



# Bitcoin and the Public Markets

## 53% BTC Correlation to Nasdaq Dropping as Equity Markets Stabilize; Equities Outperforming BTC

**The correlation of Bitcoin to the Nasdaq is ~53% and dropping.** In recent days, the S&P and the Nasdaq have stabilized following the late Jan selloff. As we noted, a large down day in the Nasdaq is a strong predictor of large Bitcoin price declines. Few such days in the past week have resulted in BTC correlation drifting downwards, but 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 8 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 \$160k**, up \$30k since last week as Bitcoin price rose 13.5% WoW. 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 8.0x 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 – not unlikely, but counter to the current trend. The multiples now look reasonably accommodative of a downward EBITDA recalibration.

**Most public miners have underperformed Bitcoin YTD** and have experienced an average drawdown of ~50% since Bitcoin peaked on 11/10/2021. Bitcoin is down 37% from that peak, which makes sense because of the loss of operating leverage as mining margins compress with BTC’s falling price.

### Key Takeaways

#### Equity Markets

- *Bitcoin’s correlation to the Nasdaq is about 53%, but the relationship is strongest when the Nasdaq is down a lot*

- *Recent stabilization in the equity markets has led to correlations drifting back downwards*
- *Bitcoin acts as a high-beta risk-on asset*

#### Public Miners

- *Unsurprisingly, public miners have underperformed Bitcoin as earnings expectations deleverage with margin compression*
- *On our preferred adjusted EV per PH/s metric, the miners trade at an average of \$160k, up \$30k from last week*
- *Low-cost miners like Riot and Greenidge, balanced hosting/self-mining models like Core Scientific, and low-growth miners like Hive trade at a premium to the group*
- *The less miner growth is in the future, the higher the multiple ( $R^2 = 33%$ ); this is quite unlike most traditional equities.*
- *Investors are paying up for operating capacity vs in the future*
- *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*

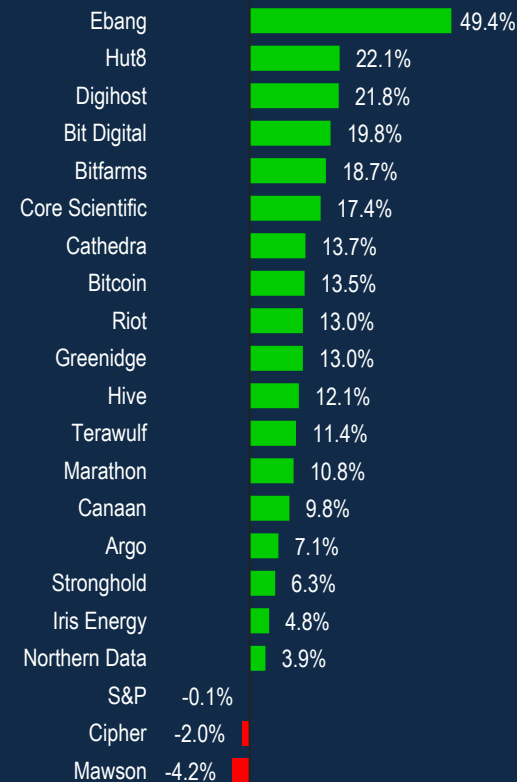
## Research

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BTC Price \$43,737  
 (2/7 at 11am ET)

