



# Bitcoin Public Markets

## \$118mm Weekly Fund Outflows, CME 13.6% of Futures Open Interest; Crypto May be Diverging from Equities

We focus attention this week on institutional fund flows, as well as on the futures markets. The week saw \$118 mm in fund outflows across our tracked basket of funds, including \$91mm redemptions from the BITO Proshares Futures ETF (slide 6, slide 8). BITO redemptions have been 12.5% of peak share count. These redemptions bear watching as one indicator of regulated / institutional flows to crypto.

**Bitcoin Futures volumes and open interest are heavily weighted towards Binance, but CME OI of \$1.9B still represents 13.6% of overall top 10 exchange OI (slide 10).** However, CME represents just 3.3% of trading by value (slide 11). Overall, Binance open interest is just 0.23 days worth of trading, while in aggregate, taking 10 crypto exchanges including both Binance and the CME, OI is 0.40 days worth of trading value. CME itself has open interest worth 1.62 days of trading, slightly more in line with more institutional markets like Oil (~2.4 days) and Gold at ~3 days (slide 13).

**CME open interest fell 13% week on week, with the active contract growing significantly as the roll was completed (slide 14).** However, June contracts are still well below recent May levels pre-April expiry. Further, the futures term structure is backwarddated through August and flat through October. Overall non-commercial net length remains firmly on the long side, at 426 lots (slide 16). Net length has been consistently long YTD.

**Bitcoin and Ethereum have both been among the underperforming assets over the past week, along with a lot of risk assets (slide 18).** However, they are in the green since 2/23/2022, just prior to the Russian invasion of Ukraine. While most risk assets are below pre-invasion levels, Natural Gas, US treasuries, Oil, Wheat, the dollar index, Bloomberg Commodity Index and the VIX join the two crypto assets in the green. Is this an anomaly, or is crypto diverging from equities and risk assets? It is too early to tell, but well worth monitoring. We have been skeptical of this divergence narrative, and the correlation of Bitcoin to the Nasdaq composite at 62% (slide 29) is higher than it has been for a long time. The relationship strengthens in weak, risk-off markets, but in general despite intraday volatility, Bitcoin has remained relatively range-bound even as equities have sold off. Slide 19 shows that both implied and realized volatility for Bitcoin has come down meaningfully in recent weeks, with 30-day realized volatility now at 46%, 1.85% below the 47.9% 30-day 10%% moneyness implied volatility.

**The equity sell-off has also applied to the Bitcoin miners. As a group, they are down 67% since Bitcoin peaked on 11/10/21, while Bitcoin is down 44% (slide 28).** Over the past few weeks, Bitcoin has remained range bound, while miners have continued to slide, extending the underperformance to 23% from 15% 5 weeks ago.

**We have received numerous questions regarding our Bitcoin Mining Reserve**

**valuation framework , which we will be diving deeper into in the coming weeks.** As we had previously identified, some miners exhibit a gap between pure mining fair value and market capitalization. This can be understood in the context of a scarcity of institutionally-investable options for getting exposure to Bitcoin within fund mandates and constraints. In addition, some miners have additional lines of business – including hosting, repair centers etc. – as well as different risk profiles based on a growing interest in exploring hedging solutions.

### Key Takeaways

- Institutional fund flows turned firmly negative last week, with \$118 million in outflows across our selected funds; BITO at \$91mm represented the bulk of outflows*
- CME futures dynamics are closer to traditional Oil and Gold markets in terms of Open Interest to Trading Value, vs. crypto-only retail-oriented exchanges like Binance that have disproportionately high trading value relative to open interest*
- The performance of Bitcoin and Ethereum since the Russian invasion raise the possibility of an emerging divergence from equities (a 62% correlation to the Nasdaq Composite notwithstanding) that bears following closely*
- However, Bitcoin miners have underperformed by a widening margin, which underscores the broader divergence we have noted*

## Research

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BTC Price (5/2 at 4 pm ET)	\$38,431
Obs Hashrate	243 EH/s

### 7 Day Performance

Stronghold	1.8%
Ebang	0.6%
Argo	0.5%
Terawulf	(0.3%)
Bitfarms	(0.8%)
Mawson	(1.4%)
Bitcoin	(3.0%)
S&P	(3.7%)
Greenidge	(4.2%)
Catheda	(5.0%)
Canaan	(6.7%)
Core Scientific	(7.9%)
Cipher	(8.4%)
Digihost	(8.8%)
Hut8	(9.6%)
Bit Digital	(10.7%)
Northern Data	(12.2%)
Hive	(12.8%)
Riot	(13.6%)
Marathon	(14.3%)
Iris Energy	(23.0%)



# 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 \$18B of the \$25B 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

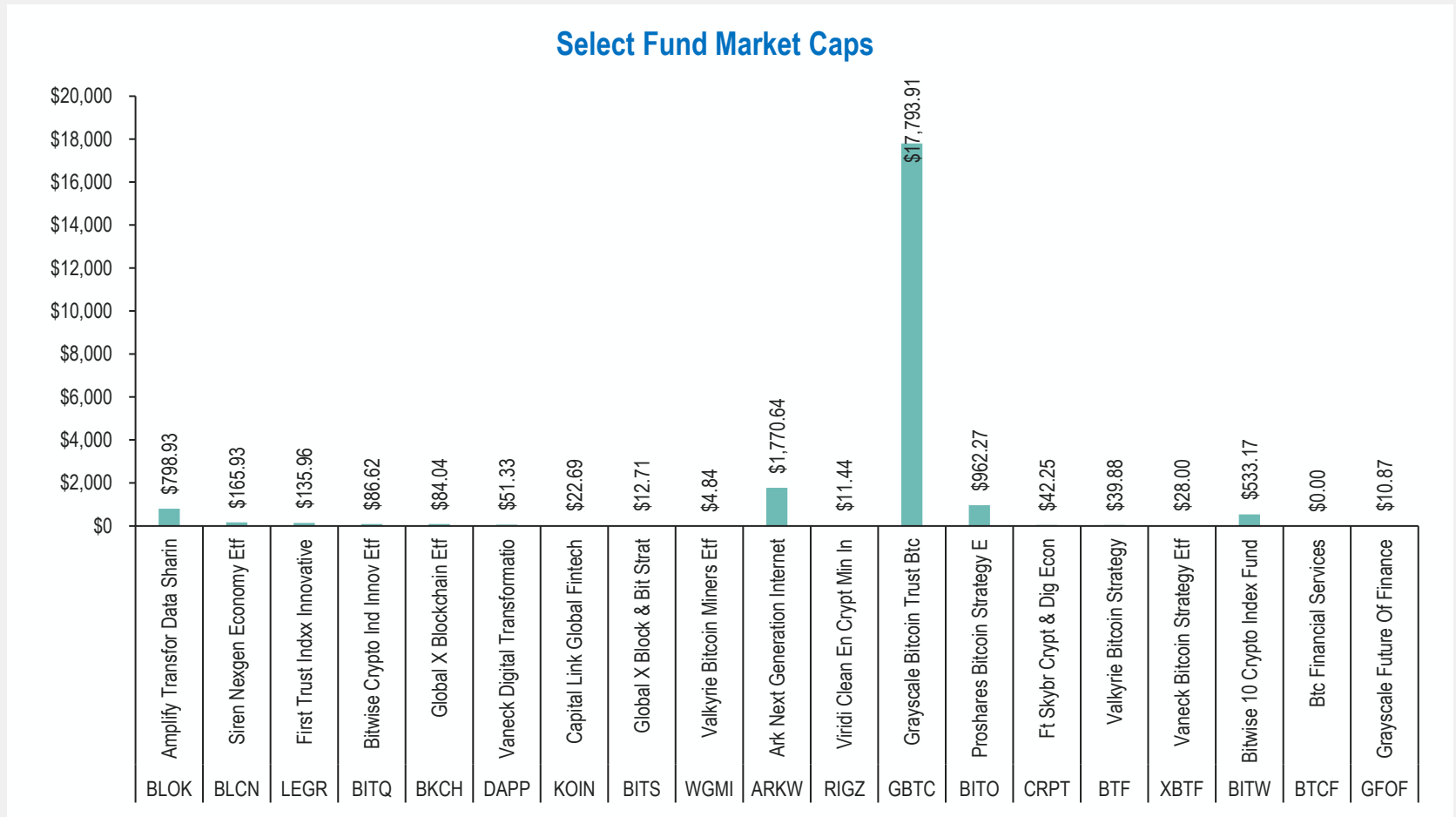


Figure: Select fund markets caps  
As of 2/28/2022

Source: BitOoda, Bloomberg



# Trailing 12M Cumulative Flows

## \$374mm Net Inflows, But \$279mm Outflows YTD

- The select fund group saw consistent outflows for much of the last year, offset by inflows into BITO upon launch in October.
- Overall, our selected funds show inflows of \$374mm over the trailing 12 months
- Year to date, funds have seen net outflows of \$279mm

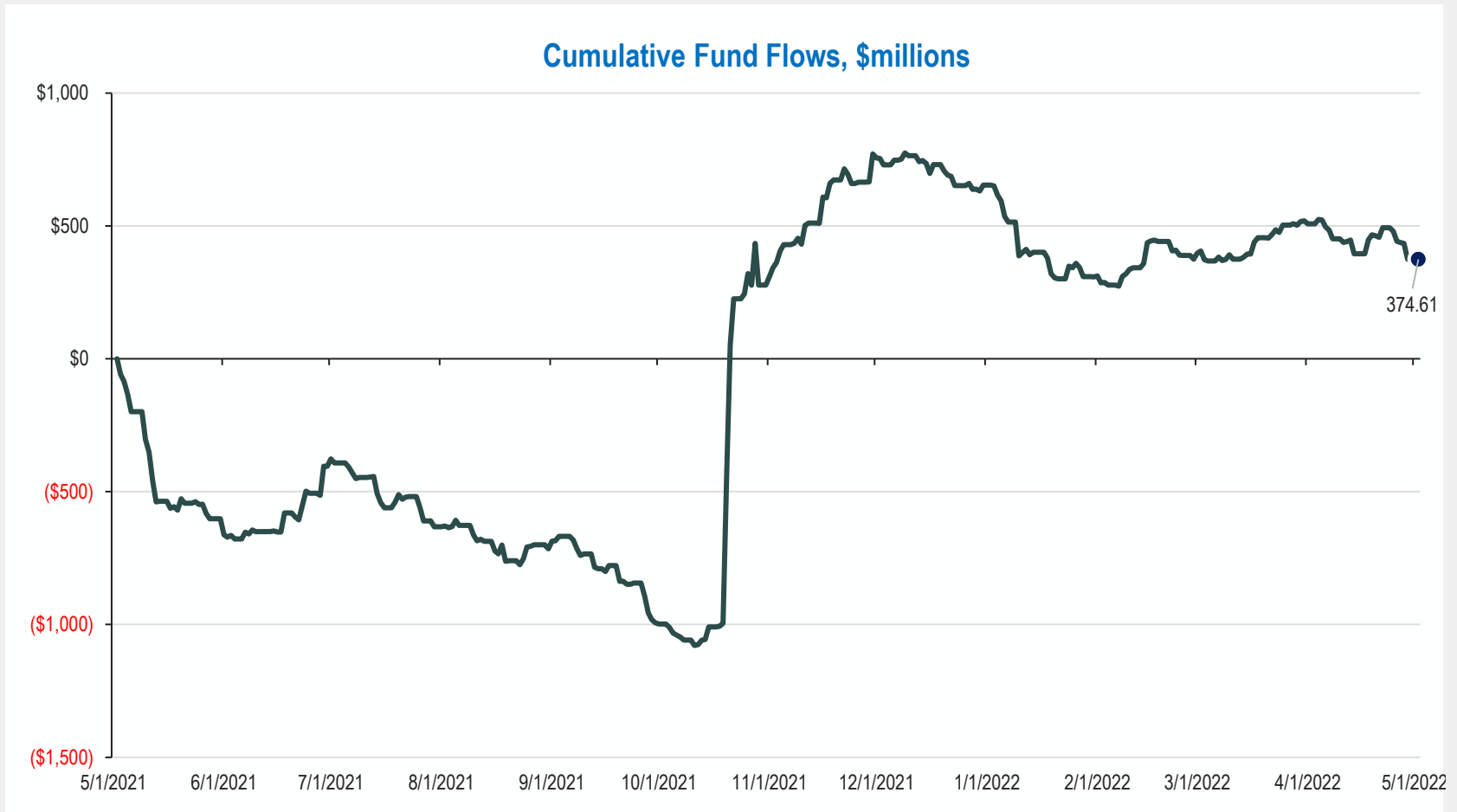


Figure: Cumulative fund flows for select crypto / crypto exposed funds  
Trailing one year

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 \$2.2 billion of outflows
- Over the same period, BITO has seen \$1.6B of inflows, with BLOK receiving \$250mm and other selected funds receiving \$676mm of inflows

