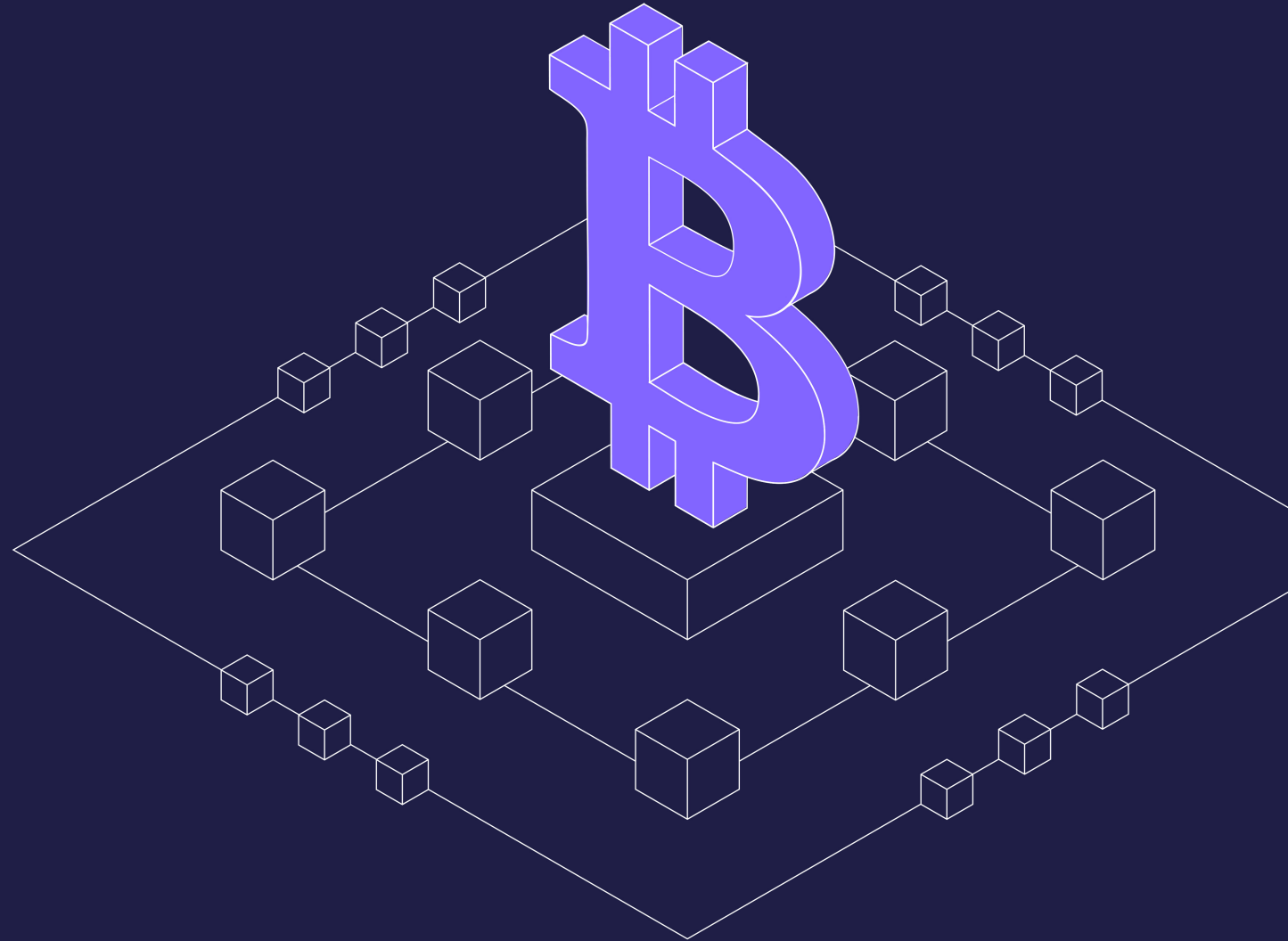




As of November 30, 2022

THE BITCOIN MONTHLY

THE FALL OF FTX



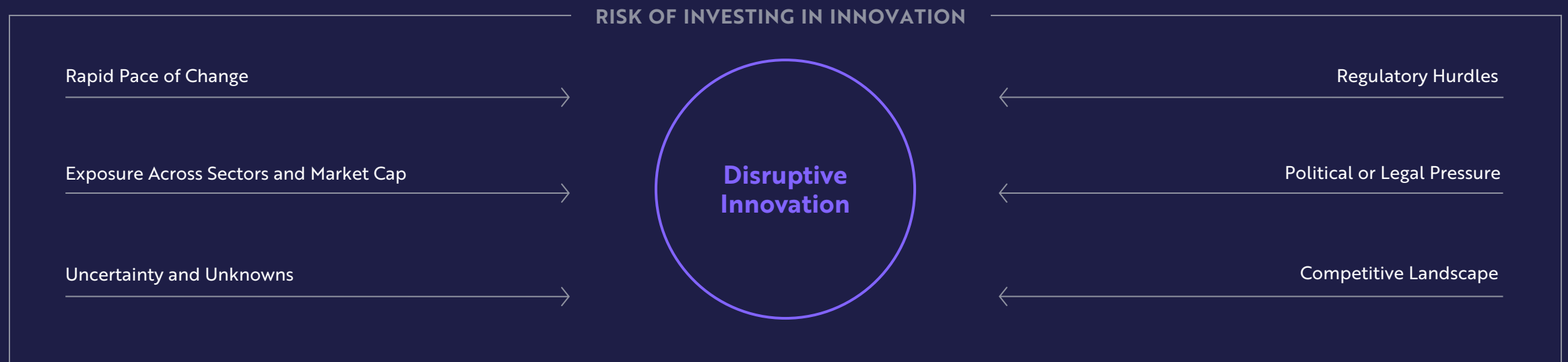
For Informational Purposes Only. ARK Investment Management LLC, 2022. This is not investment advice or a recommendation in relation to any named particular securities or cryptocurrencies and no warranty or guarantee is provided. Any references to particular securities or cryptocurrencies are for illustrative purposes only. The reader should not assume that an investment identified was or will be profitable. Certain information was obtained from sources that ARK believes to be reliable; however, ARK does not guarantee the accuracy or completeness of any information obtained from any third party. Forecasts are inherently limited and cannot be relied upon. **PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE PERFORMANCE; FUTURE RETURNS ARE NOT GUARANTEED.**



RISKS OF INVESTING IN INNOVATION

Please note: Companies that ARK believes are capitalizing on disruptive innovation and developing technologies to displace older technologies or create new markets may not in fact do so. ARK aims to educate investors and seeks to size the potential investment opportunity, noting that risks and uncertainties may impact our projections and research models. Investors should use the content presented for informational purposes only, and be aware of market risk, disruptive innovation risk, regulatory risk, and risks related to certain innovation areas.

Please read risk disclosure carefully.



→ **Aim for a cross-sector understanding of technology and combine top-down and bottom-up research.**

→ **Aim to understand the regulatory, market, sector, and company risks. (See Risk and Disclosure Page)**



SECTIONS

01

Market Summary

02

FTX Files For Chapter 11

03

Market Contagion Pushes Bitcoin Into Further Capitulation

04

Appendix: Glossary Of Terms



Section 01

Market Summary





Bitcoin's Price Drops To 2-Year Lows As FTX Files For Chapter 11

Market Contagion

- Led by once-revered crypto leader Sam Bankman-Fried (SBF), crypto exchange FTX filed for bankruptcy, catalyzed by the unethical and likely illegal transfer of billions of dollars in customer deposits to sister company Alameda to meet margin calls.
- Catching most in the crypto and venture industry completely off guard, FTX's collapse pushed the market into further capitulation. Billions of dollars-worth of customer deposits are locked on FTX; BlockFi has been forced to file for bankruptcy; broker dealer Genesis has halted customer withdrawals; and equity investors across the industry have marked their investments in FTX to zero.

