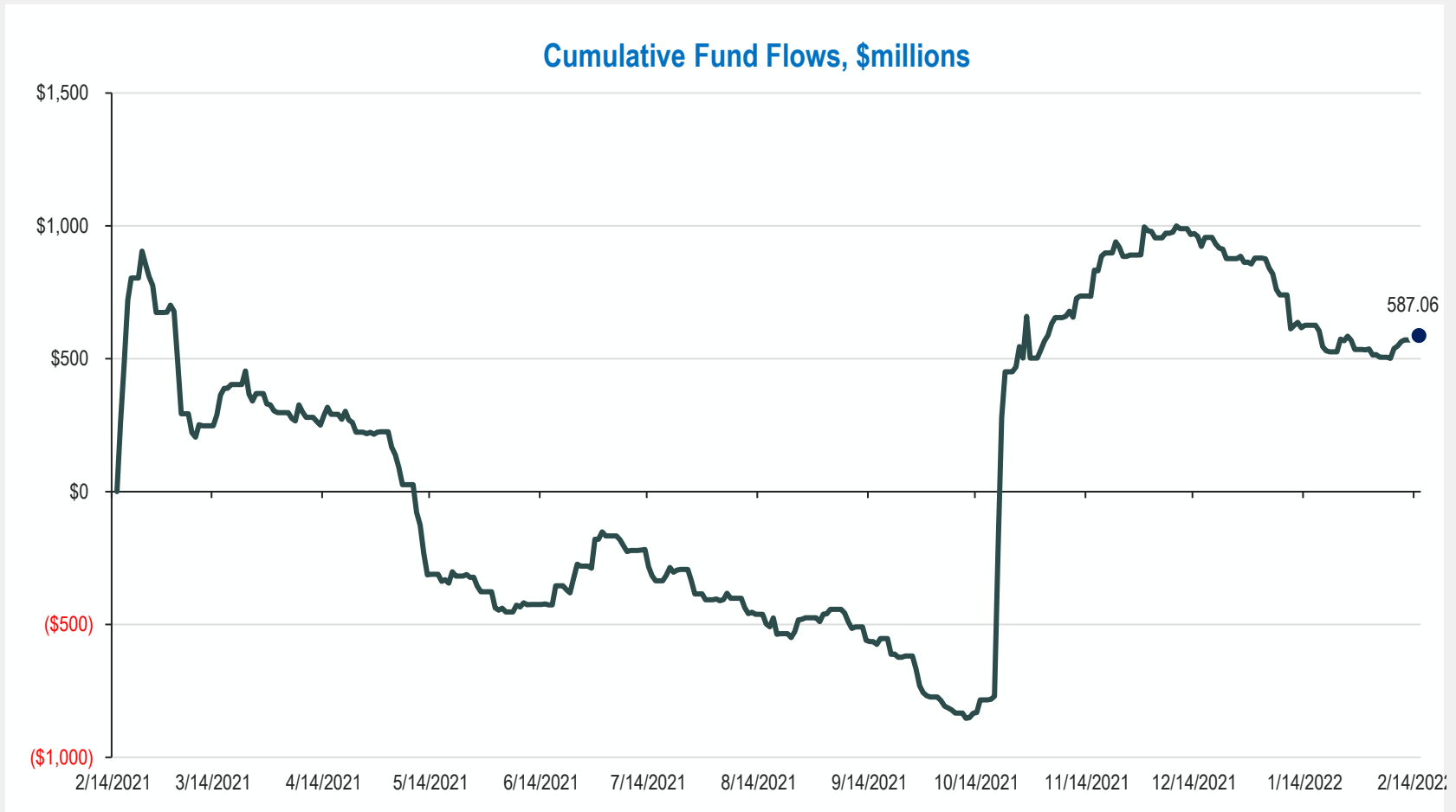


Figure: Cumulative fund flows for select crypto / crypto exposed funds
Trailing one year

Source: BitOoda, Bloomberg

Select Flows

BITO, BLOK Inflows; ARKW Outflows

- Over the past year, ARKW – which is not just exposed to crypto but to Web 3 / tech innovation more broadly – has seen \$2.7 billion of outflows
- Over the same period, BITO has seen \$1.7B in inflows, with BLOK receiving \$675mm and other selected funds receiving \$936mm in inflows