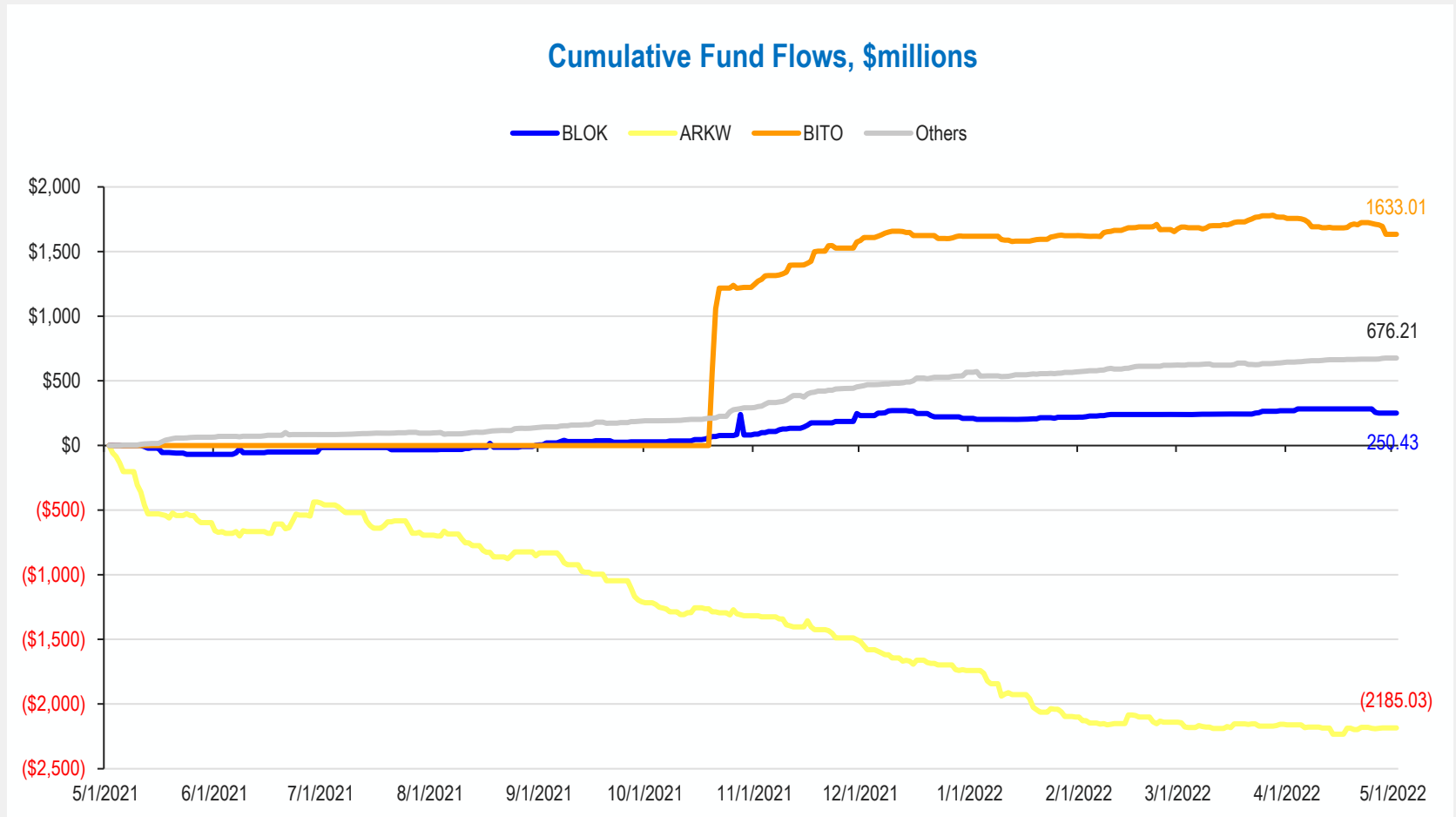


Figure: Cumulative fund flows for select crypto / crypto exposed funds  
Trailing one year

Source: BitOoda, Bloomberg

# YTD Daily Fund Flows

## \$118mm Outflows in Past Week Alone; \$133mm Outflows QTD

- Since the beginning of the quarter, the fund group saw \$133mm in redemptions
- The group saw \$118mm of outflows last week alone

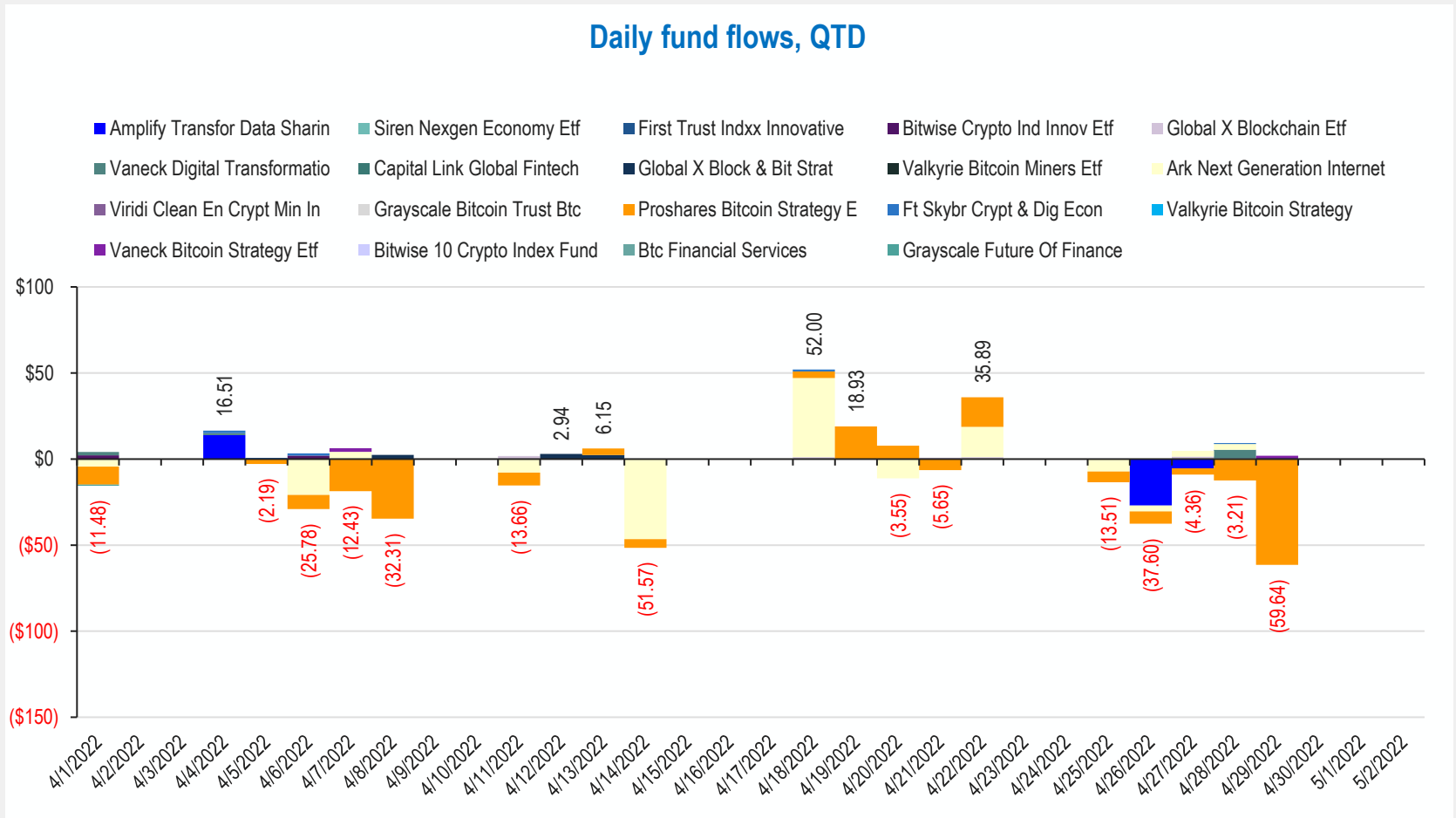


Figure: Daily fund flows Since 4/1/2022

Source: BitOoda, Bloomberg



# ProShares Futures ETF BITO

## Modest, Expected Underperformance

- The ProShares ETF BITO currently has a market cap of \$965 million
- The ETF has underperformed Bitcoin by 3.8%, declining by 43.2% since launch vs. a 39.4% decline in the price of BTC in the same timeframe
- This is expected given the cost of rolling the futures contracts each month
- BITO has seen redemptions take the share count down from a peak of 46.2mm shares to 40.44mm shares in the past ~two months, or redemptions of 12.5% of peak shares outstanding

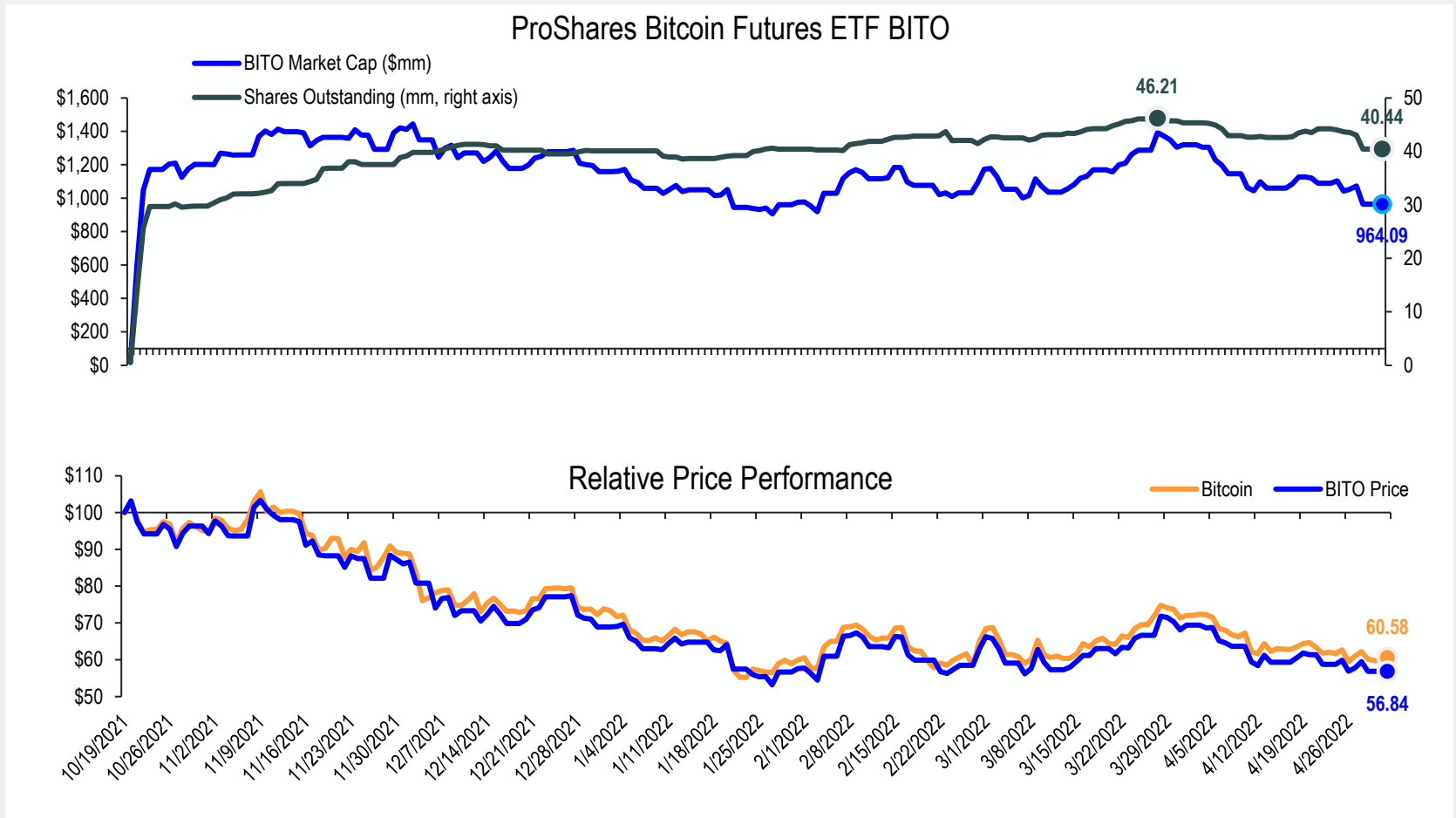


Figure: ProShares Bitcoin Strategy Futures ETF market cap and price performance compared to Bitcoin

Source: BitOoda, Bloomberg



# ProShares Futures ETF BITO \$91mm Net Outflows in Past Week

- The ProShares ETF BITO saw ~\$61mm of redemptions on 4/29
- Overall redemptions occurred on each of the last 5 trading days, and 6 of the past 10
- Weekly outflows were \$91 mm last week

