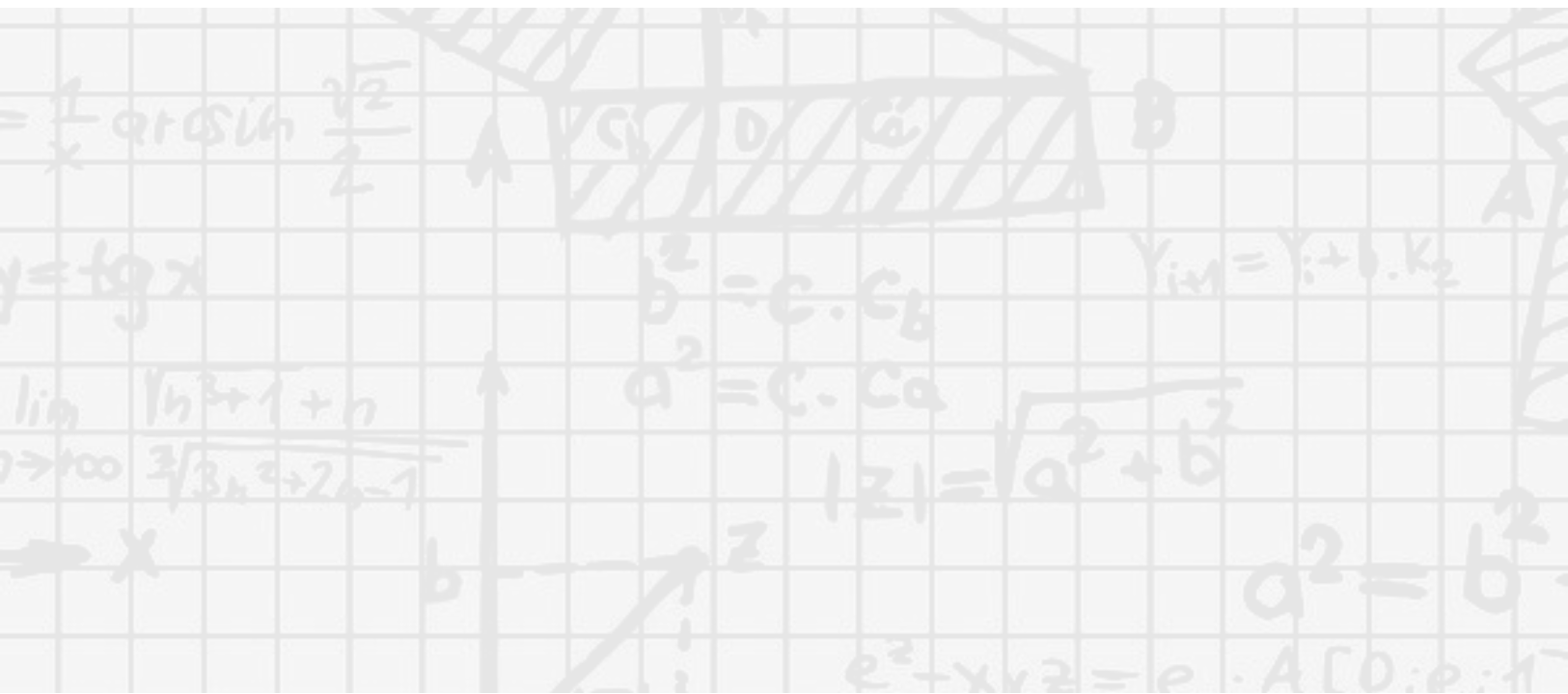


Digital Asset Markets Report

December 2022



The S2F Intelligence report examines network fundamentals using on-chain analysis, technical tools, and proprietary indicators. We aim to provide insight into how digital assets perform during these unprecedented times. By recognizing trends in both momentum and volatility, we seek to identify opportunities while navigating uncertain market conditions.

Macro Overview

- S&P500 and Dow finished 2022 down -19.9% and -8.7% YTD, respectively. The NASDAQ finished down -33.7%, its worst year since 2008 (-40.5%).
- Year over Year December data for both core and headline CPI were in line with economists' expectations of 5.7% and 6.5%, signaling further continuation of a downtrend in the rate of inflation.
- Month over Month CPI was -0.1%, the first negative print since May 2020.
- The Federal Reserve revised its 2023 Fed funds rate projection from 4.6% to 5.1%, while 2024 projections increased from 3.9% to 4.1%.
- The United States government finds itself with only a \$100 billion runway before it reaches its \$31.4 trillion debt ceiling.
- Markets are pricing in a 66.4% chance of a 25 bps at the February FOMC meeting and a 33.6% chance of a Federal Reserve pause.¹

Macro Performance

Page 1

- Digital assets' finished 2022 with a total market cap of 771.8 billion but have since risen to 955.2 billion at the start of the new year.
- GLD (Gold ETF) finished in positive territory, +0.7% on the year, and is up 1.1% in 2023.
- Crude oil sanctions have pressured prices lower, but Chinese demand could provide support in 2023; currently \$81.01/barrel.
- Commodities outperformed indices in 2022, with the GSCI index up +24.5% for the year.