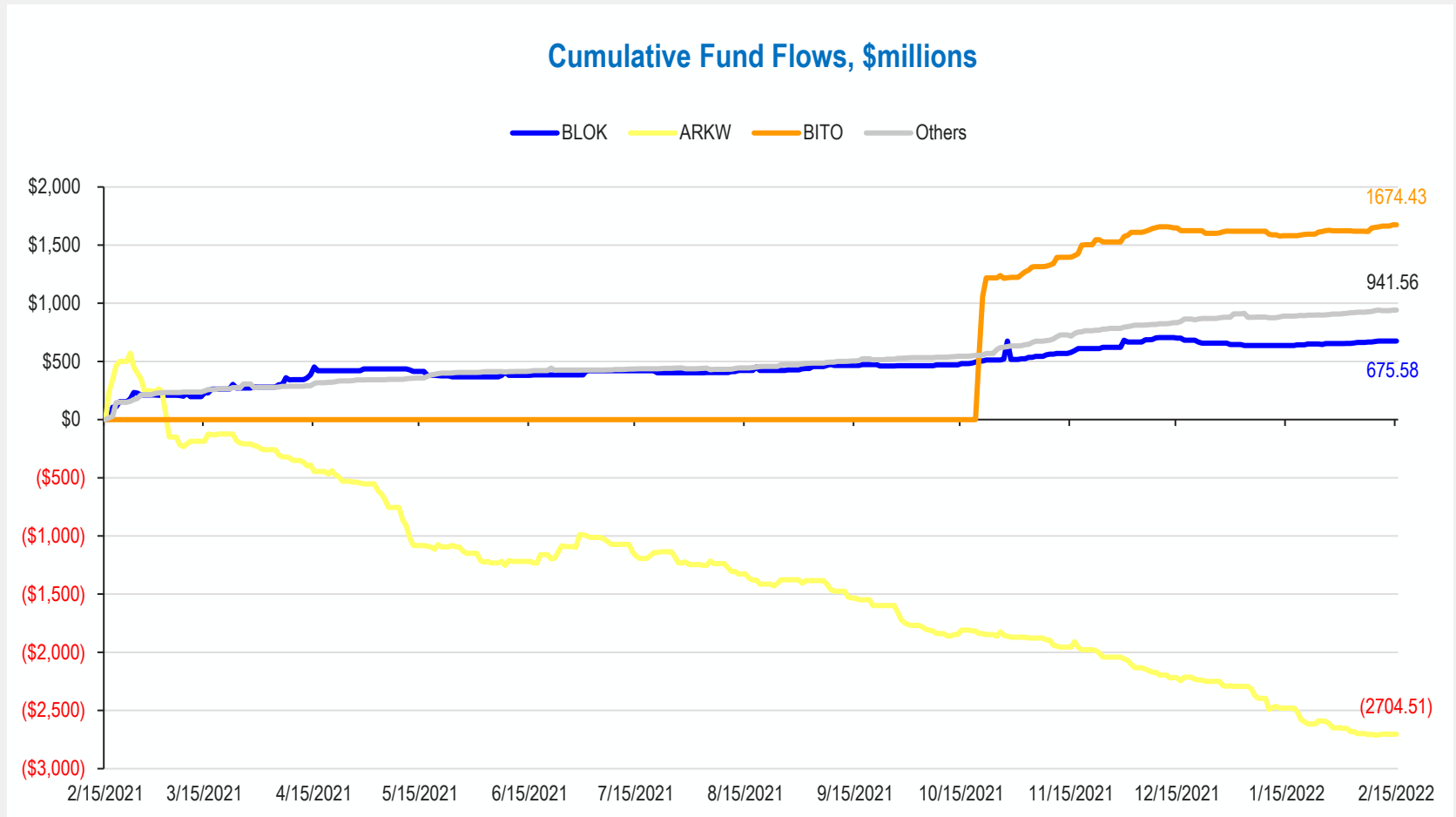


Figure: Cumulative fund flows for select crypto / crypto exposed funds
Trailing one year

Source: BitOoda, Bloomberg

YTD Daily Fund Flows

\$291mm Outflow; ARKW saw \$411mm Redemptions

- Since the beginning of the year, the fund group saw \$291mm in redemptions
- However, ARKW experienced a \$411mm outflow; other funds overall saw inflows