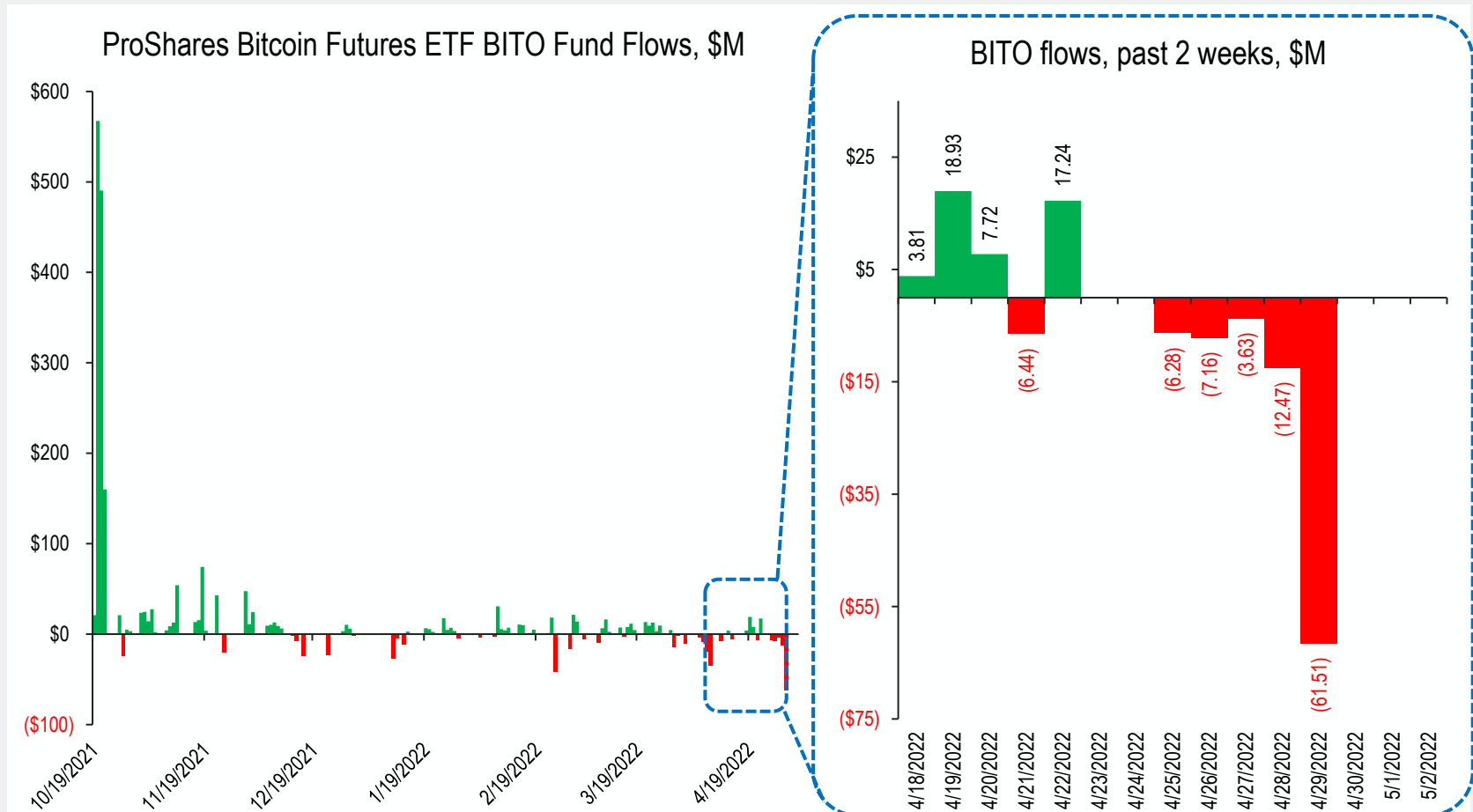


Figure: ProShares Bitcoin Strategy Futures ETF market cap and price performance compared to Bitcoin

Source: BitOoda, Bloomberg



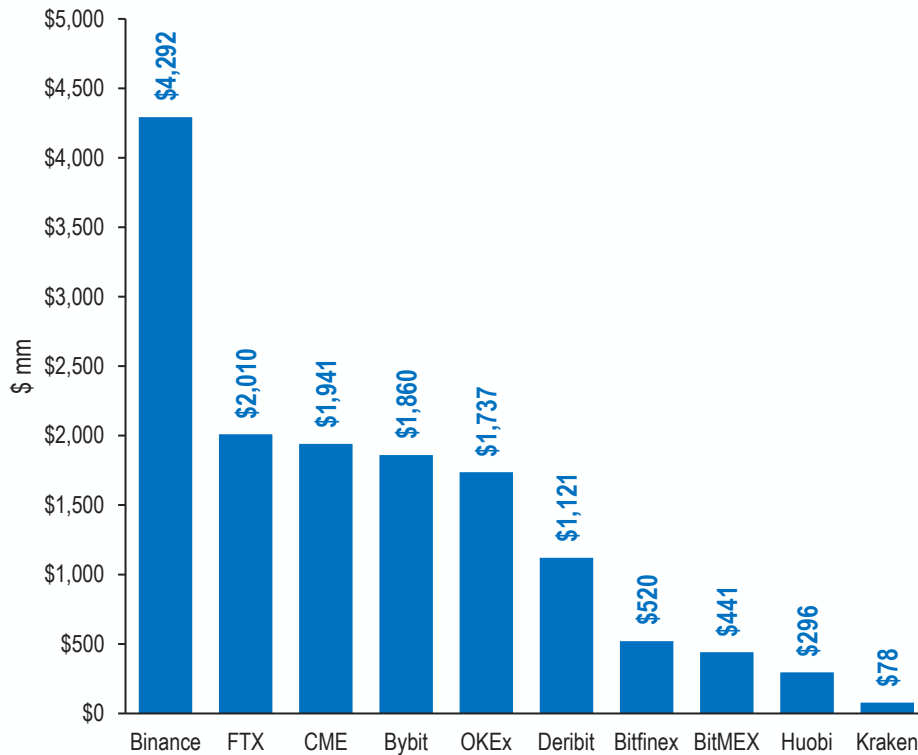


# Futures

# CME 13.6% of Open Interest Binance is Overall Leader

- The CME Futures Open Interest (current data per Glassnode) is \$1.9B
- This represents 13.6% of the overall open interest across the top 10 exchanges in the dataset

Current Futures Open Interest



Open Interest Share

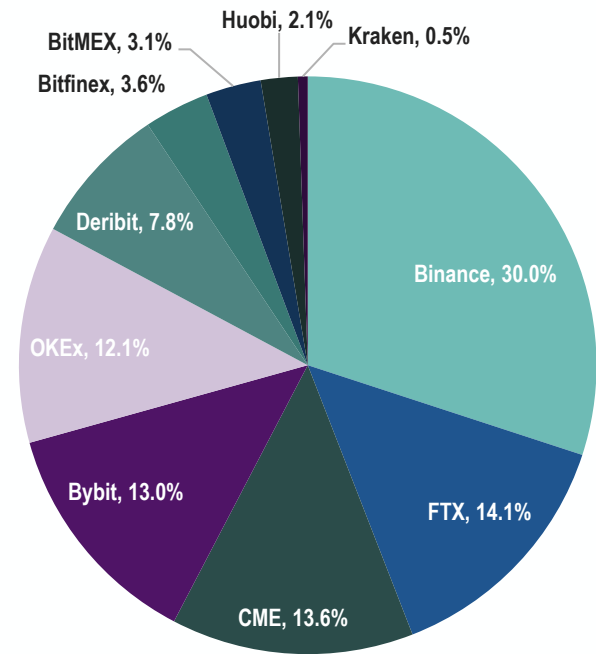


Figure: Current Futures Open Interest, key exchanges

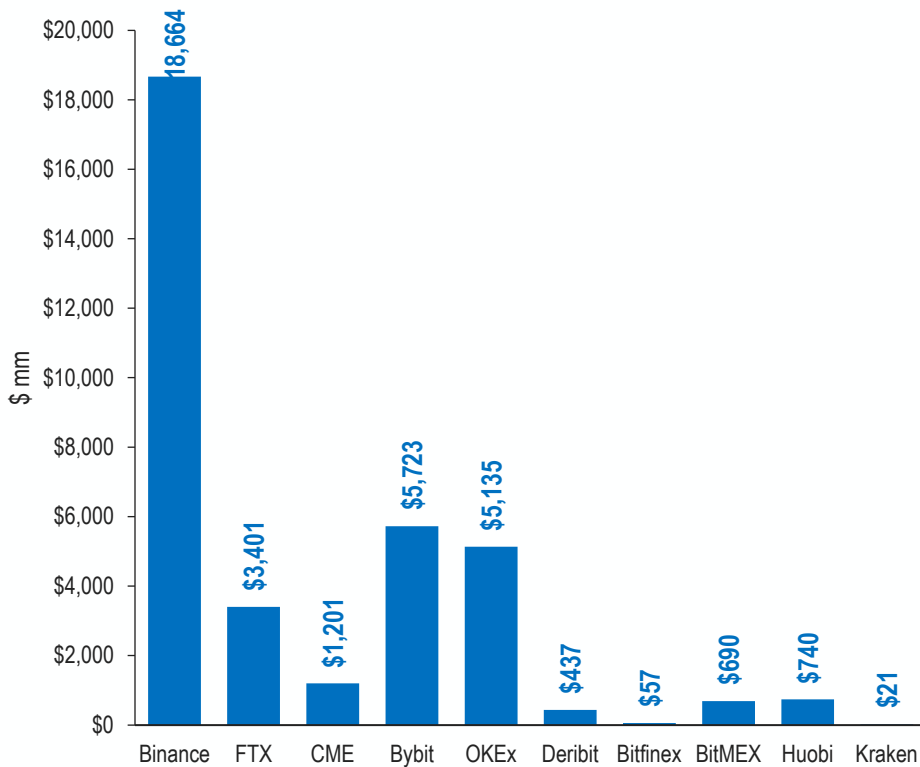
Source: BitOoda, Glassnode



# CME 3.3% of Volumes Binance Disproportionately High Volume Share

- The CME Futures trailing 24 hour trading volume (current data per Glassnode) is \$1.2B
- This represents just 3.3% of the overall open interest across the top 10 exchanges in the dataset

24 Hour Futures Volume



24 Hr Volume Share

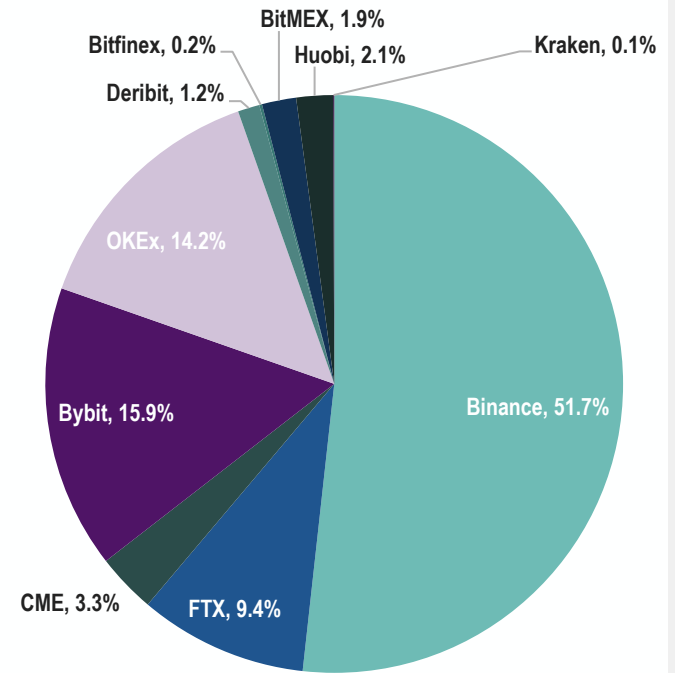


Figure: Current Futures Trading Value, key exchanges

Source: BitOoda, Glassnode





# CME OI = 1.6 Days Trading Binance OI = 0.23 Days Trading

- CME open interest represents 1.6 days of trading volume, trailing Bitfinex, Kraken and Deribit
- Binance, at the other end of the range, sees open interest equal to just 0.23 days of trading volume