On-Chain Analysis

Page 2

- **Bitcoin MVRV (200d SMA):** The current 200d SMA MVRV of Bitcoin is 0.92 - the indicator has entered the territory of all prior historical cycle bottoms - (0.83, 0.84, 0.97).
- **Ethereum Inflation Rate:** Pre-merge token inflation was greater than 4.5%. Post-merge, more than 900 ETH have been burned under Proof of Stake vs. a projected 1.47 million new ETH which would have been issued under PoW (>100% reduction).

Technical Levels

Page 3

- **Bitcoin:** Encouraging CPI data led BTC price action to reclaim both the 50d MA (\$17,383) and 200d MA (\$19,537), but we remain cautious until high timeframe support above the 2017 cycle ATH is established.
- **Ethereum:** ETH has successfully reclaimed the 50d MA (\$1279) and 200d MA (\$1405). However, we remain cautious of further upside in the short term until both moving averages have established higher timeframe support.

Momentum & Sentiment

Pages 4-5

- **S2F momentum model:** While sidelined for most of December, the model rebalanced to BTC and ETH exposure.
- **Alt-season indicator:** The indicator shows the broader trend pivoting towards a more neutral zone.
- **Delta risk:** Indicators pivoted and recently entered risk-on territory to start 2023 after a risk-off December.

Market Radar

Pages 6-7

- **Digital Currency Group:** Destructive events in 2022 have transformed a prominent leader in digital assets into possibly the largest systematic headwind for the industry after DCG's subsidiary Genesis Global halted clients' asset withdrawals.
- **GBTC Collateral + 3AC Default:** Following the Terra/Luna collapse, 3AC defaulted on a \$2.36B loan originated by Genesis who took custody of 35 million GBTC shares. The Grayscale product recently reached a new all time low of -50% discount to NAV.

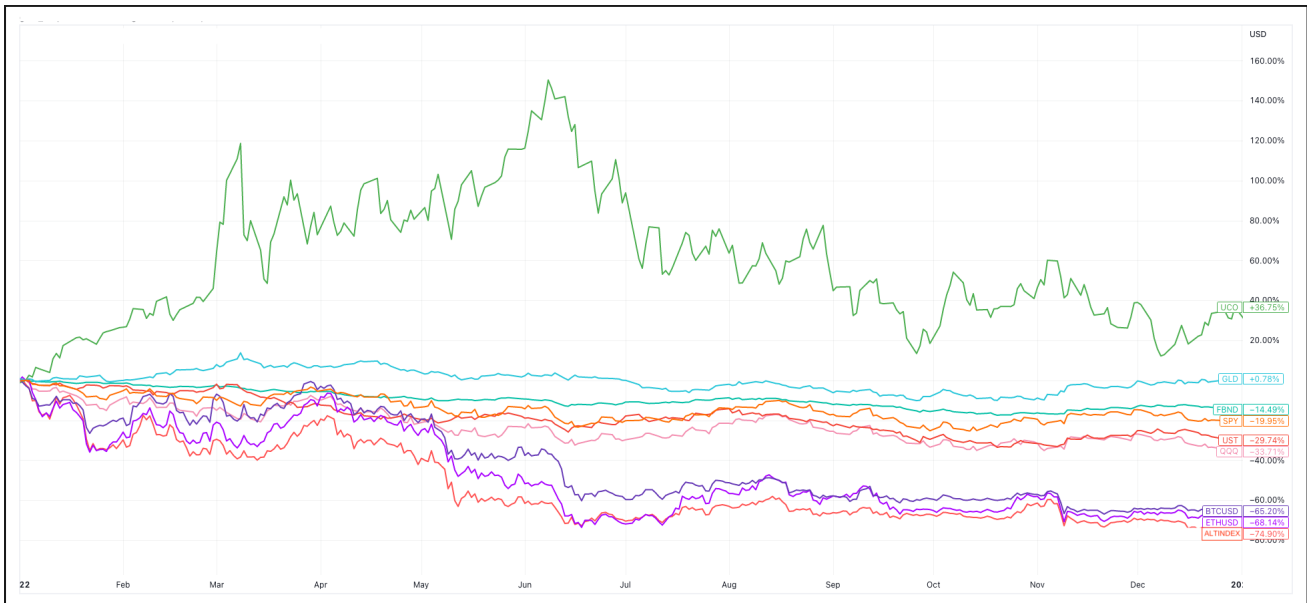
Notable News

Page 8

- Bitcoin, Ethereum, Layer One, and Other Headlines.