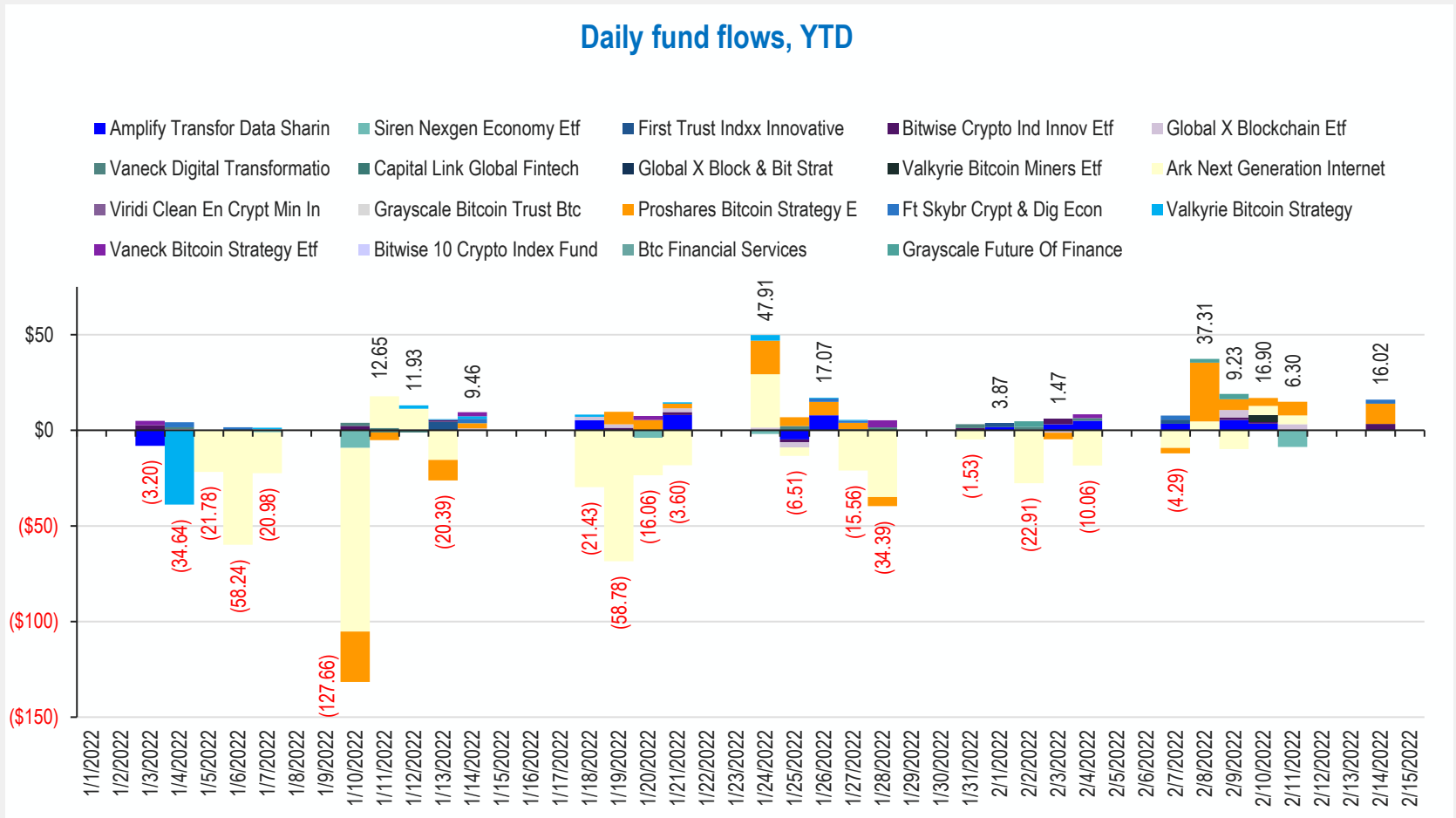


Figure: Daily fund flows Since 1/1/2022

Source: BitOoda, Bloomberg

ProShares Futures ETF BITO Underperformance Widens

- The ProShares ETF BITO currently has a market cap of \$1121 million
- The ETF has underperformed Bitcoin by 2.5%, declining by 33.5% since launch vs. a 31% decline in the price of BTC in the same timeframe
- This is expected given the cost of rolling the futures contracts each month