Obs Hashrate 185 EH/s

### 7 Day Performance



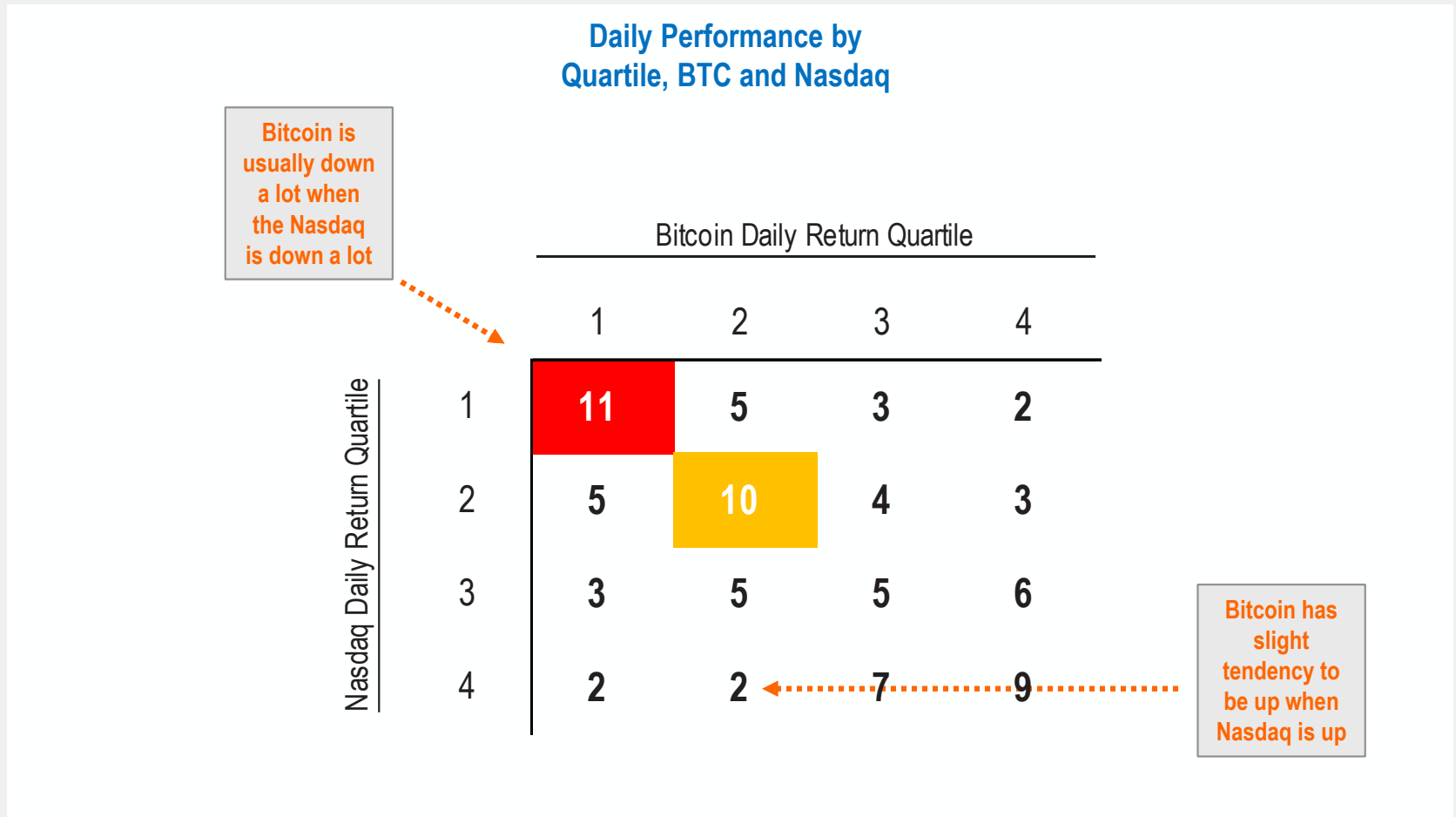


# Public Miners



# 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

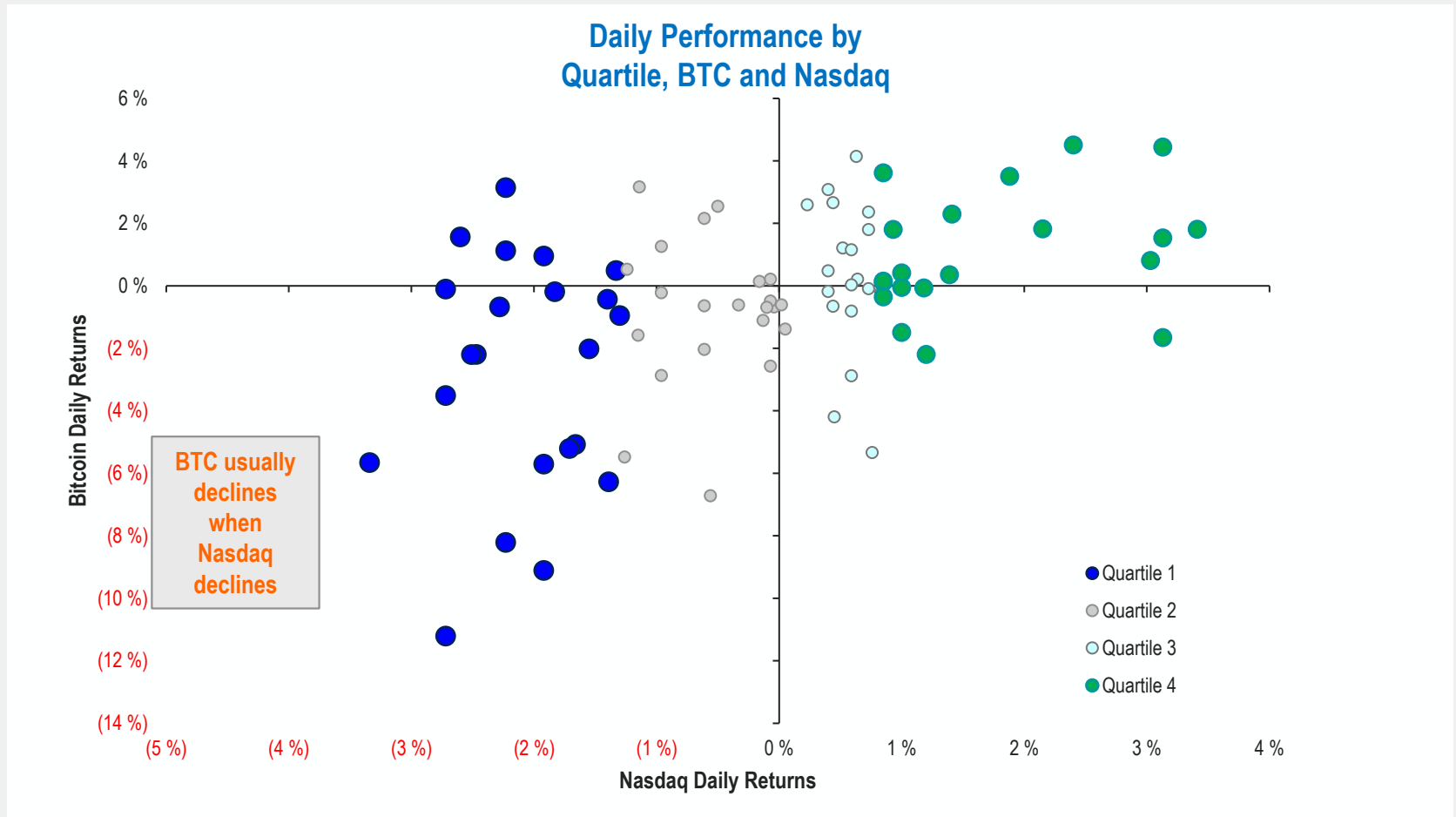


**Figure:** Sample count of daily returns by quartile, Bitcoin and Nasdaq Note Since 11/10/21

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

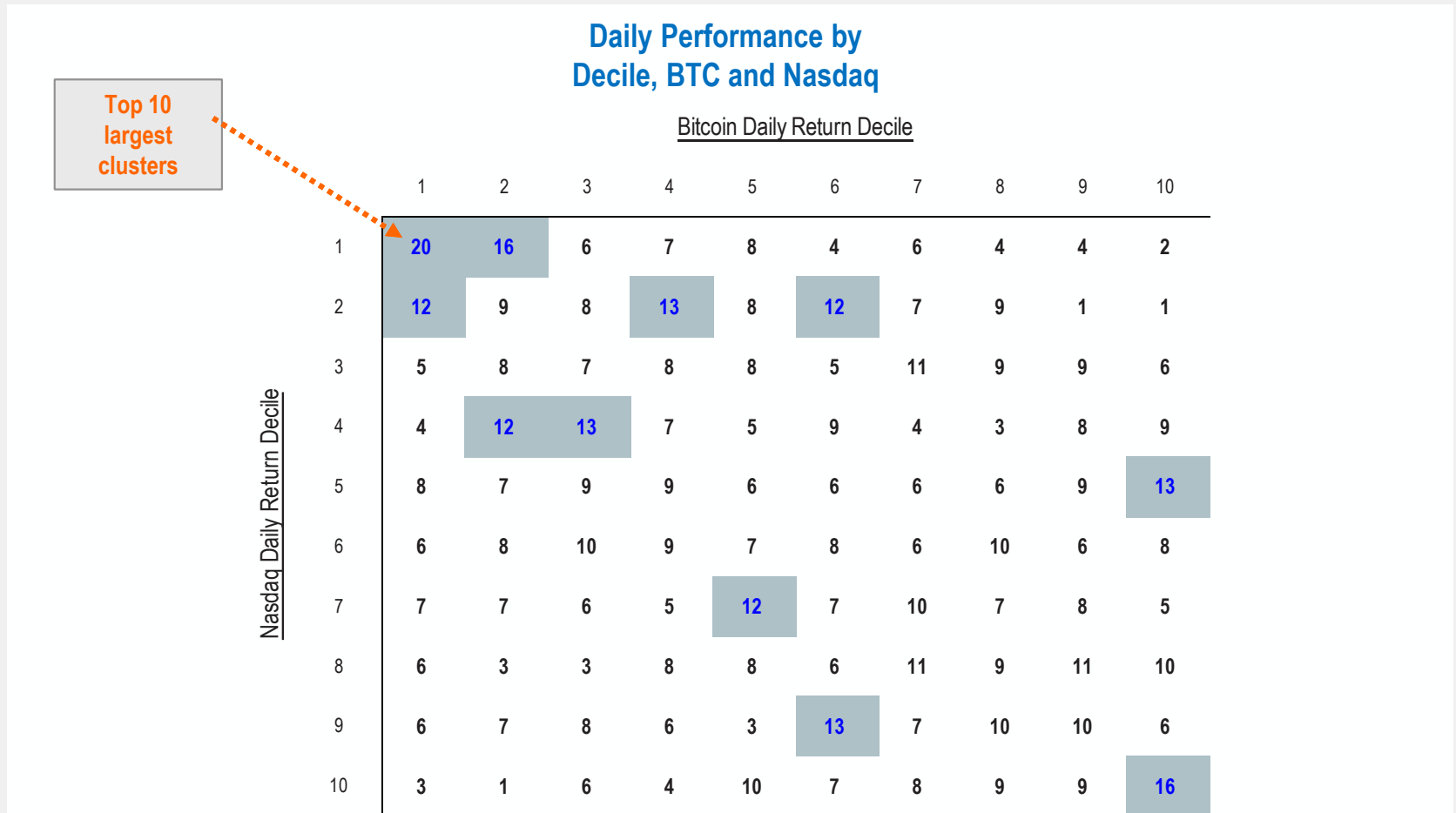


**Figure:** Bitcoin miner drawdowns  
Note Lowest quartile is weakest 25% of daily returns

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

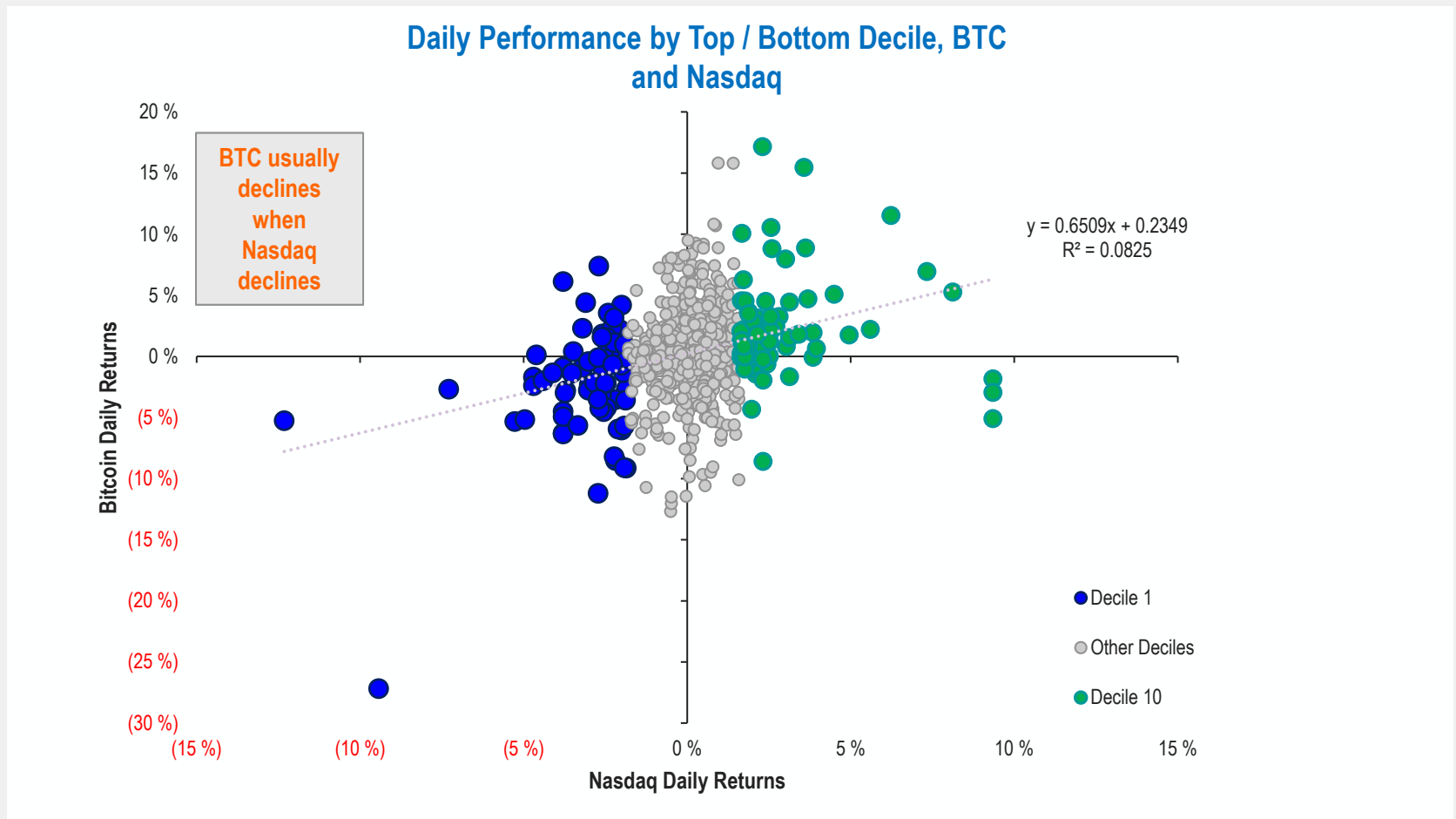


**Figure:** Sample count of daily returns by quartile, Bitcoin and Nasdaq  
 Note Since 1/1/20

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 Miners Performance Map

Year to Date	Quarter to Date	Month to Date	30 Day	7 Day	1 Day
					Bitfarms, 14.0%
					Hut8, 11.7%
					Cathedra, 11.7%
					Hive, 11.5%
					Marathon, 10.9%
					Bit Digital, 9.7%
					Ebang, 8.8%