¹ Investing.com, Fed Rate Monitor Tool <https://www.investing.com/central-banks/fed-rate-monitor>

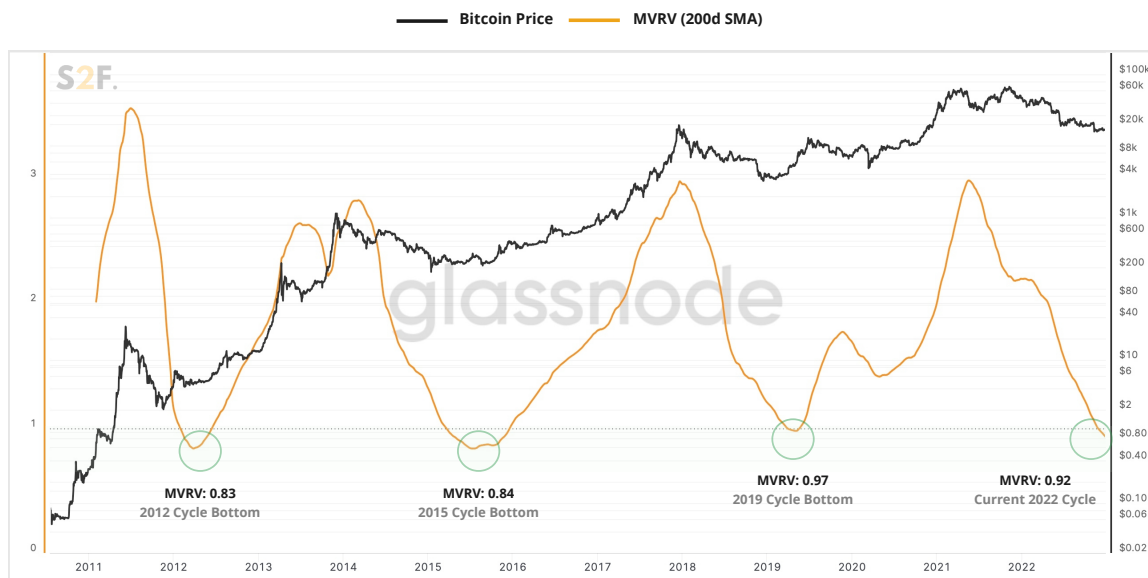
2022 Asset Returns



Asset	MtD*	QtD	YtD	Volatility (annualized)*	Sharpe (annualized)*	Correlation (to Bitcoin)**
Bitcoin	-2.4%	-14.3%	-65.20%	64%	-1.34	1.0
Ethereum	-6.2%	-8.7%	-68.14%	86%	-0.96	0.88
Altcoin Index	-17.2%	-23%	-74.90%	83%	-1.34	0.86
SPY	-5.7%	4.8%	-19.95%	24%	-0.79	-0.60
QQQ	-7%	3.6%	-33.71%	30%	-0.79	-0.63
GLD	1.1%	7.1%	0.78%	15%	0	-0.81
UCO	-1.6%	7.5%	36.75%	77%	0.79	0.56
FBND	-1.5%	1.4%	-14.49%	8%	-1.75	-0.72
UST	-5.7%	-2.5%	-29.74%	20%	-1.75	-0.62

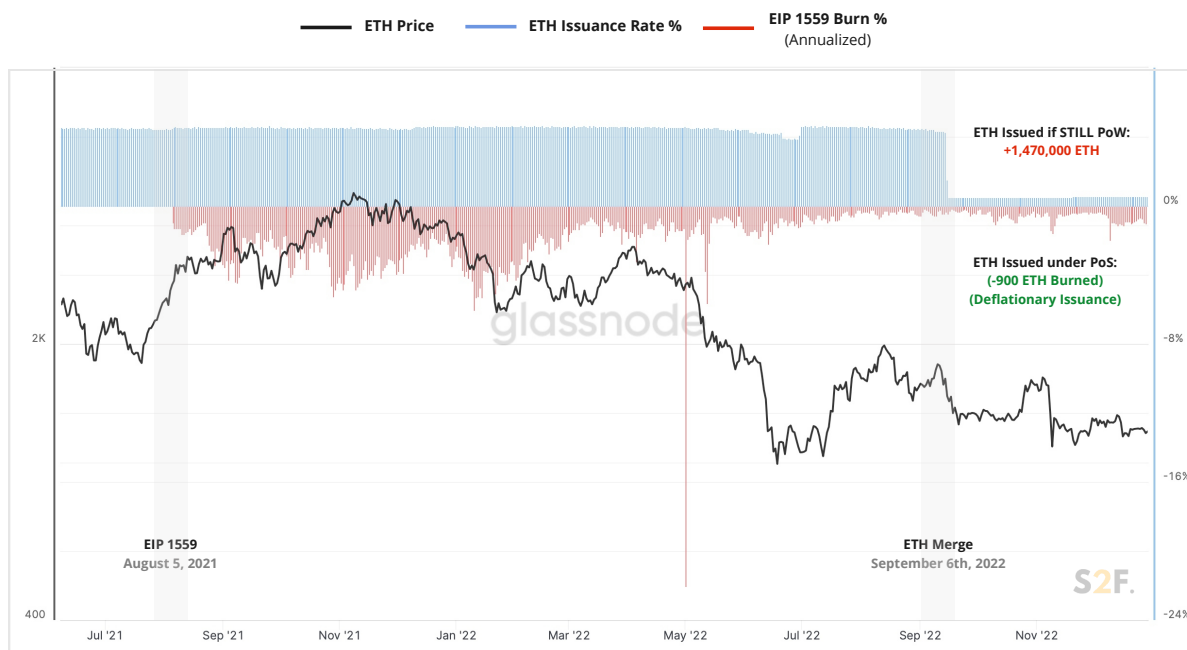
Sources: AlphaVantage, TradingView
 Assets: SPY = S&P500, QQQ = NASDAQ, GLD = Gold, UCO = Crude Oil, FBND = Total Bond Market, UST = 7-10 YR Treasury, Alt-Perp (FTX) = Altcoin Index
 *as of December 31, 2022
 **last 90 days