On-Chain Activity

- The ratio between bitcoin's realized profits and losses reached an all-time low, suggesting record-breaking capitulation.
- Net outflows from exchanges reach an all-time high.
- Bitcoin's hash rate corrected as miners faced significant compression in profit margins.
- Long-term holders stood strong, as total long-term holder supply stabilized at 13.8 million BTC, near an all-time high.

ARK'S KEY TAKEAWAY

- Bitcoin dropped 16.2% in November, breaking below its investor cost basis (\$17,860) and trading at \$17,100 by month's close.
- The fall of FTX could be the most damaging event in crypto history.
- Digital Currency Group (DCG) faces considerable pressure after its broker dealer, Genesis Capital, halted customer withdrawals and loan originations.
- ARK's conviction in decentralized and transparent public blockchains is as strong as ever. The FTX and other cases like Celsius and Alameda suggest that decentralization and transparency are paramount as antidotes to the gross mismanagement that can be associated with centralized intermediaries, especially fraudulent ones.

Source: ARK Investment Management LLC, 2022. Data from [Glassnode](#) unless otherwise specified. Data valid as of November 30, 2022, and subject to change. For more information on certain terms, please read our Appendix: Glossary Of Terms on page 22 of this report. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



News Of The Month

| | |
|--|---|
| <u>FTX Files Chapter 11 Bankruptcy</u> | <u>DCG's Silbert Addresses "Noise" Around Genesis In Shareholder Letter</u> |
| <u>Genesis Warns Of Possible Bankruptcy Without Funding</u> | <u>Binance Releases Proof-Of-Reserves System, Starting With Bitcoin</u> |
| <u>Genesis Creditors Organize In Bid To Forestall Bankruptcy Move</u> | <u>Lagarde Calls For Broader Crypto Regulation Following FTX Collapse</u> |
| <u>Grayscale's GBTC Discount To NAV Hits Record Low</u> | <u>Ikigai's Travis Kling Says Hedge Had "Large Majority" Of Assets On FTX</u> |
| <u>Over \$400M Worth Of Tokens FTX Funds Drained From Company Accounts</u> | <u>Coinbase Chief Product Officer Departs As Exchange Restructures Product Team</u> |
| <u>Gemini Earn Unable To Meet Customer Redemptions As Genesis Unit Pauses Withdrawals</u> | <u>Galaxy Digital Reveals \$77 Million Exposure To FTX In Q3 Earnings</u> |
| <u>Grayscale Won't Share Proof Of Reserves, Citing "Security Concerns"</u> | <u>Binance Will Launch A New "Industry Recovery Fund"</u> |
| <u>Fidelity To Offer Commission-Free Trades On Bitcoin And Ether</u> | |
| <u>Coinbase Chief Product Officer Departs As Exchange Restructures Product Team</u> | |
| <u>Novogratz's Galaxy Digital May Nix 20% Of Its Workforce</u> | |
| <u>BlockFi Suspends Withdrawals And Files For Bankruptcy After FTX Collapse</u> | |
| <u>Paradigm, Sequoia, Temasek, Softbank Mark Down FTX Investment To Zero</u> | |
| <u>Binance Backs Out Of FTX Acquisition Deal</u> | |
| <u>Crypto Exchange Bitmex Cuts Part Of Its Workforce Following CEO Departure</u> | |
| <u>Multicoin Capital Hit By FTX Collapse, With 10% Of Its Fund's AUM Stuck On The Exchange</u> | |