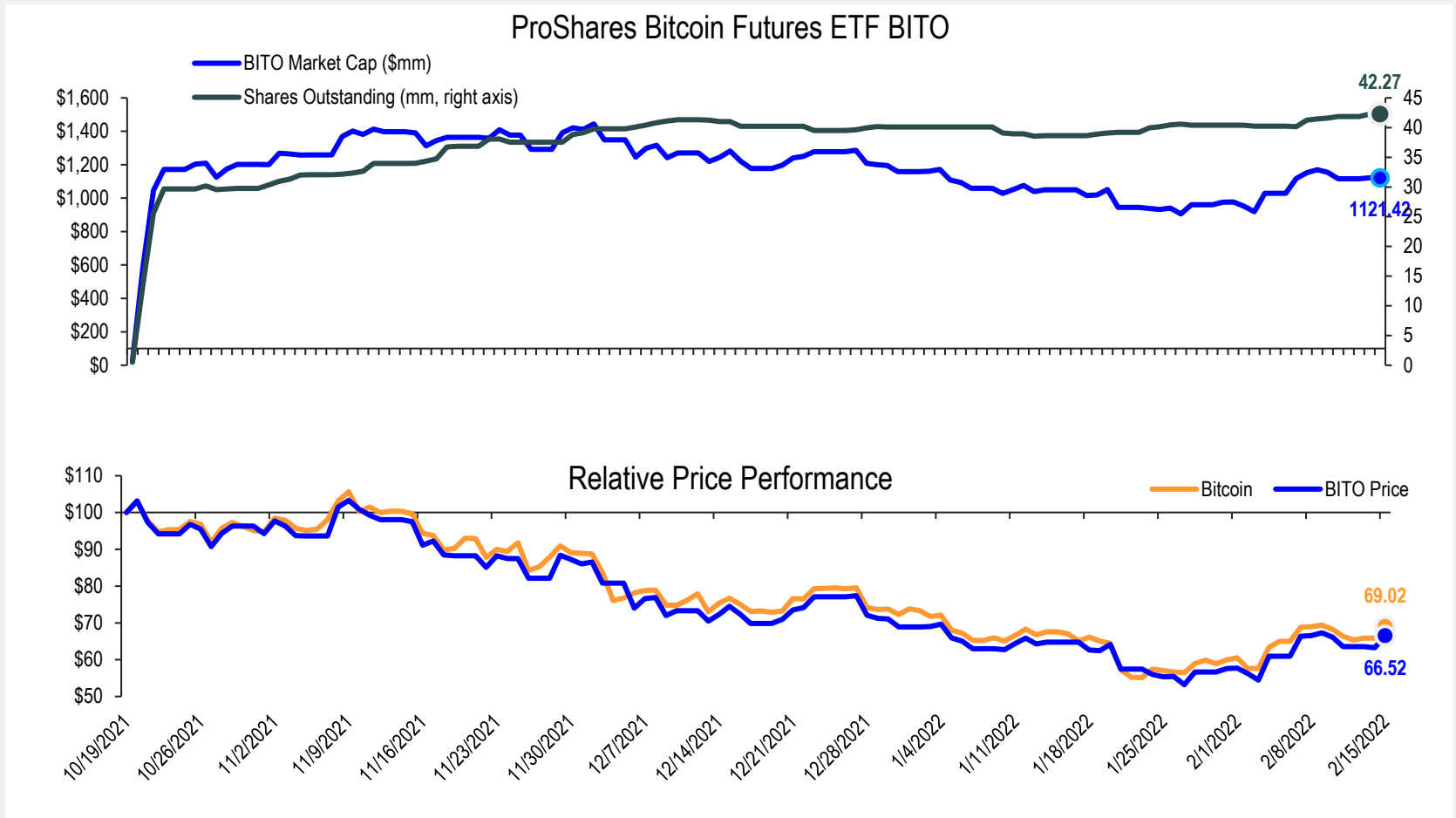


Figure: ProShares Bitcoin Strategy Futures ETF market cap and price performance compared to Bitcoin

Source: BitOoda, Bloomberg

ProShares Futures ETF BITO \$58mm inflows in past week

- The ProShares ETF BITO saw ~\$58mm in inflows in the past week
- This is indicative of capital seeking a bottom in Bitcoin prices