Bitcoin MVRV (200d SMA)



- MVRV is the ratio between Bitcoin's market cap and realized cap (orange). Realized cap calculates the cumulative cost-basis for all BTC when it last transacted - a 200d SMA is applied to identify broader "discount" conditions.
- Opportunities arise when the market price is below "fair value" or realized price. With a current 200d SMA MVRV of 0.92, the indicator has entered the territory of all prior historical cycle bottoms (green) - (0.83, 0.84, 0.97).

Ethereum Inflation Rate (Post-Merge)



- The Ethereum network implemented EIP 1559 in August of 2021 and began burning the base fee of transactions. We can observe how this upgrade impacted the % supply annually (red).
- Before the ETH merge in September, the ETH issuance rate (blue) was more than 4.5%. Post-merge, the protocol has not issued additional tokens to the circulating supply; in fact, > 900 ETH have been burned as of writing - this net deflationary issuance minimizes the dilutive impact holders experienced under Proof of Work.

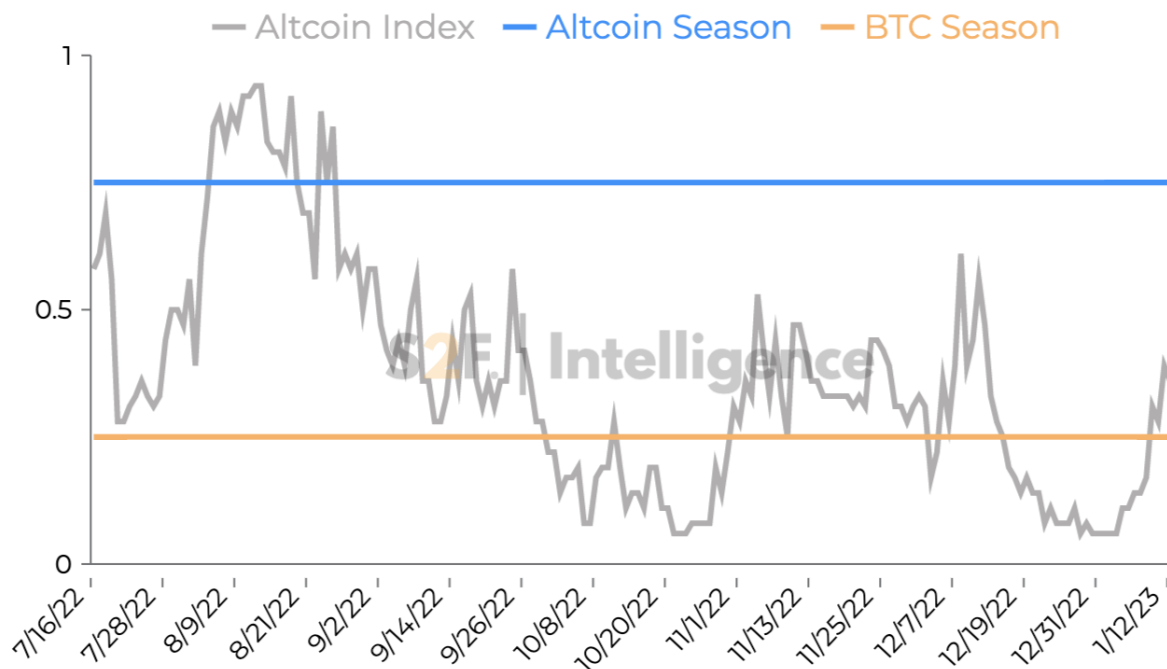
- Bitcoin reclaimed both the **50d MA** (\$17,383) and remains above the **200d MA** (\$19,537).
- Uncertainty remains surrounding the Federal Reserve's outlook on monetary policy which can still pose a challenge for risk-on assets heading into Q1 of 2023, including Bitcoin.
- Despite the short-term reclaim of the **50d MA** and the **200d MA**, we remain cautious until high timeframe support is established.