					Riot, 8.8%
					Greenidge, 8.7%
		Ebang, 49.4%		Ebang, 49.4%	Core Scientific, 7.9%
		Hut8, 22.1%		Hut8, 22.1%	Cipher, 7.6%
		Digihost, 21.8%	Ebang, 32.0%	Digihost, 21.8%	Stronghold, 6.9%
Ebang, 32.0%	Ebang, 32.0%	Bit Digital, 19.8%	Digihost, 17.6%	Bit Digital, 19.8%	Northern Data, 5.3%
Cathedra, (2.3%)	Cathedra, (2.3%)	Bitfarms, 18.7%	Iris Energy, 15.1%	Bitfarms, 18.7%	Iris Energy, 4.9%
Digihost, (4.8%)	Digihost, (4.8%)	Core Scientific, (4.8%)	Cathedra, 10.7%	Core Scientific, 17.4%	Argo, 4.7%
S&P, (5.3%)	S&P, (5.3%)	Cathedra, (5.3%)	Hut8, 9.7%	Cathedra, 13.7%	Canaan, 4.7%
Bitcoin, (5.9%)	Bitcoin, (5.9%)	Bitcoin, 13.5%	Bitcoin, 4.4%	Bitcoin, 13.5%	Bitcoin, 4.6%
Core Scientific, (6.9%)	Core Scientific, (6.9%)	Riot, 13.0%	Mawson, 3.8%	Riot, 13.0%	Mawson, 4.4%
Hut8, (7.6%)	Hut8, (7.6%)	Greenidge, 13.0%	Core Scientific, 1.3%	Greenidge, 13.0%	Terawulf, 3.2%
Canaan, (8.4%)	Canaan, (8.4%)	Hive, 12.1%	Bitfarms, 1.3%	Hive, 12.1%	Digihost, 3.0%