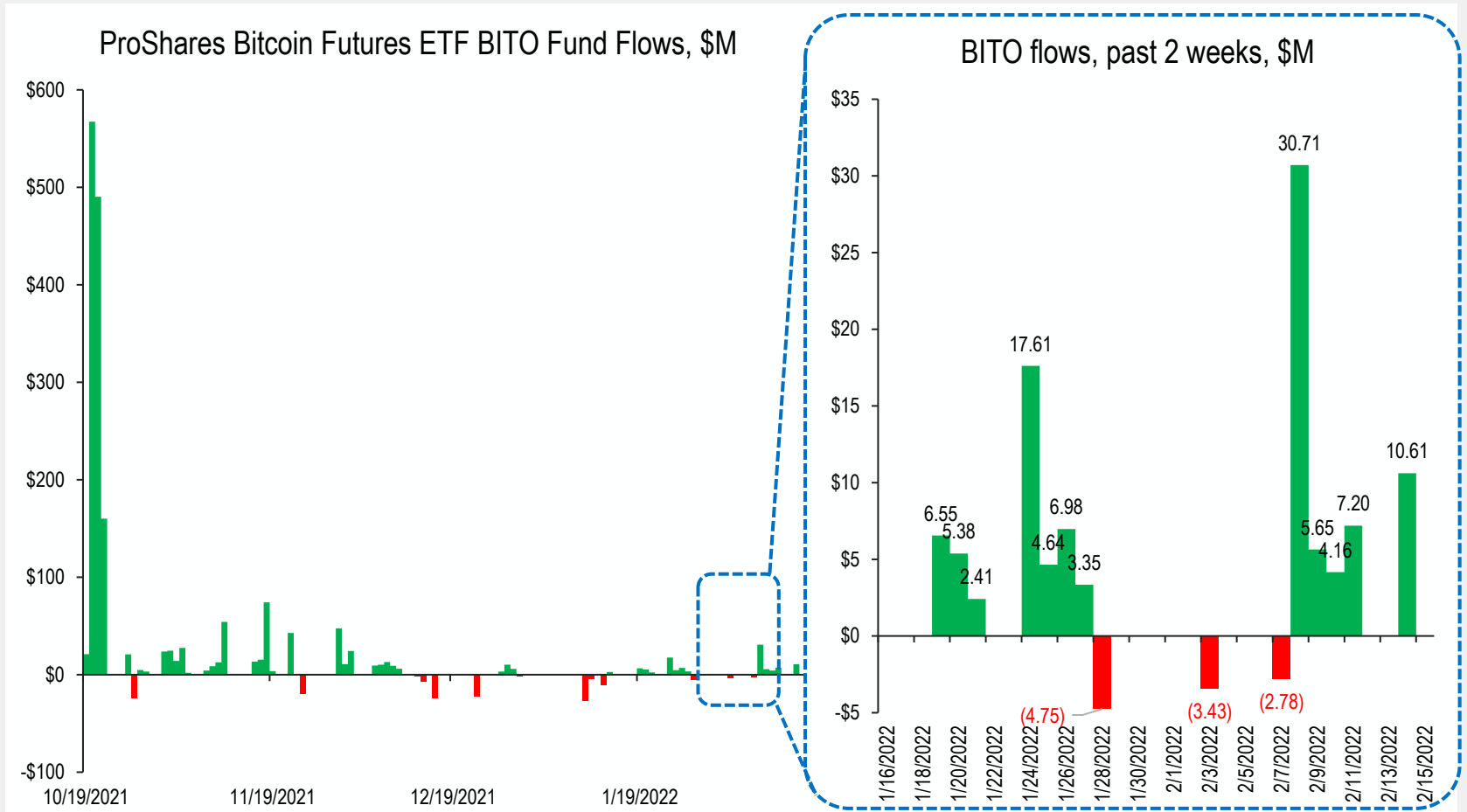


Figure: ProShares Bitcoin Strategy Futures ETF market cap and price performance compared to Bitcoin

Source: BitOoda, Bloomberg



CME Futures

Realized Bitcoin Volatility Now 11% Above Implied

- Realized Bitcoin volatility (30-day annualized) consistently comes in under 100% moneyness implied vol for the generic 1st CME contract
- However, this recently flipped to realized exceeding implied volatility
- Currently, 100% moneyness implied volatility is 58.5%, compared with 69.6% for realized volatility
- Realized volatility is 11% points below implied