- Ethereum has reclaimed support above both the **50d MA** (\$1,279) and the **200d MA** (\$1,405).
- Eliminating block rewards for miners improved the annual token issuance, but the market has raised new concerns over potential sell-side pressure from staked ETH holders when tokens are unlocked in Q1 2023.
- In the 2018 bear market, the ETH/BTC ratio declined Y/Y by 35%, while in 2022, ETH lost 9% vs. the BTC ratio.

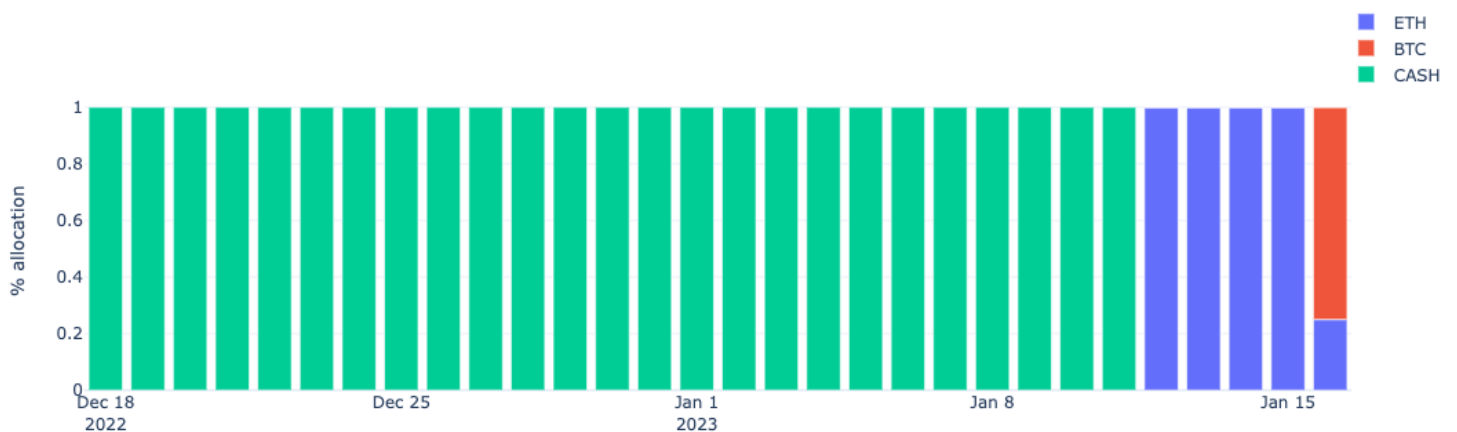


S2F Alt-Season Indicator



The S2F Alt-Season Indicator is a proprietary model that measures the capital flows between Bitcoin and a basket of major Altcoins. This indicator is especially helpful in **identifying where strength resides** in the cycle and can **potentially indicate what may happen next**. When the Index line (gray) is below the orange line, it generally signals strong momentum favoring Bitcoin vs. Altcoins.

S2F Momentum Model



The S2F Momentum Model is a proprietary model for portfolio optimization. The **entry and exit signals rely on a risk indicator**, while the **ETH and BTC weights are based on price momentum**. The chart above shows the suggested daily allocation over the last 30 days.