Argo, (10.5%)	Argo, (10.5%)	Terawulf, 11.4%	Canaan, 1.1%	Terawulf, 11.4%	S&P, 0.3%
Terawulf, (13.6%)	Terawulf, (13.6%)	Marathon, 10.8%	Terawulf, 0.8%	Marathon, 10.8%	
Bitfarms, (14.0%)	Bitfarms, (14.0%)	Canaan, 9.8%	Hive, (2.6%)	Canaan, 9.8%	
Iris Energy, (14.7%)	Iris Energy, (14.7%)	Argo, 7.1%	Argo, (2.9%)	Argo, 7.1%	
Hive, (15.5%)	Hive, (15.5%)	Stronghold, 6.3%	S&P, (3.5%)	Stronghold, 6.3%	
Mawson, (17.8%)	Mawson, (17.8%)	Iris Energy, 4.8%	Marathon, (8.5%)	Iris Energy, 4.8%	
Greenidge, (18.4%)	Greenidge, (18.4%)	Northern Data, 3.9%	Riot, (11.5%)	Northern Data, 3.9%	
Riot, (19.3%)	Riot, (19.3%)	S&P, (0.1%)	Northern Data, (12.8%)	S&P, (0.1%)	
Marathon, (20.6%)	Marathon, (20.6%)	Cipher, (2.0%)	Bit Digital, (14.4%)	Cipher, (2.0%)	
Northern Data, (23.6%)	Northern Data, (23.6%)	Mawson, (4.2%)	Greenidge, (17.5%)	Mawson, (4.2%)	
Bit Digital, (25.5%)	Bit Digital, (25.5%)		Stronghold, (24.3%)		
Stronghold, (26.1%)	Stronghold, (26.1%)		Cipher, (25.1%)		
Cipher, (35.6%)	Cipher, (35.6%)				