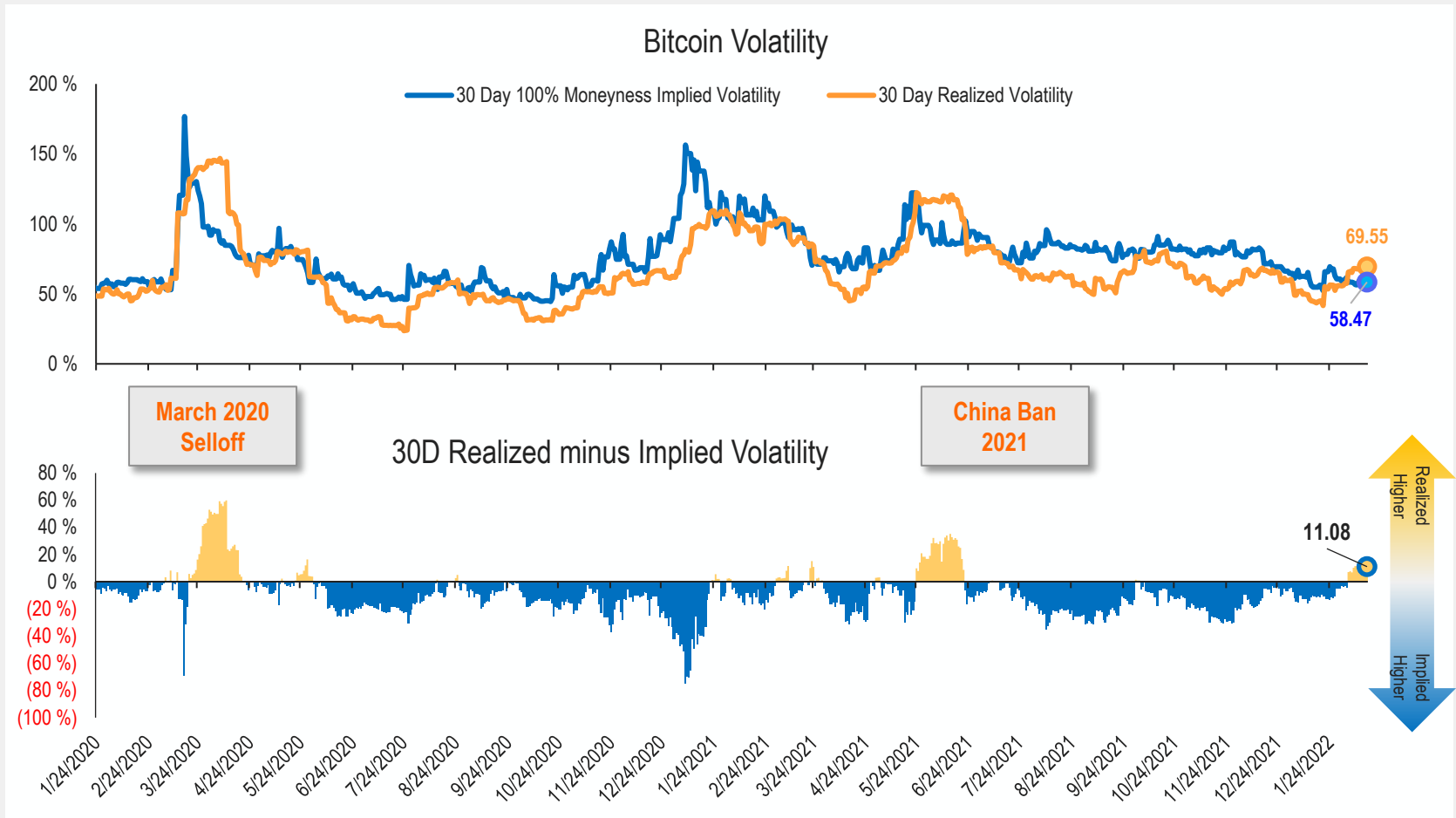


Figure: Trailing 2-year Bitcoin annualized volatility based on 30-day trailing daily returns of XBTUSD Curncy and 100% Moneyness Implied Volatility for BTC1 Curncy

Source: Bloomberg, BitOoda

Futures Curve Flat through April

Open Interest Up 2.4% WoW

- The futures curve is flat through April
- Backwardation on the curve in May and beyond, but without meaningful open interest or change in open interest
- Overall CME open interest rose 2.4% vs. last week and 3.3% vs. two weeks ago to 10,128 lots
- The February roll appears to be beginning: Open interest on the active contract is drifting lower while March contract OI is expanding