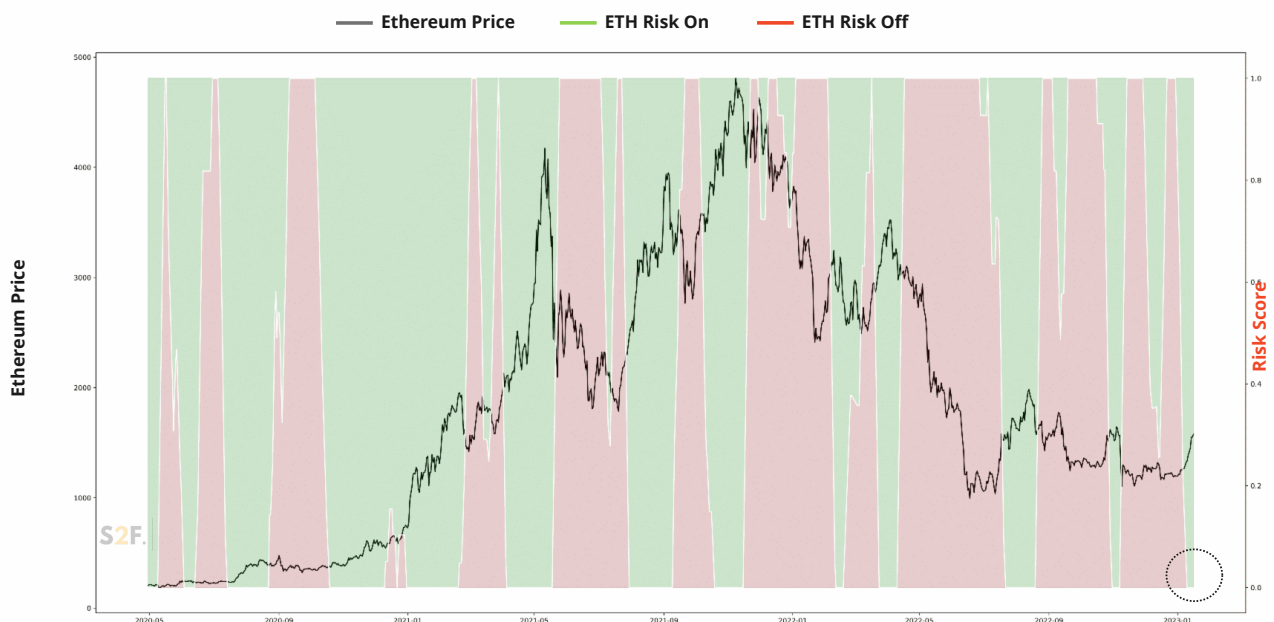
Delta Risk Score

The Delta Risk Score is a proprietary model that **measures the probability of an imminent retracement in price**. The indicator's value (**red line**) oscillates between 0 and 1, with the former signaling low-risk while the latter determines high-risk conditions. The chart below shows both indicators and the underlying asset's price (**grey line**) since Q2 2020.

Bitcoin



Ethereum



Market headwinds in 2022 included aggressive fiscal policy and the Ukrainian war, but the adverse price action in digital assets was exacerbated by leverage and credit defaults from several key participants. Institutional players like 3AC took advantage of the investment mechanisms behind Grayscale's Bitcoin trust before doubling down by posting shares as collateral to Grayscale's sister company Genesis Global. The parent company of both Grayscale and Genesis, DCG, is tasked with bringing an end to this leverage crisis as we usher in 2023.

DCG - Digital Currency Group

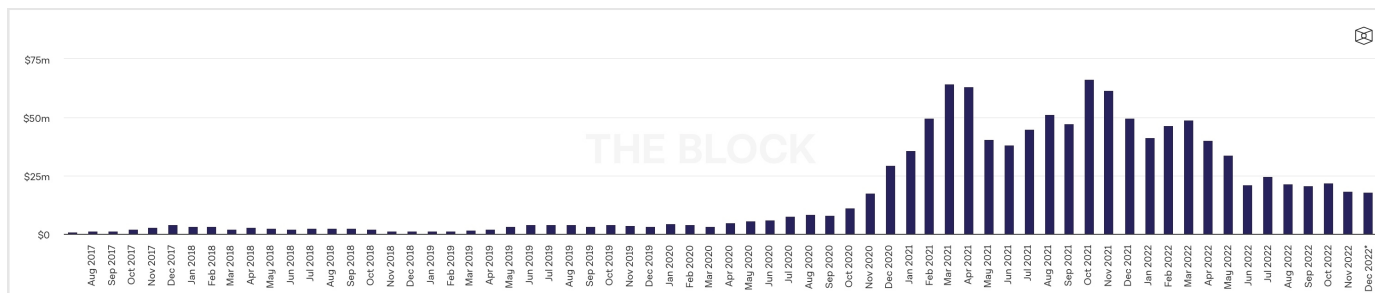
- DCG is one of the largest entities in the crypto ecosystem. It is the parent company of several esteemed subsidiaries, including Foundry mining, Genesis Global, CoinDesk, and Grayscale.
- The global investment company was established in 2015 and raised \$700 million at a \$10 billion valuation in November 2021.
- Despite its initial success, DCG is currently facing credit challenges while seeking a resolution for institutional customers after its subsidiary Genesis Global halted user withdrawals.

Genesis Global Capital - Institutional Lending Arm

- For years, DCG's subsidiary Genesis served a pivotal role as a premiere cryptocurrency brokerage for investors. Genesis launched BTC's first official OTC trading desk in 2013 and has onboarded many institutional investors.
- Genesis Global Capital also provides lending services to many of its clients. In 2021, loan originations totaled \$131 billion (\$50 billion of its assets were loaned in Q4 2021).
- Genesis also manages a derivatives unit that recently disclosed \$175 million in locked funds on FTX.
- Following the FTX collapse, Genesis froze customer withdrawals citing "unprecedented market dislocation." As a result, Gemini Earn also halted its earn-users' redemption requests. How did this happen?