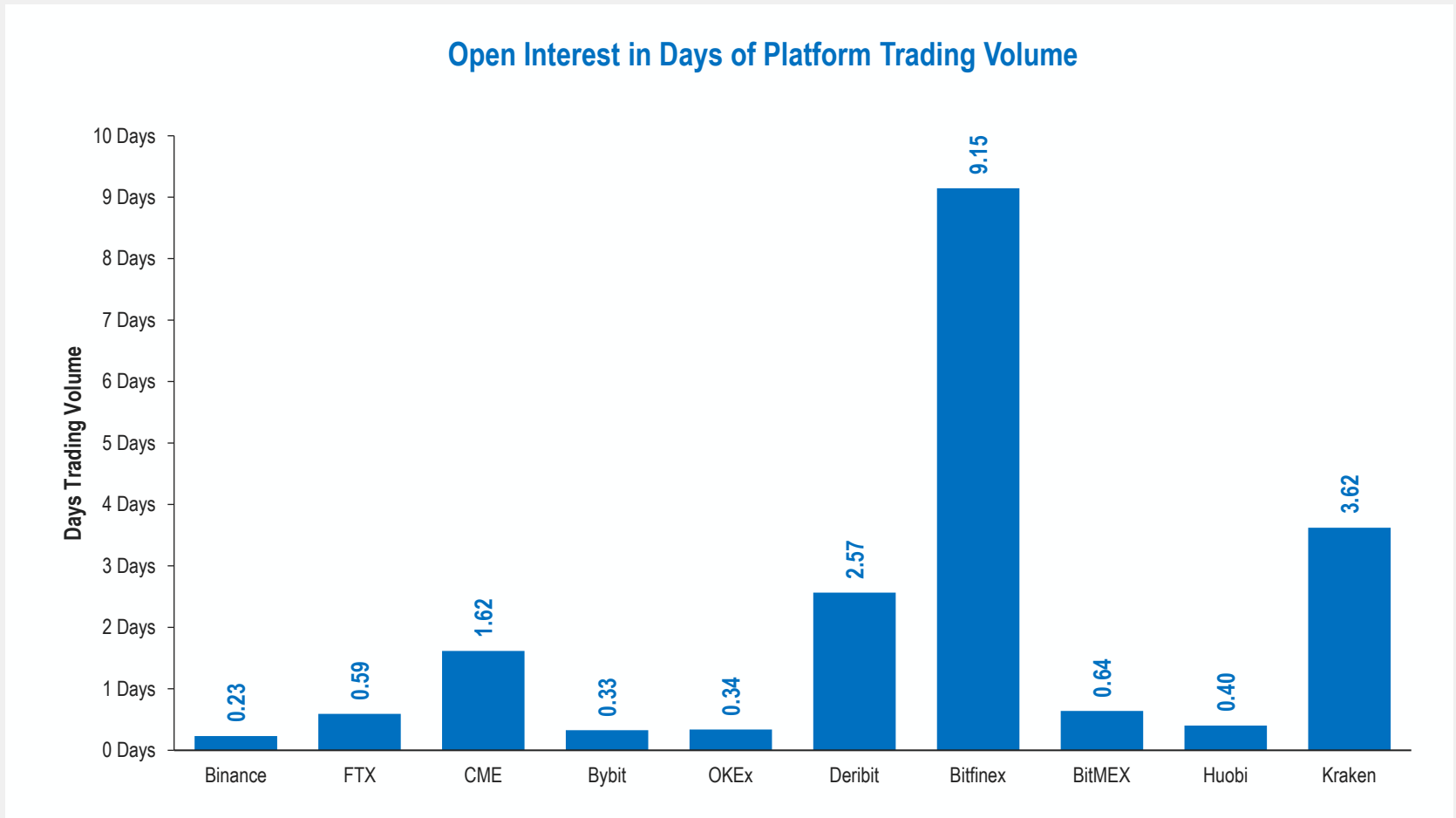


Figure: Futures Open Interest as days of trading value, key exchanges

Source: BitOoda, Glassnode

# Comparing Commodities

## Bitcoin has Shorter Holding Period

- Futures markets tend to be incredibly liquid, with short holding periods and high turnover
- Open Interest on US Oil and Gold markets tends to be about 2.5-3 days worth of trading volume
- On the top 10 exchanges per Glassnode – including CME – Open Interest is a small fraction of Oil and Gold Open Interest
- On these exchanges, OI is just 0.4 days worth of trading
- Separating out CME, though, we see that Open Interest is 1.6 days worth of trading – not quite where Oil and Gold trade, but much closer
- **This reflects the more institutional nature of CME participants**

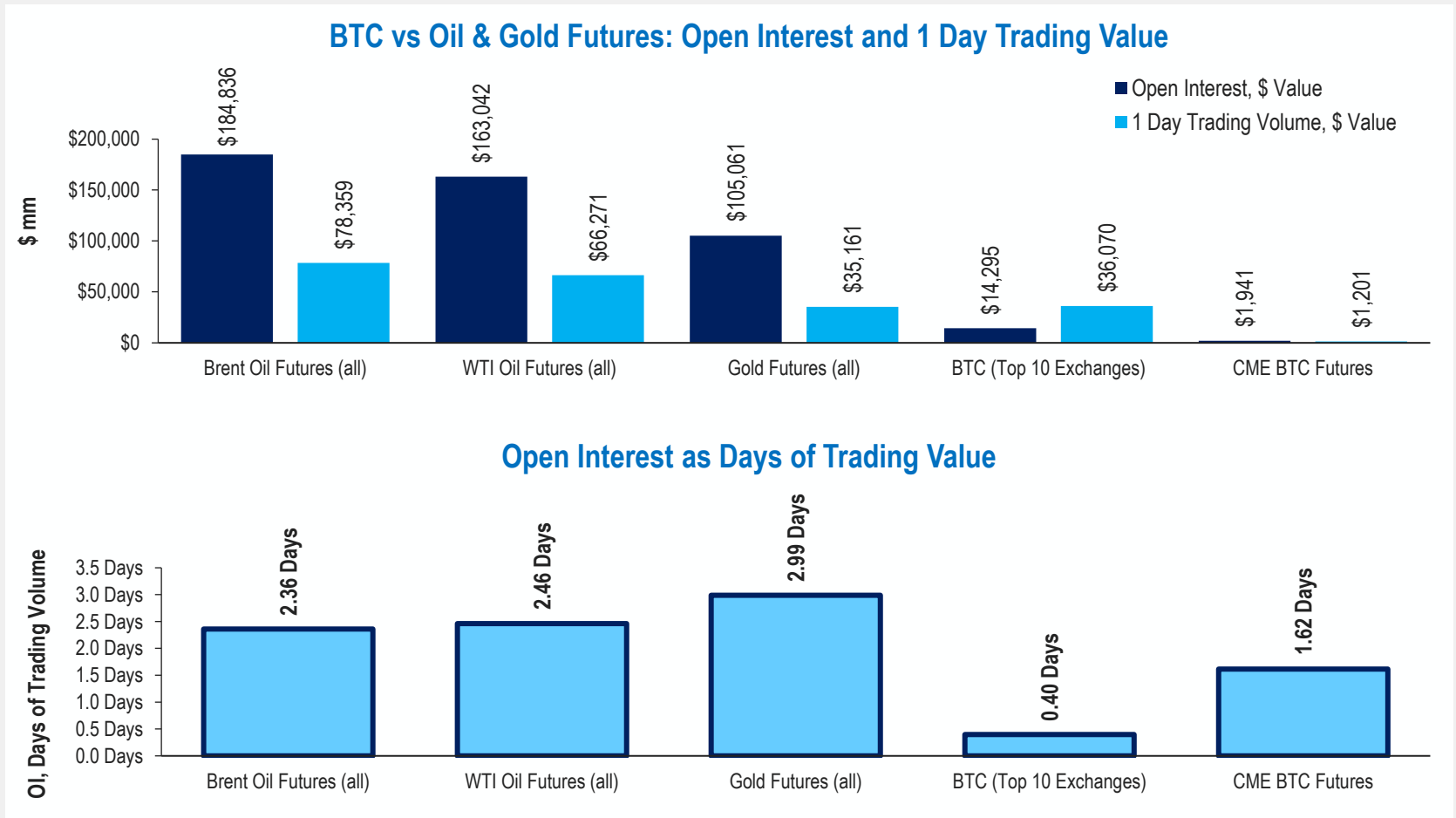


Figure: Current Futures Open Interest, Value and OI as Days of Trading Value , for Gold, Oil and Bitcoin

Source: BitOoda, Bloomberg, Glassnode



# CME Futures Curve Flat through October

## Open Interest Down 13.1% WoW

- The futures curve is flat through October
- Overall CME open interest fell 13.1% vs. last week and 12.1% vs. two weeks ago to 9468 lots
- The monthly roll appears partially completed, with May OI greater than April OI pre-expiry
- June OI has increased, but not to pre-expiry May levels

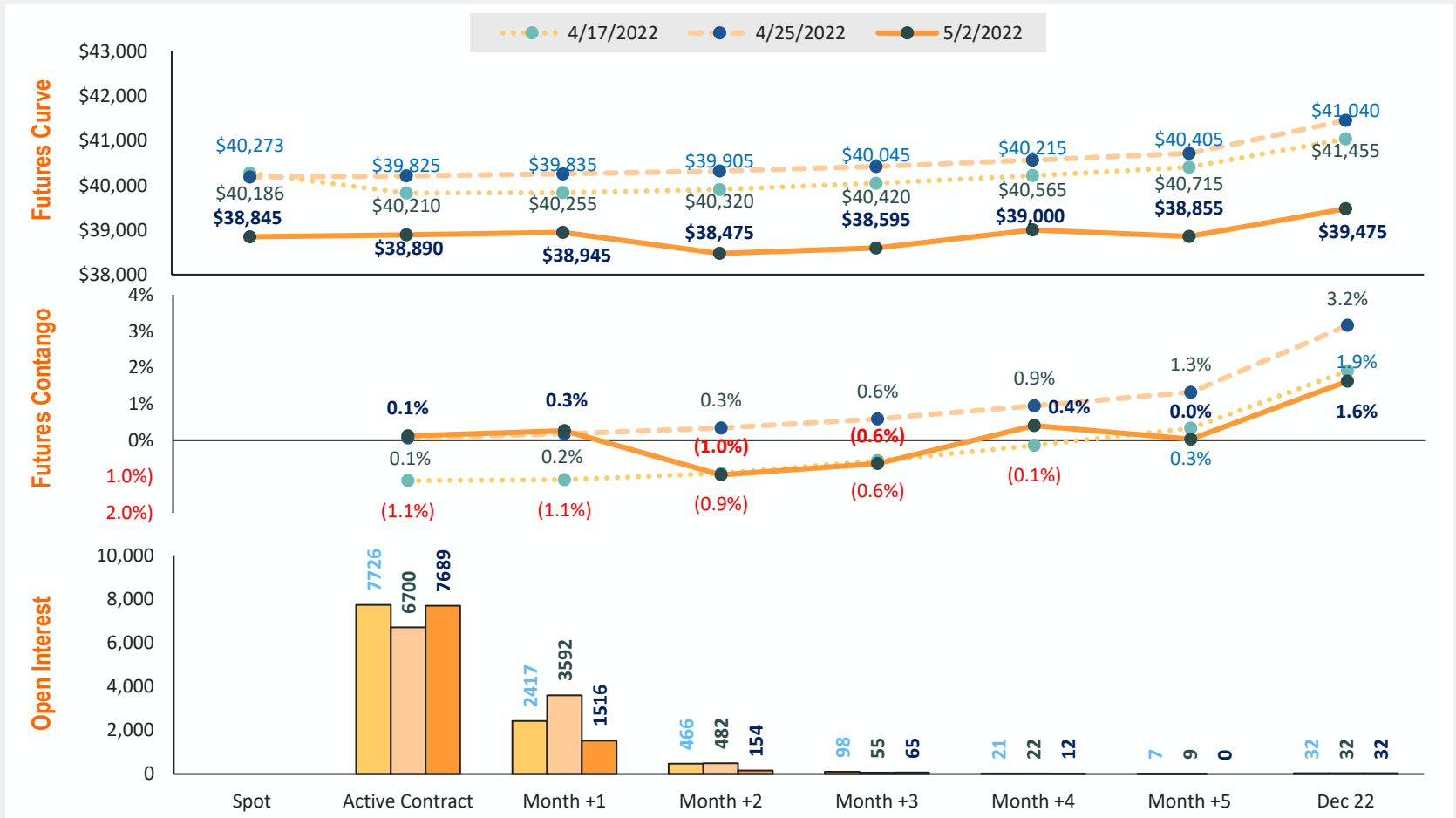


Figure: Bitcoin futures metrics

Source: BitOoda, CME, Bloomberg

# CME Commitment of Traders 4/26 Open Interest Dipped on Lower Spreading Positions

- The CME Bitcoin Commitment of Traders report shows that open interest dipped over the week of 4/26/22
- Data shows 10,709 lots on 4/26 compared with 11,223 lots on 4/19
- Spreading positions were the driver, falling from 1450 to 888 lots
- Commercial players lowered long positions by 58 lots, and increased their shorts by almost 200 lots