- Relatively few public Bitcoin miners have outperformed Bitcoin YTD
- However, most miners are outperforming Bitcoin today, 2/7. With Bitcoin being up modestly, investors factor in operating leverage in bidding up most miners



Source: BitOoda, Bloomberg

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# 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

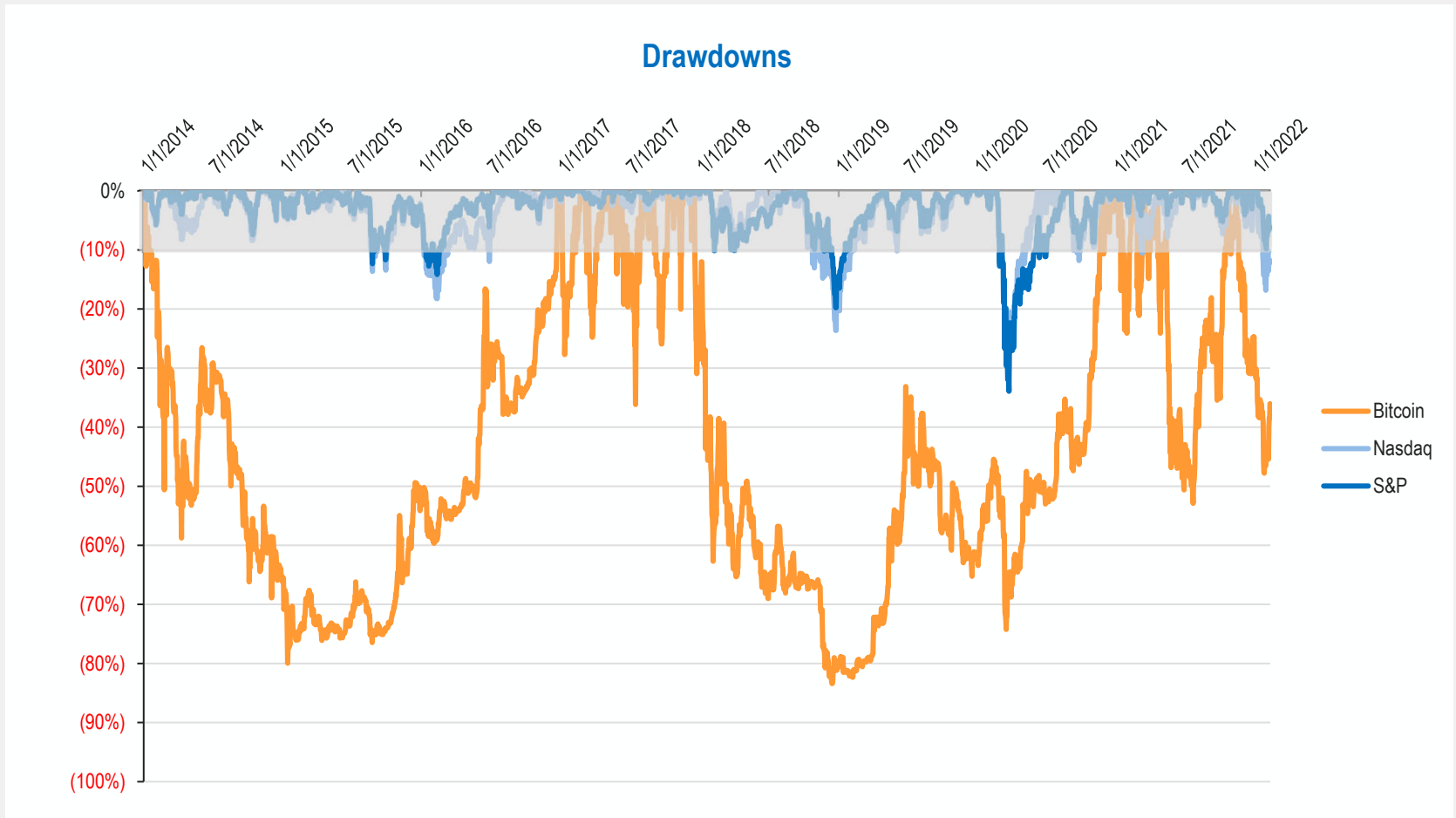


Figure: Drawdowns comparisons: Bitcoin vs the S&P and Nasdaq Since 1/1/2014

Source: BitOoda, Bloomberg





# Trading Comparables

## Miners Trade at an Adj EV of \$160k per PH/s of 2022YE Hashrate, Up \$30k 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 \$590k per current operating PH/s and \$160k per YE 2022 expected PH/s, up \$30k 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	\$43,318.20	\$28,824.32	\$68,991.85	\$820,934											
S&P	SPX Index	S&P 500 Index	4499.79	3723.3	4818.6	\$39,644,904											
Nasdaq	CCMP Index	Nasdaq Composite	14165.62	12397.1	16212.2	\$23,985,201											
<b>Public Miners</b>																	
Argo	ARBK	Argo Blockchain Plc	\$10.80	\$7.90	\$21.00	\$505.5	\$0.0	\$0.0	2317 BTC	\$100.4	\$405.2	1605 PH/s	2000 PH/s	3700 PH/s	\$0.25	\$0.11	
Bit Digital	BTBT	Bit Digital Inc	\$4.49	\$3.37	\$30.68	\$312.6	\$26.5	\$0.0	627 BTC	\$27.2	\$258.9	1603 PH/s	1000 PH/s	2603 PH/s	\$0.16	\$0.10	
Bitfarms	BITF	Bitfarms Ltd/Canada	\$4.28	\$2.81	\$9.36	\$835.6	\$43.3	\$21.1	2973 BTC	\$128.8	\$684.7	2100 PH/s	5900 PH/s	8000 PH/s	\$0.33	\$0.09	
Cathedrala	CBIT CN	Cathedrala Bitcoin Inc	\$0.51	\$0.23	\$1.01	\$44.0	\$5.7	\$0.6	129 BTC	\$5.6	\$33.3	161 PH/s	566 PH/s	727 PH/s	\$0.21	\$0.05	
Cipher	CIFR	Cipher Mining Inc	\$2.95	\$2.54	\$15.39	\$738.0	\$282.3	\$0.0	0 BTC	\$0.0	\$455.7	0 PH/s	8000 PH/s	8000 PH/s	\$0.00	\$0.06	
Cleantalk	CLSK	Cleantalk Inc	\$7.43	\$5.47	\$40.50	\$308.1	\$18.8	\$2.4	838 BTC	\$36.3	\$255.3	1300 PH/s	2458 PH/s	3758 PH/s	\$0.20	\$0.07	
Core Scientific	CORZ	Core Scientific Inc	\$10.24	\$5.82	\$14.98	\$3,248.9	\$1.6	\$0.0	2816 BTC	\$122.0	\$3,125.4	2640 PH/s	12360 PH/s	15000 PH/s	\$1.18	\$0.21	
Digihost	DGHI	Digihost Technology Inc	\$4.36	\$2.44	\$14.25	\$108.8	\$17.3	\$2.5	524 BTC	\$22.7	\$71.3	0 PH/s	2400 PH/s	2400 PH/s	\$0.00	\$0.03	
Greenidge	GREE	Greenidge Generation Holding	\$12.89	\$9.85	\$60.00	\$523.7	\$51.6	\$26.3	0 BTC	\$0.0	\$498.4	1200 PH/s	1900 PH/s	3100 PH/s	\$0.42	\$0.16	
Hive	HIVE	Hive Blockchain Technologies	\$2.20	\$1.50	\$5.75	\$900.0	\$24.4	\$17.0	2921 BTC	\$126.5	\$766.0	2000 PH/s	1000 PH/s	3000 PH/s	\$0.38	\$0.26	
Hut 8	HUT	Hut 8 Mining Corp	\$7.28	\$3.15	\$16.57	\$1,234.6	\$223.2	\$10.3	5053 BTC	\$218.9	\$802.9	1700 PH/s	2800 PH/s	4500 PH/s	\$0.47	\$0.18	
Iris Energy	IREN	Iris Energy Ltd	\$13.90	\$8.55	\$28.25	\$770.8	\$118.6	\$0.0	0 BTC	\$0.0	\$652.3	1452 PH/s	5671 PH/s	7123 PH/s	\$0.45	\$0.09	
Marathon	MARA	Marathon Digital Holdings In	\$25.64	\$18.32	\$83.45	\$2,631.4	\$32.9	\$0.0	7453 BTC	\$322.9	\$2,275.7	3200 PH/s	20100 PH/s	23300 PH/s	\$0.71	\$0.10	
Mawson	MIGI	Mawson Infrastructure Group	\$5.54	\$2.00	\$17.25	\$382.3	\$32.4	\$3.8	0 BTC	\$0.0	\$353.7	800 PH/s	3350 PH/s	4150 PH/s	\$0.44	\$0.09	
Northern Data	NB2 GY	Northern Data Ag	\$58.80	\$40.20	\$143.00	\$1,366.5	\$0.0	\$0.0	0 BTC	\$0.0	\$1,366.5	660 PH/s	2600 PH/s	3260 PH/s	\$2.07	\$0.42	
Riot	RIOT	Riot Blockchain Inc	\$17.69	\$12.90	\$79.50	\$2,062.4	\$71.5	\$8.4	4464 BTC	\$193.4	\$1,805.8	3000 PH/s	6000 PH/s	9000 PH/s	\$0.60	\$0.20	
Stronghold	SDIG	Stronghold Digital Mining-A	\$9.52	\$7.26	\$35.80	\$459.1	\$41.4	\$54.5	56 BTC	\$2.4	\$469.8	470 PH/s	7600 PH/s	8070 PH/s	\$1.00	\$0.06	
Terawulf	WULF	Terawulf Inc	\$12.96	\$8.36	\$43.98	\$1,295.7	\$1.5	\$0.0	0 BTC	\$0.0	\$1,294.2	0 PH/s	2100 PH/s	2100 PH/s	\$0.00	\$0.62	
<b>Total</b>						<b>\$17,728.1</b>	<b>\$993.0</b>	<b>\$147.0</b>	<b>30170 BTC</b>	<b>\$1,306.9</b>	<b>\$15,575.1</b>	<b>23891 PH/s</b>	<b>87805 PH/s</b>	<b>111791 PH/s</b>	<b>\$0.65</b>	<b>\$0.14</b>	
<b>Average</b>						<b>\$984.9</b>	<b>\$55.2</b>	<b>\$8.2</b>	<b>1676 BTC</b>	<b>\$72.6</b>	<b>\$865.3</b>	<b>1327 PH/s</b>	<b>4878 PH/s</b>	<b>6211 PH/s</b>	<b>\$0.59</b>	<b>\$0.16</b>	
<b>Median</b>						<b>\$754.4</b>	<b>\$29.4</b>	<b>\$1.5</b>	<b>576 BTC</b>	<b>\$24.9</b>	<b>\$575.3</b>	<b>1376 PH/s</b>	<b>2700 PH/s</b>	<b>3954 PH/s</b>	<b>\$0.44</b>	<b>\$0.10</b>	

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

Source: BitOoda, Bloomberg

# Adj EV / 2022YE PH/s Average of \$160k

- The chart shows the adjusted EV per PH/s of expected 2022 YE Hashrate valuation
- The group trades at an average of \$160k per future PH/s