Grayscale Bitcoin Trust (GBTC)

- DCG's revenue powerhouse, Grayscale and its Bitcoin Trust product provided an opportunistic premium that institutions took full advantage of. Since 2013, few avenues existed for institutions to gain regulatory-approved exposure to BTC.
- Grayscale became a popular option for accredited investors who could acquire GBTC shares. Due to non-accredited retail demand for Bitcoin exposure, **shares of GBTC historically traded at a premium** to the underlying Bitcoin held by the Trust.
- Share creation featured a one-way mechanism for qualified investors who received "locked" GBTC shares (*eligible to sell after six months*) by depositing BTC. The Trust's 2% annual management fee incentivized Grayscale to generate as many deposits as possible.
- Institutional greed to arbitrage the share premium led to Grayscale holding 632.35K BTC (~3.29% of the current circulating supply). As the bull market heated up in Q4 2020, Grayscale revenues grew along with its appreciating AUM.

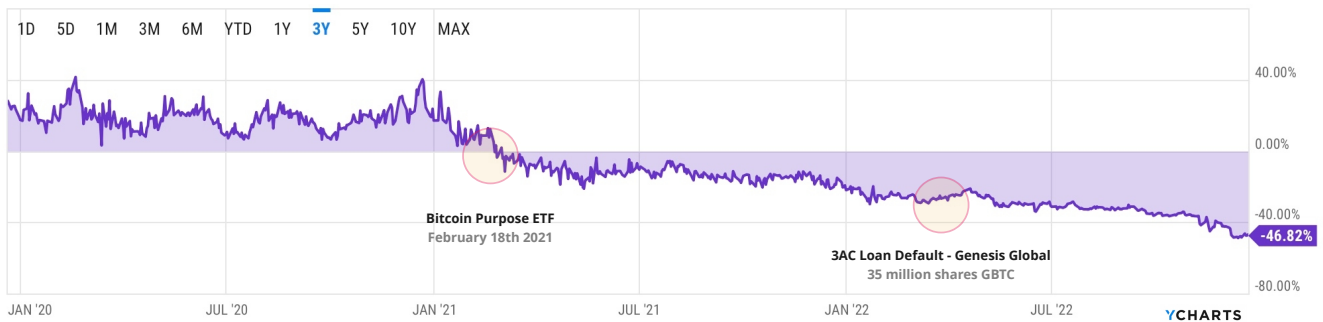


Grayscale Revenue from GBTC (Estimates)
2017-2022

Three Arrows Capital - (GBTC and UST Collateral)

In a 12/31/2020 filing, Three Arrows Capital, disclosed a 6.1% majority stake in all GBTC trust shares. On the surface, what appeared to be a popular arbitrage trade for institutional investors was about to become something more insidious.

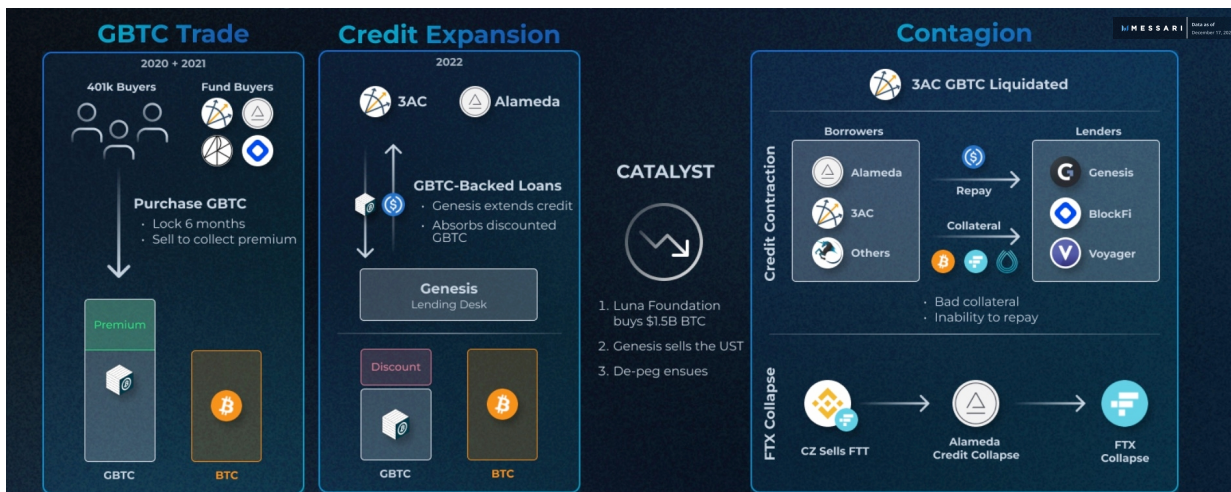
- Institutional lenders, including BlockFi and 3AC were borrowing against their assets - **posting GBTC as collateral to Genesis**.
- Pressure on GBTC as adequate collateral continued with the launch of the Purpose Bitcoin ETF (the first physically settled Bitcoin ETF) on the Toronto Stock Exchange. GBTC shares would trade at a (-0.68%) discount to NAV for the first time on February 23rd.
- In April, the Luna Foundation Guard, with the help of 3AC, coordinated a loan from Genesis with plans to purchase \$1.5 billion of BTC. The algorithmic stablecoin UST was posted as collateral which eventually became selling pressure during its notorious depeg in May.
- Following the Terra/Luna collapse 3AC defaulted on a \$2.36B loan and Genesis eventually took custody of 35 million GBTC shares.