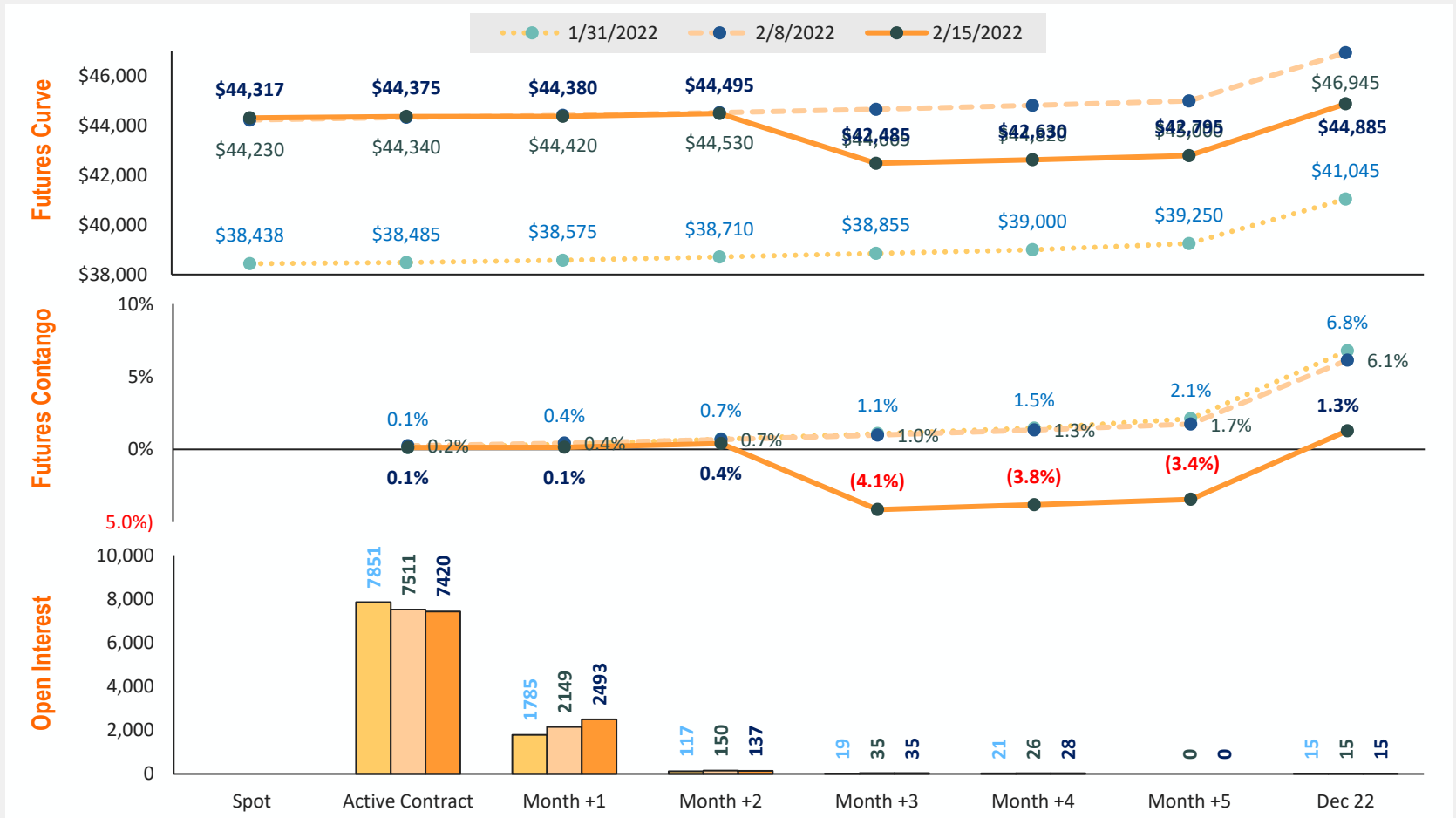


Figure: Bitcoin futures metrics

Source: BitOoda, CME, Bloomberg

CME Commitment of Traders 2/8 Open Interest Dipped on Lower Spreading, Other Reportables Positions

- The CME Bitcoin Commitment of Traders report shows that open interest dipped slightly over the week to 2/8/22
- Data shows 9,886 lots on 2/8 compared with 9,948 lots on 2/1
- Spreading positions fell by 140 lots, while total OI fell by 62 lots
- Other Reportables shifted to a meaningful 288 lot net short, from a 620 lot net long position
- Commercial players reduced their net short positions