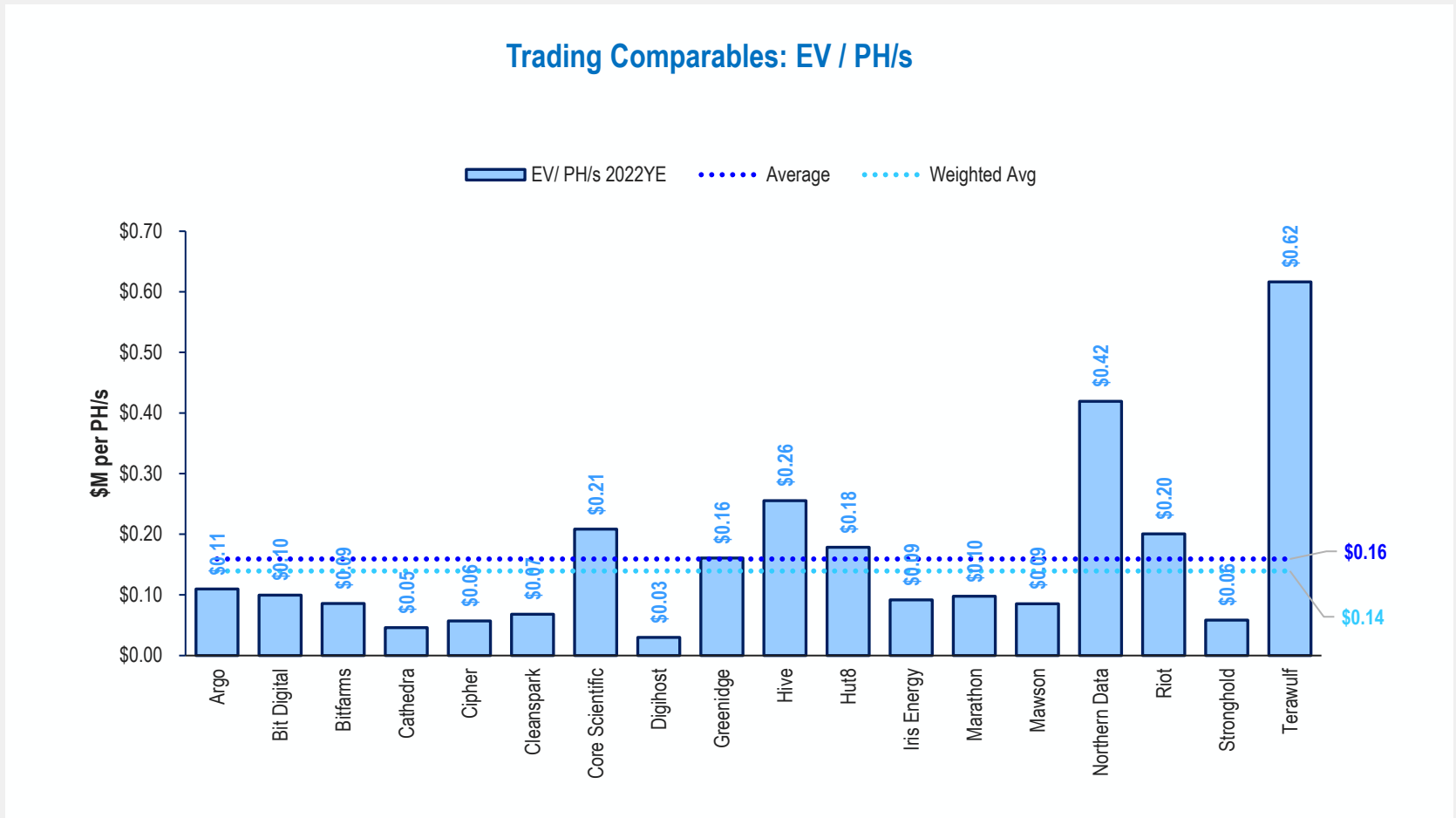


Figure: Comparable analysis: Adjusted Enterprise Value per PH/s of YE 2022 Capacity

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

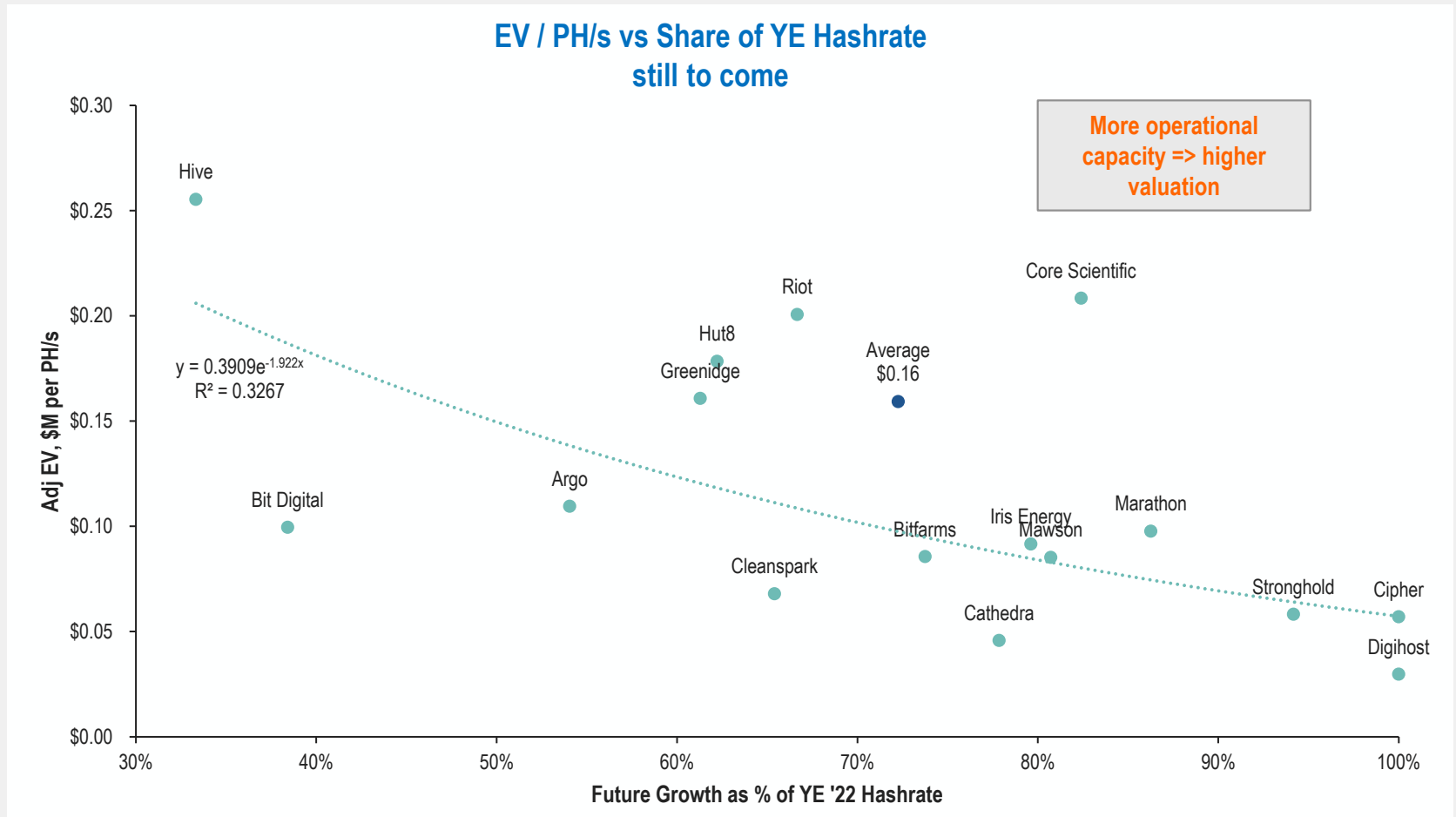


Figure: Public miner adjusted EV per PH/s vs. percentage of YE 22 Hashrate already operational