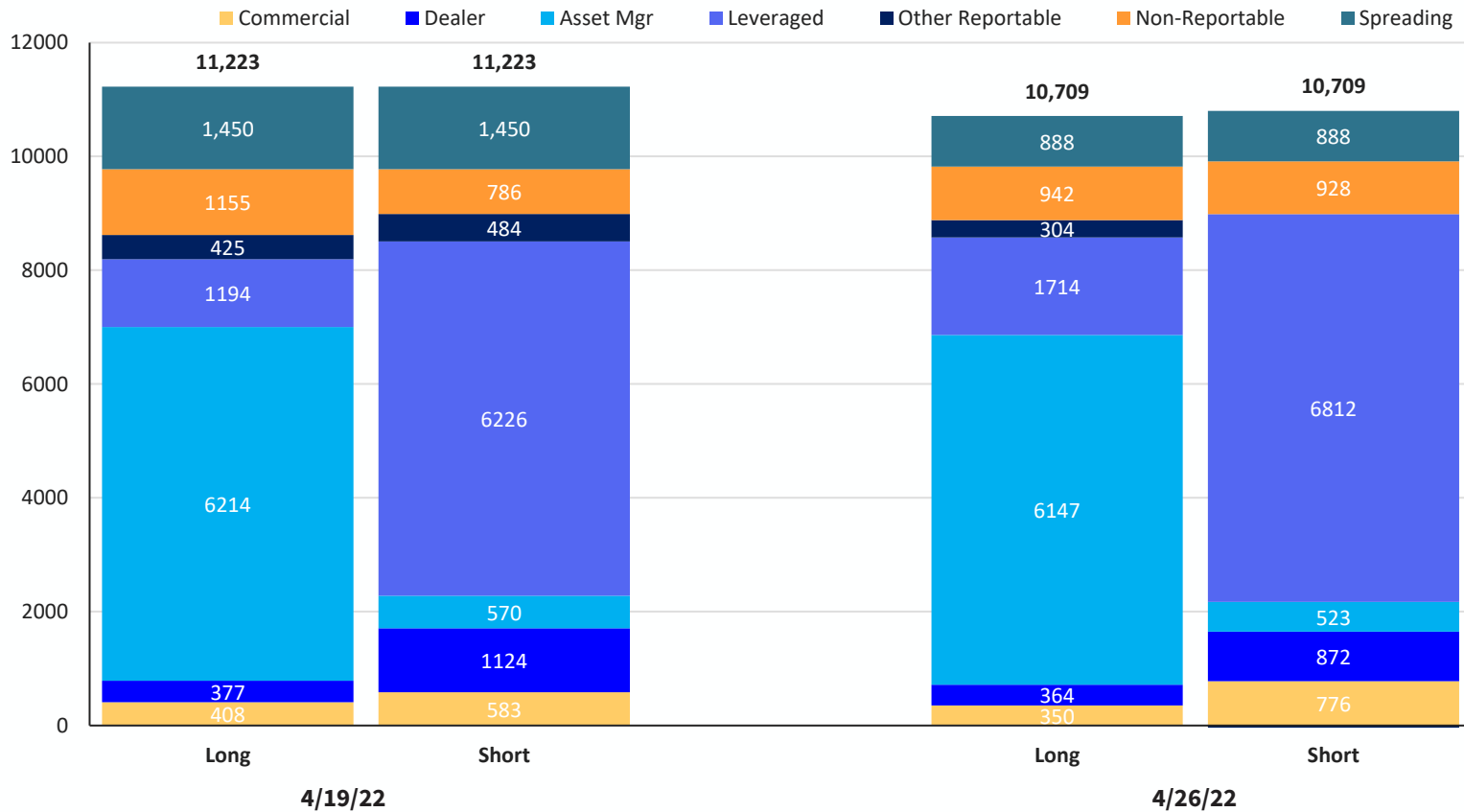


Figure: CME Bitcoin Commitment of Traders, 4/19/2022 and 4/26/2022

Source: BitOoda, Bloomberg, CME



# Non-Commercial Net Length Is Now 426 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 but has been consistently long this year
- The net length for non-commercial participants rose to 426 lots

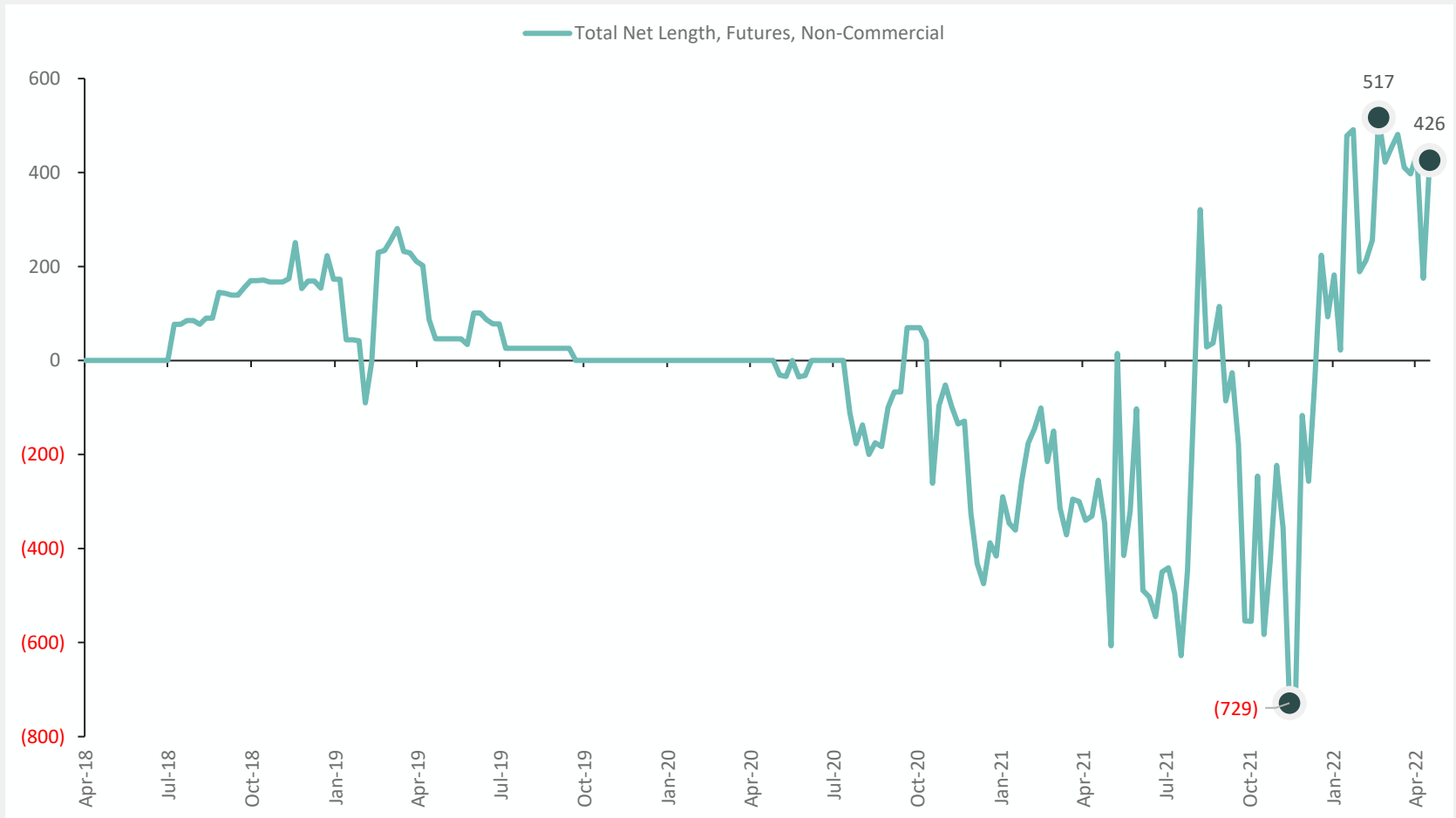


Figure: CME Bitcoin Future Non-Commercial Net Length, from Jan 1 2021

Source: Bloomberg



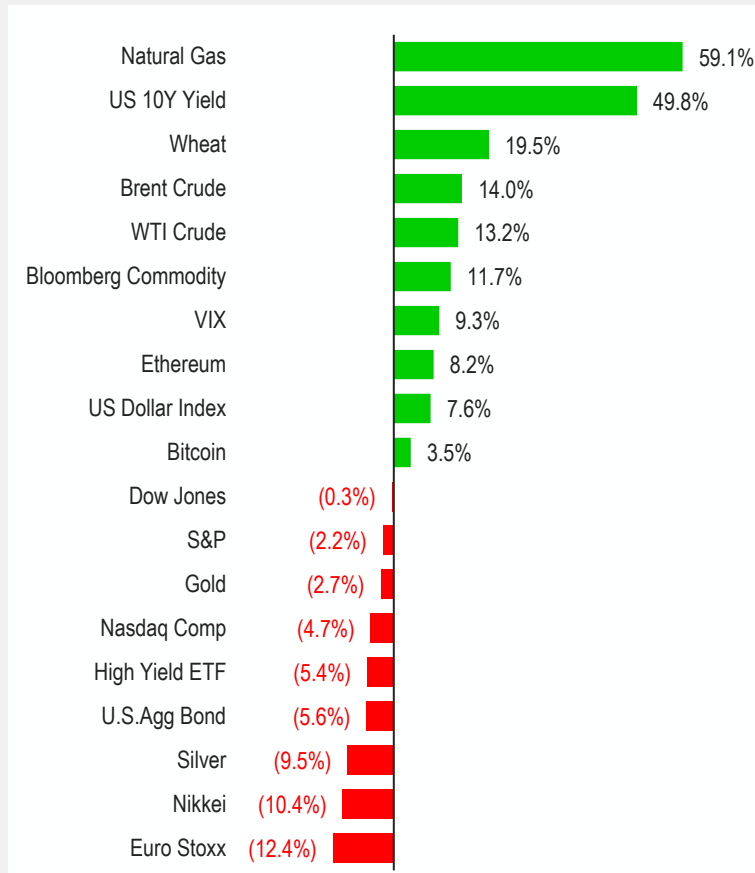


# Bitcoin and Broader Markets

# Macro Markets: Is Crypto Diverging From Equities?

- Since the Russian invasion of Ukraine, equities and corporate bonds have sold off
- So have gold and silver
- Commodities are up a lot, along with US treasuries, the Dollar and the VIX
- **Interestingly, Bitcoin and Ethereum round out the list of indicators in the green since the invasion**
- **However, they are among the lower performing assets in the past week**

Performance since 2/23



7D Performance as of 5/2

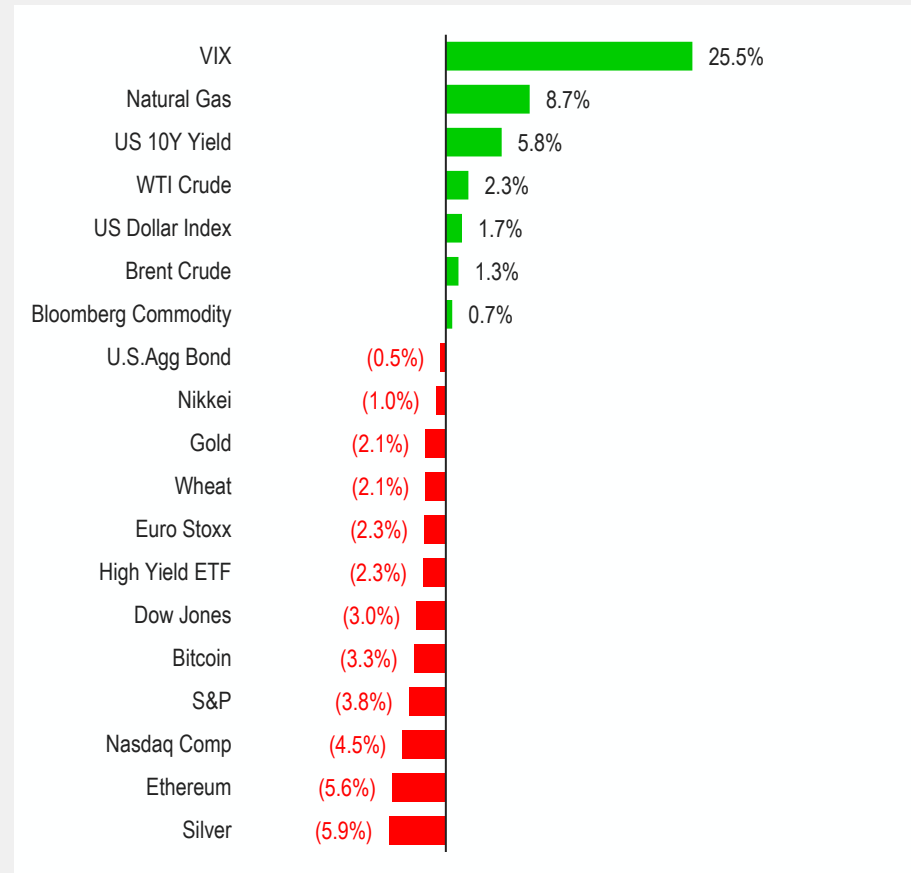


Figure: Macro Indicators: Returns over 7 days, and returns since 2/23, the day before the invasion of Ukraine

Source: BitOoda, Bloomberg

# BTC Volatility Moderates Implied 1.9% Above Realized

- Realized Bitcoin volatility (30-day annualized) consistently comes in under 100% moneyness implied vol for the generic 1<sup>st</sup> CME contract
- Overall, both volatilities came down WoW and are the lowest they have been for a year
- Currently, 100% moneyness implied volatility is 48%, compared with 46% for realized volatility
- **Implied volatility is 1.9% points above realized volatility**