Grayscale \$GBTC Trust Discount to NAV

DCG Credit Extension

The multi-billion default from 3AC and other lenders left a sizable hole in Genesis' balance sheet resulting in an intra-company loan from its parent company DCG - **\$575 million due in 2023 and a \$1.1 billion promissory note due in 2032**.



- DCG's largest revenue generator, Grayscale's GBTC product recently reached a -50% discount to NAV (net asset value) following the announcement of a possible 20% tender offer to restore capital to shareholders of the trust.
- Reaching an agreement with Genesis' creditors without declaring bankruptcy or dissolving DCG's subsidiary, Grayscale, could be the most systematically impactful event in applying the final tourniquet of contagion to the crypto ecosystem.

Bitcoin

- Elizabeth Warren (MA) and Roger Marshall (R-Kan.) introduce the Digital Assets Anti-Money Laundering bill. This bipartisan legislation aims to deter the financing of terrorists and rogue nations using crypto.
- Grayscale CEO, Sonnenshein shares that the company is weighing a tender offer for up to 20% of the current outstanding GBTC shares if its ETF conversion is unsuccessful (pending SEC approval).
- Bitcoin miner Core Scientific files for Chapter 11 bankruptcy - they cited BTC's declining price and rising electricity costs.
- Valkyrie Investments offers to take over management of Grayscale's Bitcoin Trust proposing to facilitate Regulation M redemptions for their shares and reduce management fee from 2% to 0.75%.¹

Ethereum

- Ethereum's L2 Arbitrum TVL (\$1.05B) surpasses Polygon (\$1.01B) and Avalanche (\$778.8 million) to become the #4 blockchain in total value locked behind Ethereum, Tron, and Binance Smart Chain.
- ConsenSys, the company behind MetaMask, announced plans to integrate its extension wallet with PayPal providing users with the utility of an additional on/off-ramp.
- Visa proposes "account abstraction" that could use smart contracts to enable automated programmable payments on Ethereum.²
- Ethereum founder Vitalik Buterin announced public support for Solana, stating the recent events in the industry had washed away bad actors from its ecosystem.

Layer 1's

- Two of Solana's most popular NFT projects, Yoots and DeGods, announce plans to migrate to Ethereum and Ethereum's side chain Polygon (MATIC).³
- Ripple (XRP) announces plans to integrate support for smart contracts and NFTs on its XRPL ledger.
- Cosmos surpasses Cardano in Github daily development activity.
- Binance Smart Chain (BNB) announced plans for the January 2nd Einstein testnet upgrade, enabling permissionless validator elections.
- Dogecoin developers deny rumors of an immediate consensus protocol shift from PoW to PoS.

Other Headlines

- After being extradited to the United States, Sam Bankman-Fried was released from prison on a record-setting \$250 million bail bond.
- Voyager Digital announced Binance.US would be purchasing its assets for \$1.022 billion - the deal could finalize in bankruptcy court in January with hopes of granting customers access to their funds.⁴
- According to attorneys involved in the bankruptcy case, FTX has recovered at least \$5 billion of liquid assets, including cash, crypto and securities.⁵
- Japan's Financial Services Agency (FSA) plans to allow the circulation of foreign-issued stablecoins.
- Nigeria set to pass legislation recognizing digital assets - the news comes after the launch of its CBDC eNaira, which achieved a 0.5% adoption rate and the nation imposed \$225 ATM weekly limits for withdrawals.

¹ Bitcoin.com, Valkyrie Reveals Intention to Sponsor Grayscale's Bitcoin Trust as GBTC Discount to NAV Widens <https://news.bitcoin.com/valkyrie-reveals-intention-to-sponsor-grayscale-bitcoin-trust-as-gbtc-discount-to-nav-widens/>

² Yahoo News, Visa Teases Ethereum Collab, Aims to 'Actively Contribute' to Crypto Development <https://news.yahoo.com/visa-teases-ethereum-collab-aims-000345572.html>

³ CoinDesk, Solana's Top NFT Projects DeGods and Y00ts to Migrate Chains <https://www.coindesk.com/web3/2022/12/26/solanas-top-nft-projects-degods-and-y00ts-to-migrate-chains/>

⁴ Forbes, Binance.US Is Buying Failing Crypto Exchange Voyager <https://www.forbes.com/sites/gai/2022/12/27/binanceus-is-buying-failing-crypto-exchange-voyager/?sh=5d8d7eb36245>

⁵ CNBC, FTX has recovered \$5 billion worth of 'liquid' assets, lawyers say <https://www.cnbc.com/2023/01/11/ftx-has-recovered-5-billion-worth-of-liquid-assets-lawyers-say-bankman-fried-crypto.html>

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