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

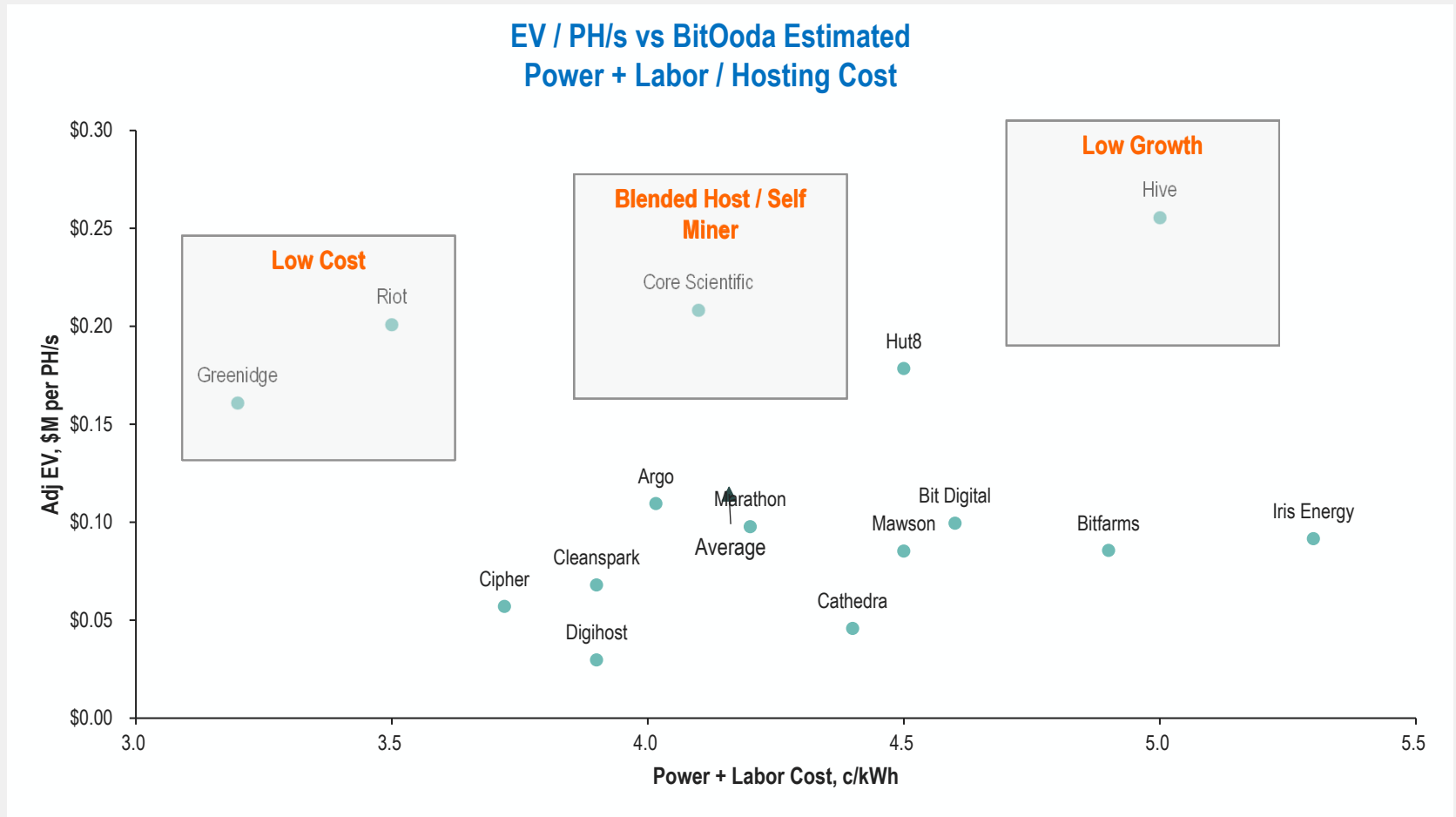


Figure: Adjusted EV per PH/s vs all in power + labor or hosting cost, cents per kWh

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 \$3.2B in 2022 EBITDA on over \$5B in revenue, based on Bloomberg consensus
- The group trades at an average 8x 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	3.5x	3.0x	
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													—	1.7x	
Cleanspark	CLSK	71.75	(46.14)	49.44	45.55	195.00	71.75	73.20	73.20	(15.99)	(4.90)			(28.58)	(17.75)	43.50	—	—	
Core Scientific	CORZ				483.50	1085.50	58.10	58.10		206.50	599.00	114.50		176.00	484.50	395.41	7.9x	5.2x	
Digihost	DGHI																—	—	
Greenidge	GREE				120.00	226.00				54.70	120.00	42.70		14.80	77.30		—	4.2x	
Hive	HIVE	65.94	122.50	173.19	193.69	160.49	65.94	69.60	69.60	196.80			166.41	123.33	63.09		—	—	
Hut 8	HUT	42.37	47.17	129.39	129.28	323.49	42.37	53.15	53.15	47.13	83.12	231.78	50.15	29.40	181.63	118.86	6.8x	3.5x	
Iris Energy	IREN				65.28	383.50		83.00	83.00		42.13	296.00	31.00		35.87	265.00	85.18	7.7x	2.2x
Marathon	MARA	75.08	(331.22)	92.83	151.00	717.60	75.08	79.25	79.25	(93.86)	120.00	521.25	64.58	(111.67)	25.05	456.67	184.25	12.4x	4.4x
Mawson	MIGI																	—	—
Northern Data	NB2 GY				229.09	800.68		66.30	66.30		116.81	597.67	216.61		36.29	381.06	368.50	3.7x	2.3x
Riot	RIOT	62.15	43.49	127.64	212.50	454.00	62.15	65.73	65.73	20.11	109.32	269.83	113.38	(2.84)	50.16	156.46	253.06	7.1x	6.7x
Stronghold	SDIG				33.68	302.40		4.00	4.00		9.49	216.00	30.40		(2.89)	185.60	31.75	14.8x	2.2x
Terawulf	WULF	33.76	(4.61)	16.30			33.76			(0.76)				(1.51)				—	—
<b>Total</b>				<b>713.07</b>	<b>2044.31</b>	<b>5158.95</b>				<b>158.08</b>	<b>806.60</b>	<b>3255.45</b>	<b>700.27</b>	<b>2.59</b>	<b>671.30</b>	<b>2539.76</b>			
<b>Average</b>		<b>54.58</b>	<b>13.04</b>	<b>79.23</b>	<b>157.25</b>	<b>396.84</b>	<b>54.58</b>	<b>64.59</b>	<b>64.59</b>	<b>22.58</b>	<b>73.33</b>	<b>325.54</b>	<b>77.81</b>	<b>0.29</b>	<b>51.64</b>	<b>195.37</b>	<b>194.18</b>	<b>8.0x</b>	<b>3.5x</b>
<b>Median</b>		<b>62.15</b>	<b>43.49</b>	<b>92.83</b>	<b>129.28</b>	<b>302.40</b>	<b>62.15</b>	<b>69.70</b>	<b>69.70</b>	<b>4.64</b>	<b>74.44</b>	<b>270.42</b>	<b>50.15</b>	<b>(2.84)</b>	<b>36.29</b>	<b>156.46</b>	<b>151.56</b>	<b>7.4x</b>	<b>3.3x</b>