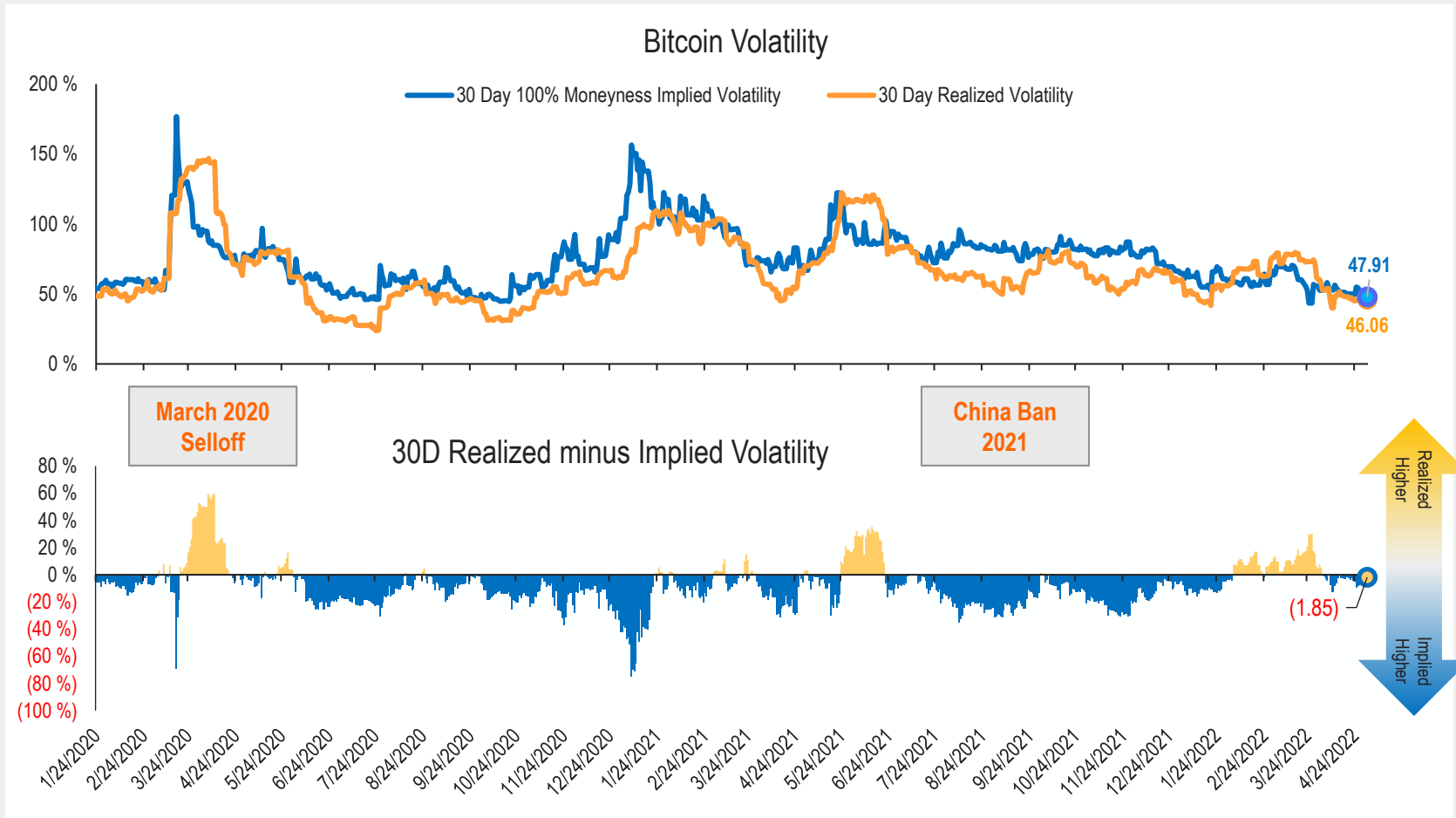


Figure: Trailing 2-year Bitcoin annualized volatility based on 30-day trailing daily returns of XBTUSD Curncy and 100% Moneyness Implied Volatility for BTC1 Curncy

Source: Bloomberg, BitOoda

# When the Nasdaq Sneezes Bitcoin Catches a Cold

- As shown below, when the Nasdaq performance is in the bottom quartile of its range (since BTC's 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

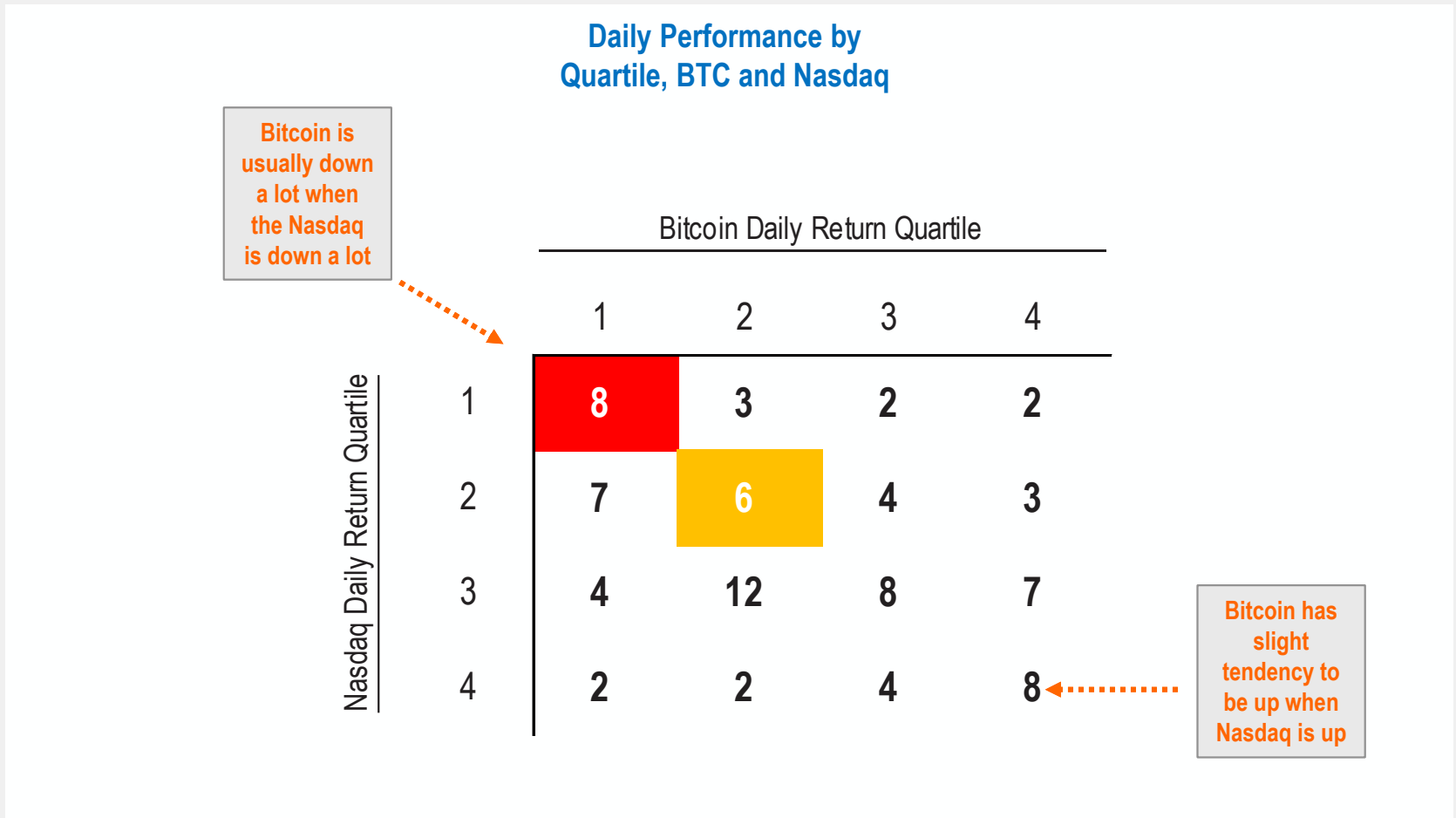


Figure: Sample count of daily returns by quartile, Bitcoin and Nasdaq Note Since 11/10/21

Source: BitOoda, Bloomberg

# 62% 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 BTC's 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

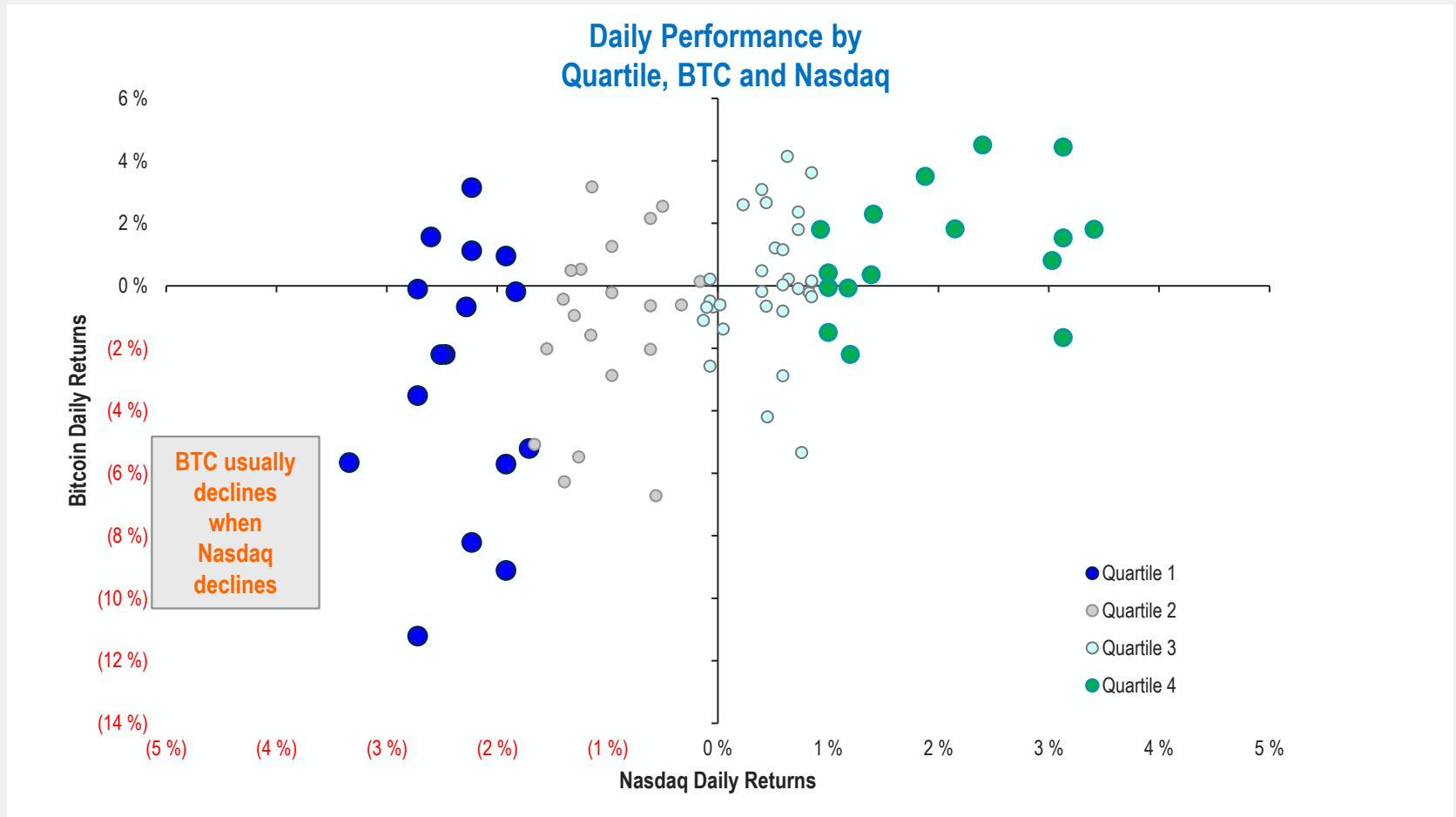


Figure: Nasdaq Composite and Bitcoin daily returns, since 11/10/21  
Note Lowest quartile is weakest 25% of Nasdaq daily returns