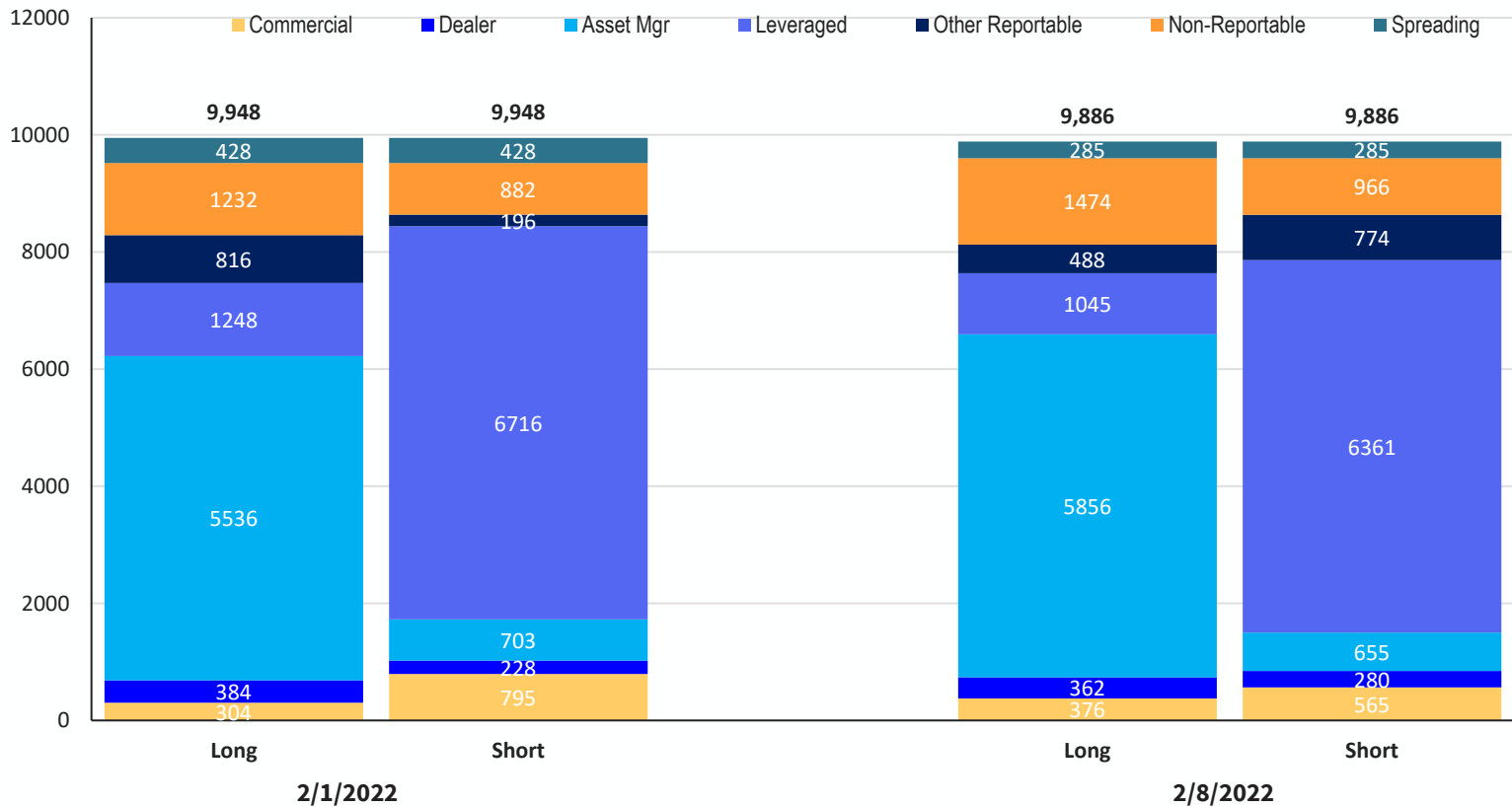


Figure: CME Bitcoin Commitment of Traders, 2/1/2022 and 2/8/2022

Source: BitOoda, Bloomberg, CME

Non-Commercial Net Length Drops to 189 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, but recently switched to short
- As a result, the net position for non-commercial market participants has been largely short and is now long for the first time since September
- The net length for non-commercial participants fell to 189 lots

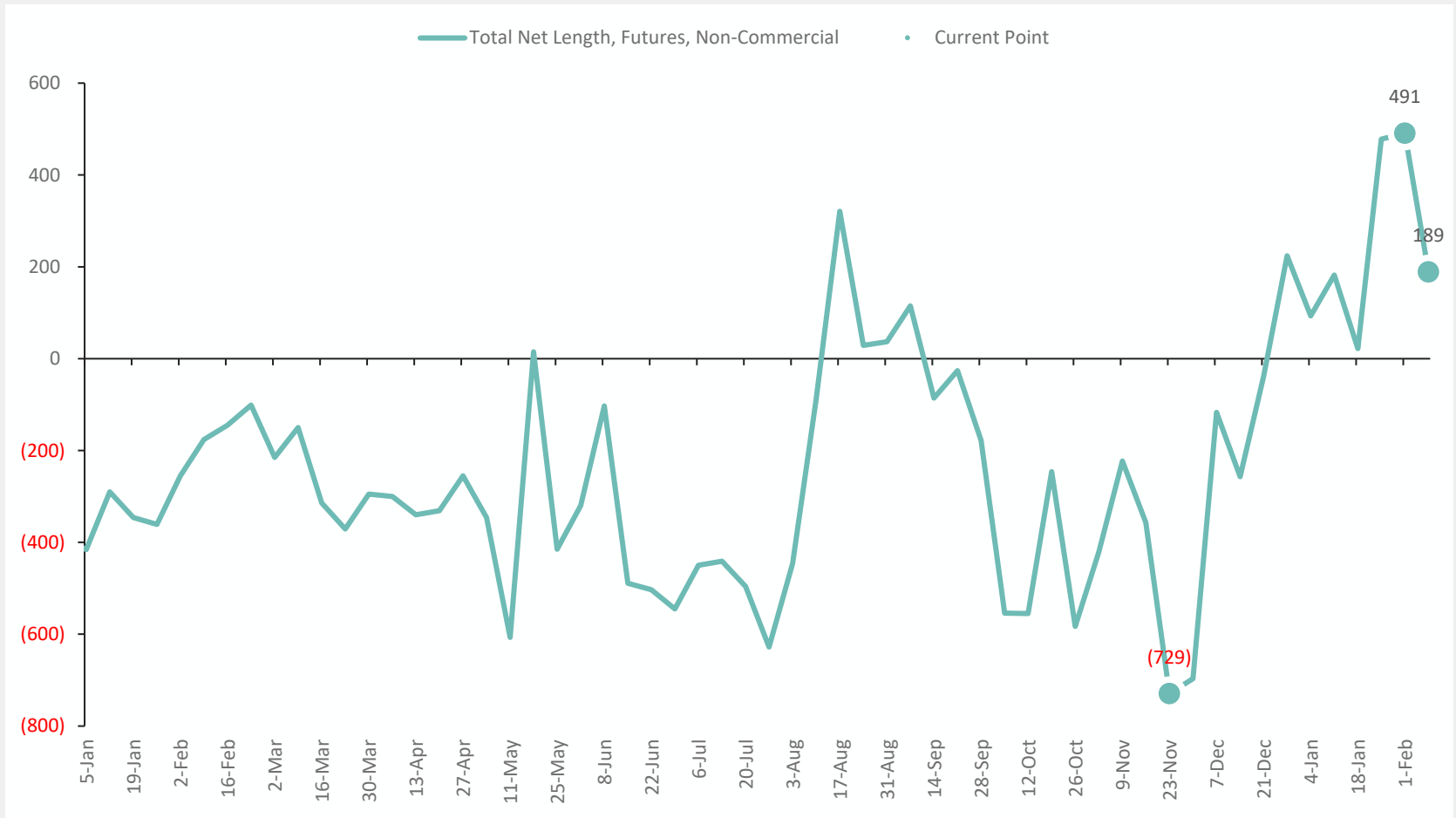


Figure: CME Bitcoin Future Non-Commercial Net Length, from Jan 1 2021

Source: Bloomberg



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