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

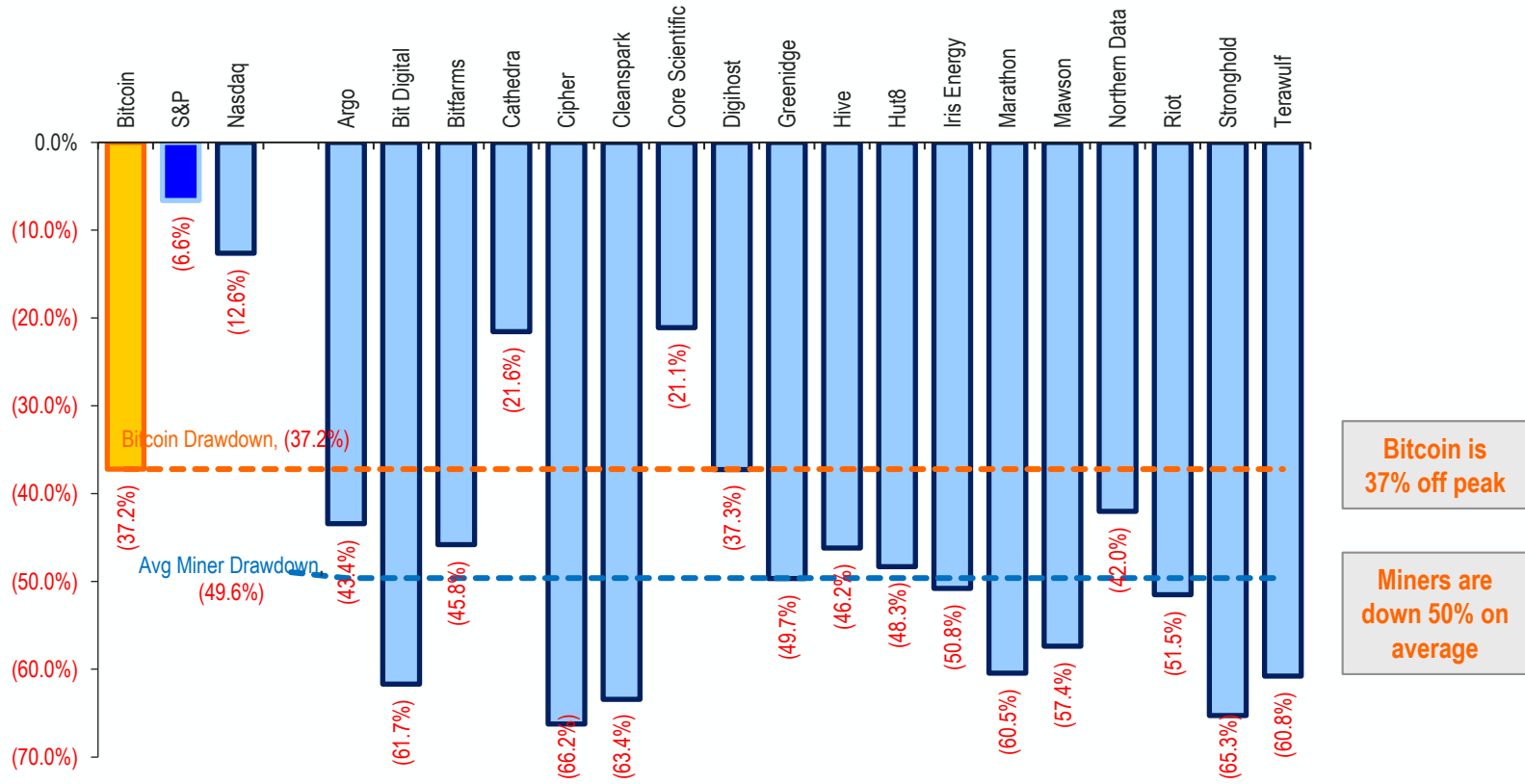
Source: BitOoda, Bloomberg

# Drawdowns From BTC Peak

## Miners Underperforming Bitcoin

- Bitcoin is off 37% from its peak on November 10, 2021
- Over the same period, the S&P 500 is down 6.6% and the Nasdaq 12.6%
- Most miners underperformed Bitcoin since then by an average additional 12%

### Drawdowns Since 11/10/21 BTC Peak



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

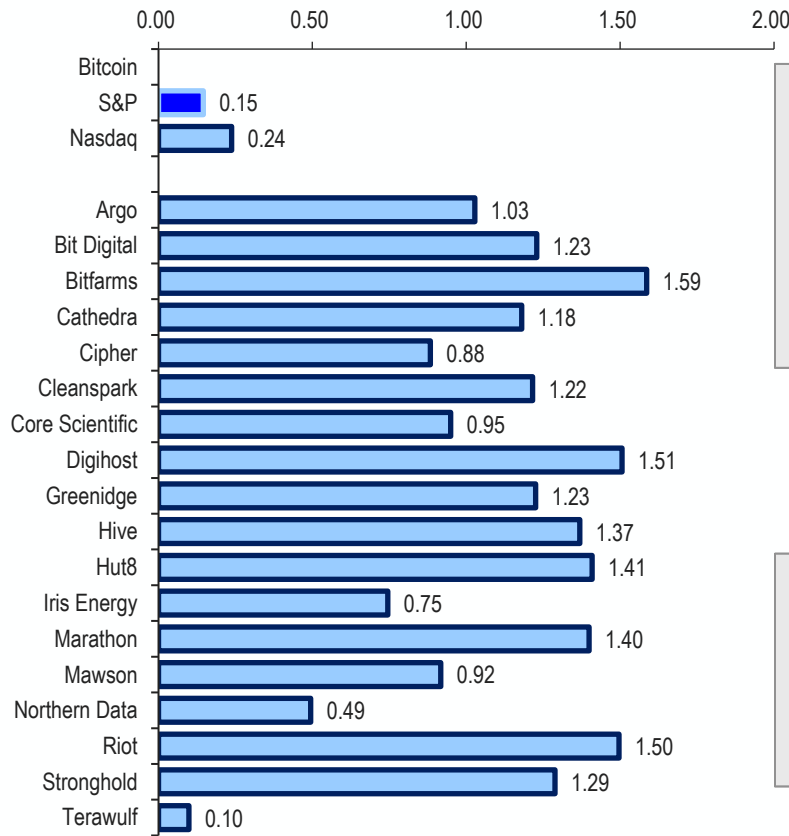
Source: BitOoda, Bloomberg



# Beta & Correlation Not All Miners Are Equal

- We expect most miners to exhibit a Beta > 1 relative to Bitcoin
- Bitcoin is off 37% 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 47% & 53%, respectively
- **The correlation to equities is falling back down as equities have stabilized**
- **This is unsurprising; we have said before that the correlation of Bitcoin to traditional risk assets picks up in a risk off market**

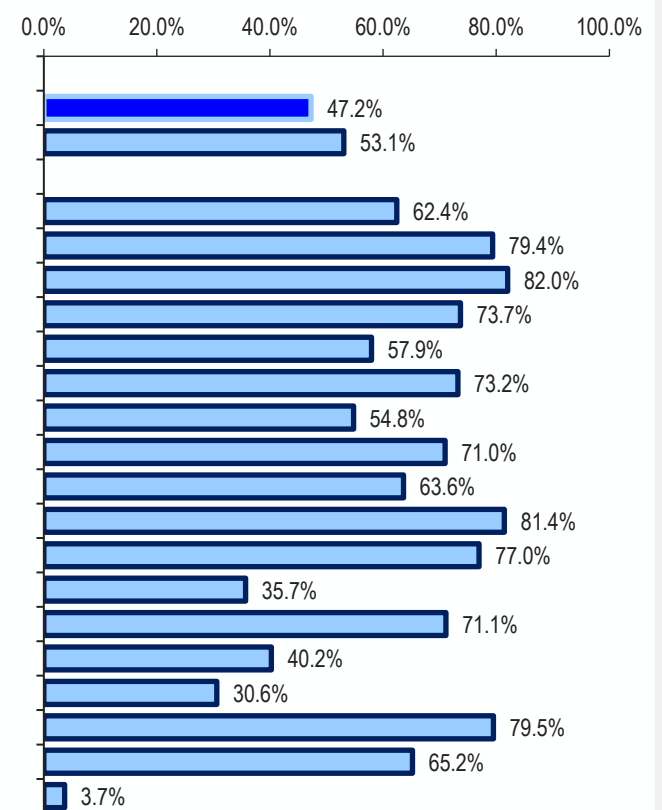
**Beta to BTC Since BTC Peak**



**Bitcoin has a 47% correlation to the S&P and 53% to the Nasdaq since its peak**

**Some miners show both a low Beta and a low correlation to Bitcoin**

**Correl to BTC since BTC Peak**



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

Source: BitOoda, Bloomberg



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Sam Doctor, the research analyst denoted by an “AC” on the cover of this report, hereby certifies that all of the views expressed in this report accurately reflect his personal views, which have not been influenced by considerations of the firm’s business or client relationships.

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