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

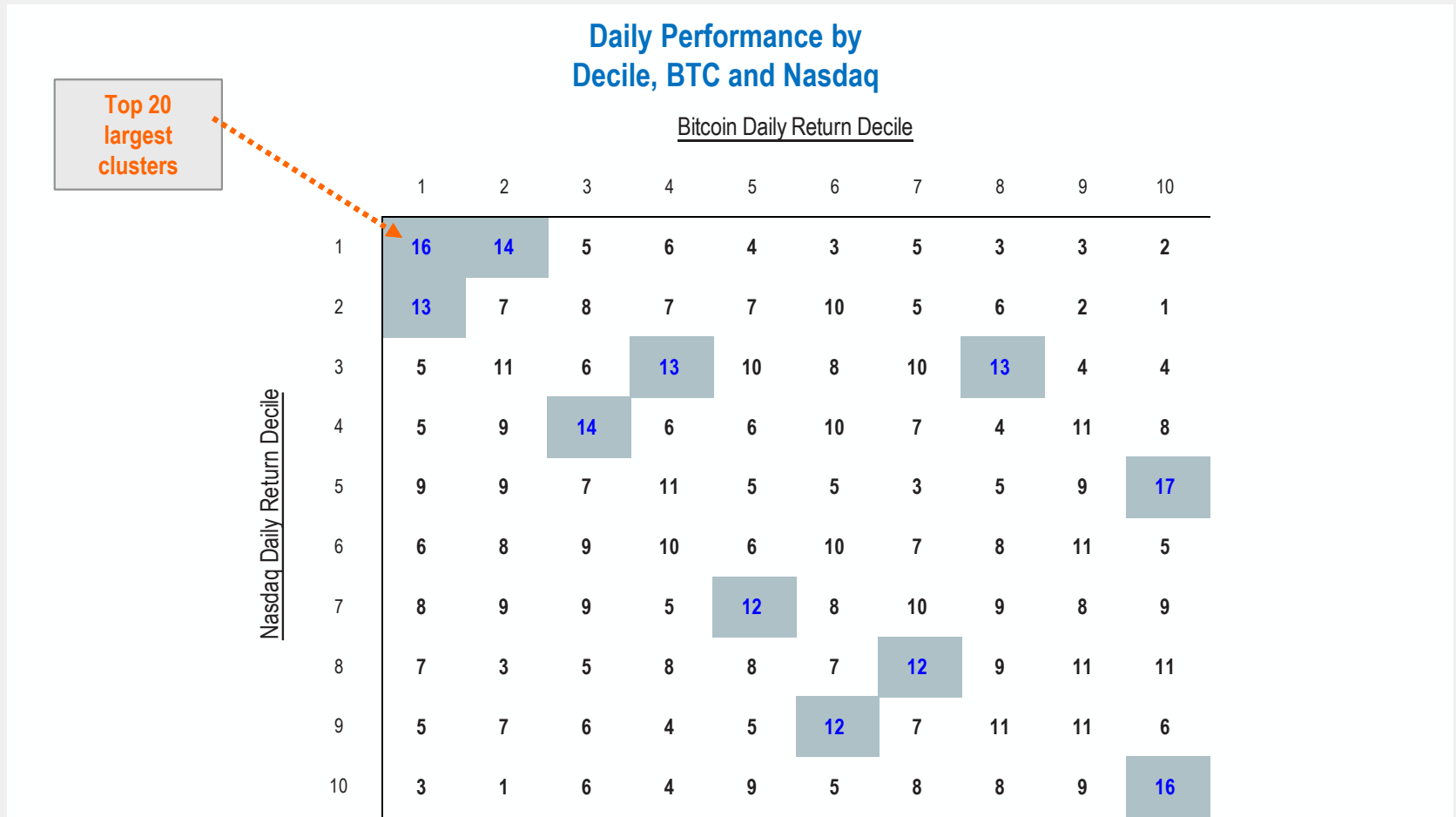
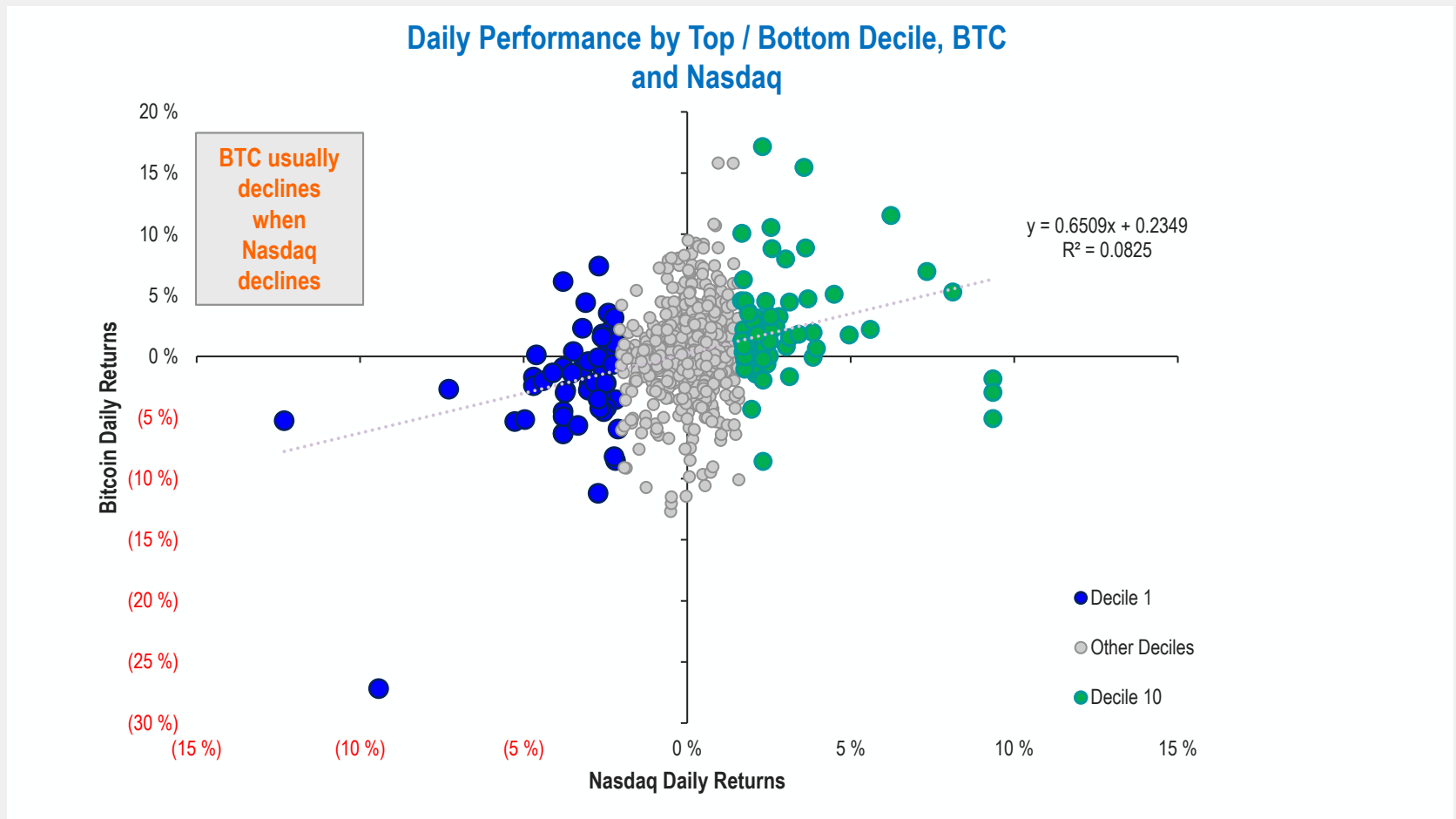


Figure: Sample count of daily returns by quartile, Bitcoin and Nasdaq Note Since 1/1/20

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:** Nasdaq Composite and Bitcoin daily returns, since 1/1/20  
Note Lowest quartile is weakest 25% of Nasdaq daily returns

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, although we are now in a third bear market for the Nasdaq Composite
- Bitcoin is only intermittently within 10-20% of all time highs

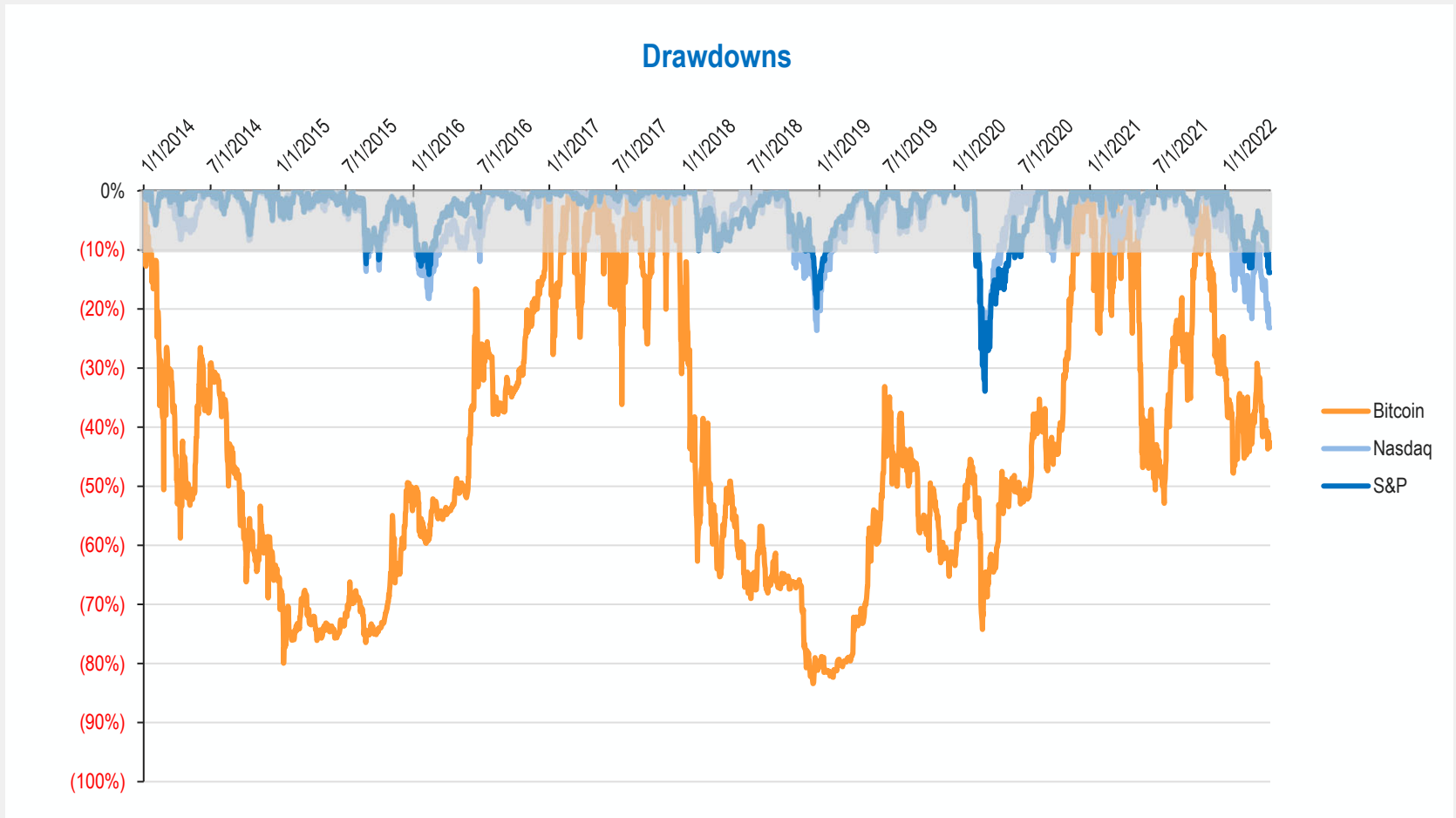


Figure: Drawdowns comparisons: Bitcoin vs the S&P and Nasdaq Composite Since 1/1/2014

Source: BitOoda, Bloomberg







# Public Miners

# Bitcoin Miners Performance Map

- Only Cathedra and Ebang have outperformed Bitcoin YTD, but are still down in absolute terms
- Hut8 is up the most today, at +2.2%, outpacing Bitcoin's 1.7% gain

Year to Date	Quarter to Date	Month to Date	30 Day	7 Day	1 Day
		Terawulf, 4.7%		Stronghold, 1.8%	Terawulf, 4.7%
		Ebang, 3.8%		Ebang, 0.6%	Ebang, 3.8%
		Greenidge, 2.8%		Argo, 0.5%	Greenidge, 2.8%
		Marathon, 2.8%		Terawulf, (0.3%)	Marathon, 2.8%
Ebang, (6.3%)		Riot, 2.6%	S&P, (9.0%)	Bitfarms, (0.8%)	Riot, 2.6%
Cathedra, (7.7%)		Bitfarms, 2.3%	Cipher, (15.2%)	Mawson, (1.4%)	Bitfarms, 2.3%
S&P, (13.2%)	S&P, (8.7%)	Bitcoin, 1.7%	Bitcoin, (15.6%)	Bitcoin, (3.0%)	Bitcoin, 1.7%
Bitcoin, (15.9%)	Bitcoin, (14.8%)	Cipher, 1.3%	Argo, (20.2%)	S&P, (3.7%)	Cipher, 1.3%
Canaan, (28.6%)	Cipher, (15.7%)	Bit Digital, 1.2%	Bitfarms, (22.5%)	Greenidge, (4.2%)	Bit Digital, 1.2%
Cipher, (33.7%)	Ebang, (16.8%)	Mawson, 1.2%	Mawson, (22.7%)	Cathedra, (5.0%)	Mawson, 1.2%
Argo, (34.9%)	Argo, (19.7%)	Argo, 1.1%	Ebang, (23.4%)	Canaan, (6.7%)	Argo, 1.1%
Mawson, (41.3%)	Bitfarms, (21.5%)	Hive, 0.3%	Northern Data, (24.6%)	Core Scientific, (7.9%)	Hive, 0.3%
Bitfarms, (41.7%)	Northern Data, (23.2%)	S&P, 0.1%	Cathedra, (26.0%)	Cipher, (8.4%)	S&P, 0.1%
Northern Data, (43.4%)	Mawson, (23.8%)	Iris Energy, (0.3%)	Digihost, (28.0%)	Digihost, (8.8%)	Iris Energy, (0.3%)
Hive, (44.5%)	Cathedra, (23.9%)	Hut8, (0.4%)	Hive, (30.6%)	Hut8, (9.6%)	Hut8, (0.4%)
Iris Energy, (46.4%)	Greenidge, (25.0%)	Stronghold, (0.8%)	Stronghold, (31.5%)	Bit Digital, (10.7%)	Stronghold, (0.8%)
Core Scientific, (46.9%)	Digihost, (27.1%)	Core Scientific, (1.7%)	Core Scientific, (31.6%)	Northern Data, (12.2%)	Core Scientific, (1.7%)
Digihost, (47.4%)	Core Scientific, (29.4%)	Canaan, (3.3%)	Canaan, (35.2%)	Hive, (12.8%)	Canaan, (3.3%)
Marathon, (51.2%)	Hive, (31.2%)	Cathedra, (3.7%)	Hut8, (36.2%)	Riot, (13.6%)	Cathedra, (3.7%)
Riot, (53.4%)	Canaan, (32.3%)	Northern Data, (5.2%)	Bit Digital, (42.8%)	Marathon, (14.3%)	Northern Data, (5.2%)
Hut8, (54.8%)	Stronghold, (33.8%)	Digihost, (5.6%)	Marathon, (43.8%)	Iris Energy, (23.0%)	Digihost, (5.6%)
Greenidge, (59.8%)	Hut8, (35.8%)		Greenidge, (44.0%)		
Bit Digital, (66.2%)	Marathon, (42.6%)		Iris Energy, (45.2%)		
Stronghold, (69.9%)	Bit Digital, (42.9%)		Riot, (49.8%)		
Terawulf, (73.6%)	Iris Energy, (44.7%)		Terawulf, (51.7%)		
	Riot, (50.9%)				
	Terawulf, (52.8%)				



Source: BitOoda, Bloomberg

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# Miner Performance

## YTD, Most Underperform BTC

- Bitcoin is off 16% Year to Date
- Only Cathedra and Ebang have outperformed Bitcoin so far this year; most miners have significantly underperformed Bitcoin
- On shorter timeframes, several miners have outperformed, and tend to do so when Bitcoin is up
- This makes sense to us, given the operating leverage miners should experience on price upside for the underlying

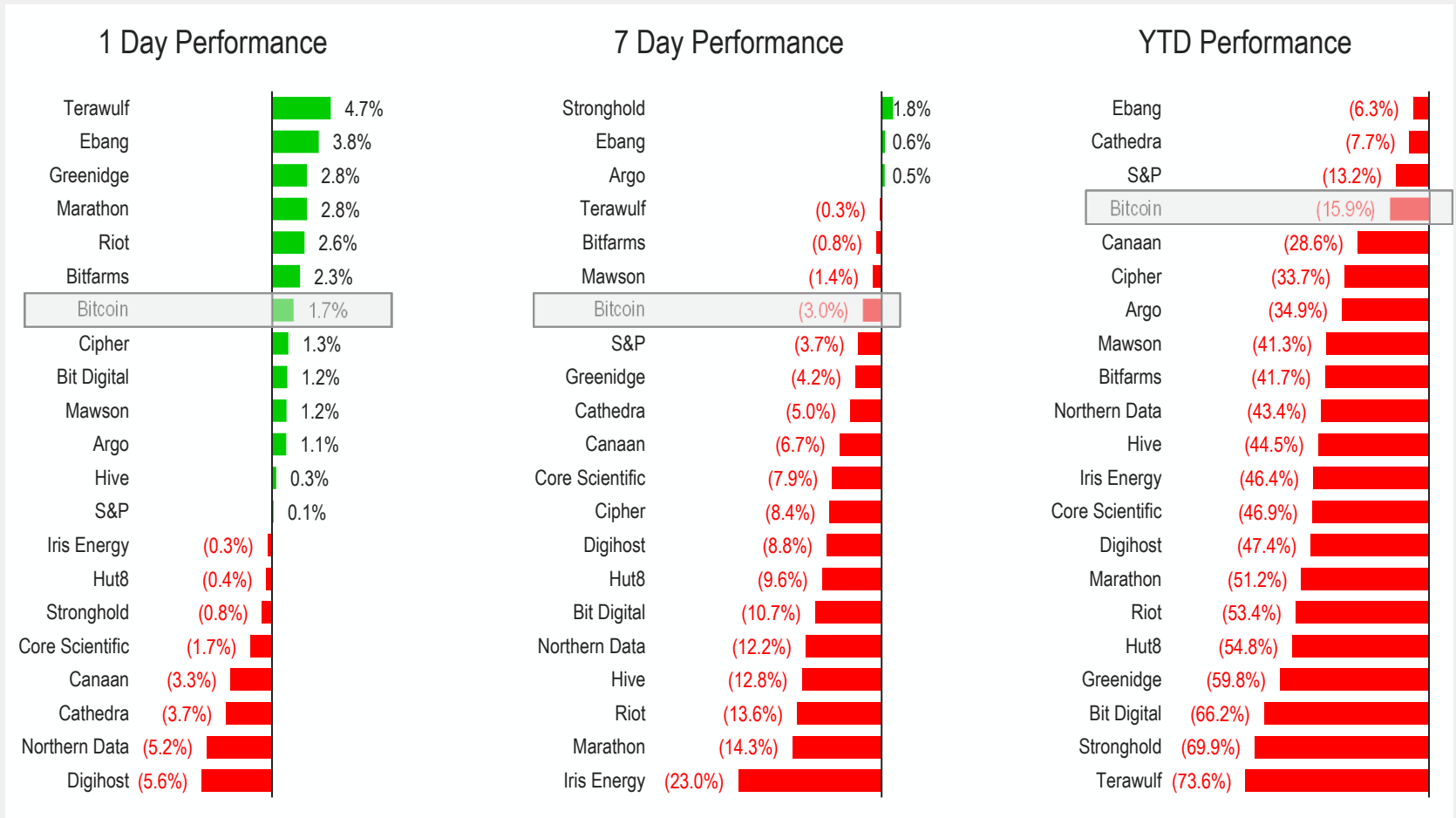


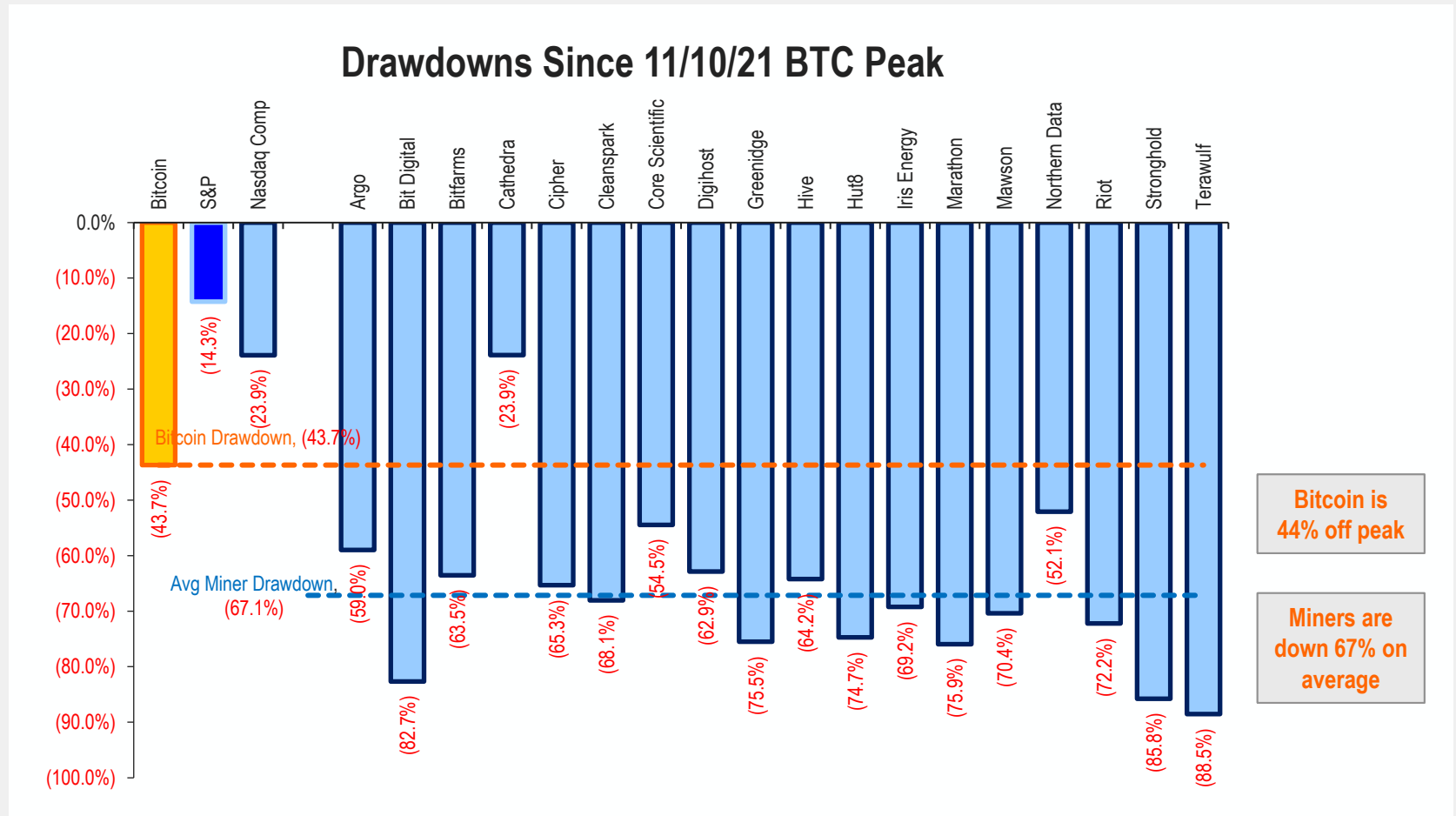
Figure: Bitcoin miner drawdowns  
 Notes: 1. Iris Energy's drawdown measured from 11/17/21

Source: BitOoda, Bloomberg

# Drawdowns From BTC Peak

## Miners Underperforming Bitcoin

- Bitcoin is off 44% from its peak on November 10, 2021
- Over the same period, the S&P 500 is down 14% and the Nasdaq 24%
- Most miners have underperformed Bitcoin since November 2021 by an average additional 23%, extending the underperformance further



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

Source: BitOoda, Bloomberg

**Bitcoin is 44% off peak**

**Miners are down 67% on average**

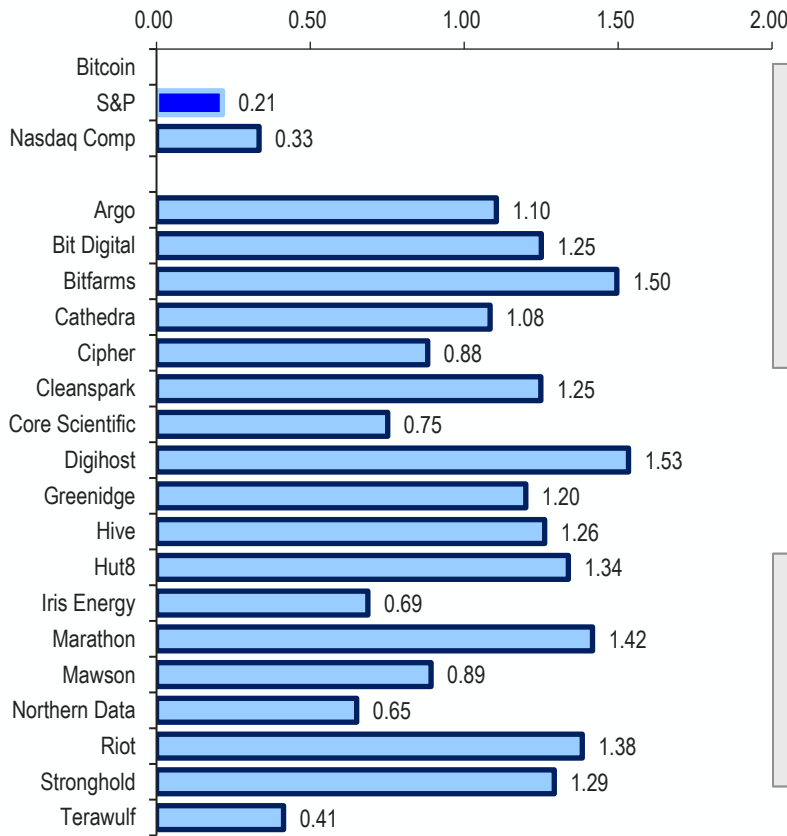


# Beta & Correlation

## Not All Miners Are Equal

- We expect most miners to exhibit a Beta > 1 relative to Bitcoin
- Bitcoin is off 44% 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 56% & 62%, respectively
- **The correlation to equities is picking up to new highs as macro fears affect equity markets**

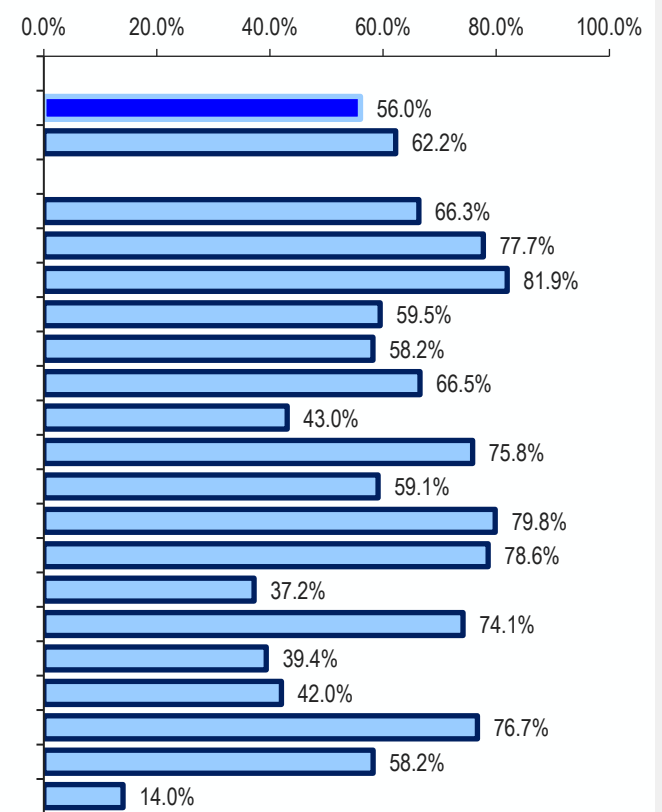
### Beta to BTC Since BTC Peak



**Bitcoin has a 56% correlation to the S&P and 62% 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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