After FTX's Collapse, Network Activity Metrics Remained Slightly Net Bullish

| | Bitcoin Metrics ¹ | Unit | November 2022 | 1M Change | 1Y Change | ARK's View | Upgrade/Downgrade ³ |
|------------------|--|---|---------------|-----------|-----------|------------|--------------------------------|
| Network Security | <u>Mining Difficulty</u> | Exahash/sec ¹ (Thousands) | 158.7 | +0.3% | +65.4% | Neutral | ↓ |
| | <u>Miner Revenue</u> (7-Day Moving Average) | USD (Millions) | \$13.76 | -27.6% | -72.4% | Bearish | ↓ |
| Network Usage | <u>Active Owners</u> ² (Active Entities, 7-Day Moving Average) | Thousands | 245.4 | -1.1% | -10.9% | Neutral | No Change |
| | <u>Transaction Volume</u> ² (7-Day Moving Average) | BTC (Thousands) | 150.5 | -14.5% | -12.2% | Neutral | No Change |
| Holder Behavior | <u>Long-Term-Holder Supply</u> ² (Coins Held for 155 Days+) | BTC (Millions) | 13.84 | +0.05% | +4.1% | Bullish | No Change |
| | <u>Locked Supply</u> ² (Illiquid Supply) | BTC (Millions) | 14.95 | +1.7% | +6.8% | Bullish | No Change |
| | <u>Time-Weighted Turnover</u> ² (Coindays Destroyed, 7-Day Median) | Coindays (Millions) | 9.53 | +18.8% | -11.3% | Neutral | ↓ |

[1] For more information on these metrics and their units of account, please read the Appendix: Glossary of Terms on page 22 of this report. [2] Data may be subject to change over time since they are entity-adjusted in real time via a machine-learning algorithm. [3] Arrows displayed in the "Upgrade/Downgrade" column convey the change in our view of that metric compared to last month. For instance, if our view changes from bearish to neutral, the arrow will be green, and so forth.

Source: ARK Investment Management LLC, 2022. Data sourced from [Glassnode](#). Some data may be subject to change over time since they are entity-adjusted in real time. Information as of November 30, 2022.

For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Bitcoin Remains Oversold, Trading Lower Than Its Cost Bases

| | Bitcoin Metrics ¹ | Unit | November 2022 | 1M Change | 1Y Change | ARK's View | Upgrade/Downgrade ³ |
|----------------------|---|------|---------------|-----------|-----------|------------|--------------------------------|
| Long-Term Valuation | <u>Market Cost Basis</u> (Realized Price) | USD | \$20,174 | -4.4% | -17.8% | Bullish | ↑ |
| | <u>Percent Supply In Profit</u> | pp | 55.76% | -3 pp | -28.9 pp | Bullish | No Change |
| Short-Term Valuation | <u>Short-Term-Holder Cost Basis²</u> (STH Realized Price) | USD | \$18,757 | -5.4% | -14.5% | Bullish | No Change |
| | <u>Realized Market Returns²</u> (SOPR-1, 7-day moving average) | pp | -10.4% | -7 pp | -17 pp | Neutral | No Change |
| Market Sentiment | <u>Perpetual Futures Basis</u> (Binance, Estimated, 7-Day Exponential Moving Average) | pp | -0.01% | +0.02 pp | -0.02 pp | Bullish | No Change |
| | <u>Expirational Futures Basis</u> (Quarterly, All Exchanges, Annualized) | pp | 0.06% | -1.5 pp | -10.9 pp | Bullish | No Change |

[1] For more information on these metrics and their units of account, please read the Appendix: Glossary of Terms on page 22 of this report. [2] Data may be subject to change over time since they are entity-adjusted in real time via a machine-learning algorithm. [3] Arrows displayed in the "Upgrade/Downgrade" column convey the change in our view of that metric compared to last month. For instance, if our view changes from bearish to neutral, the arrow will be green, and so forth. Source: ARK Investment Management LLC, 2022. Data sourced from [Glassnode](#). Some data may be subject to change over time since they are entity-adjusted in real time. The perpetual futures basis was estimated internally on the basis of data from TradingView, and it is subject to change. Information as of November 30, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Section 02

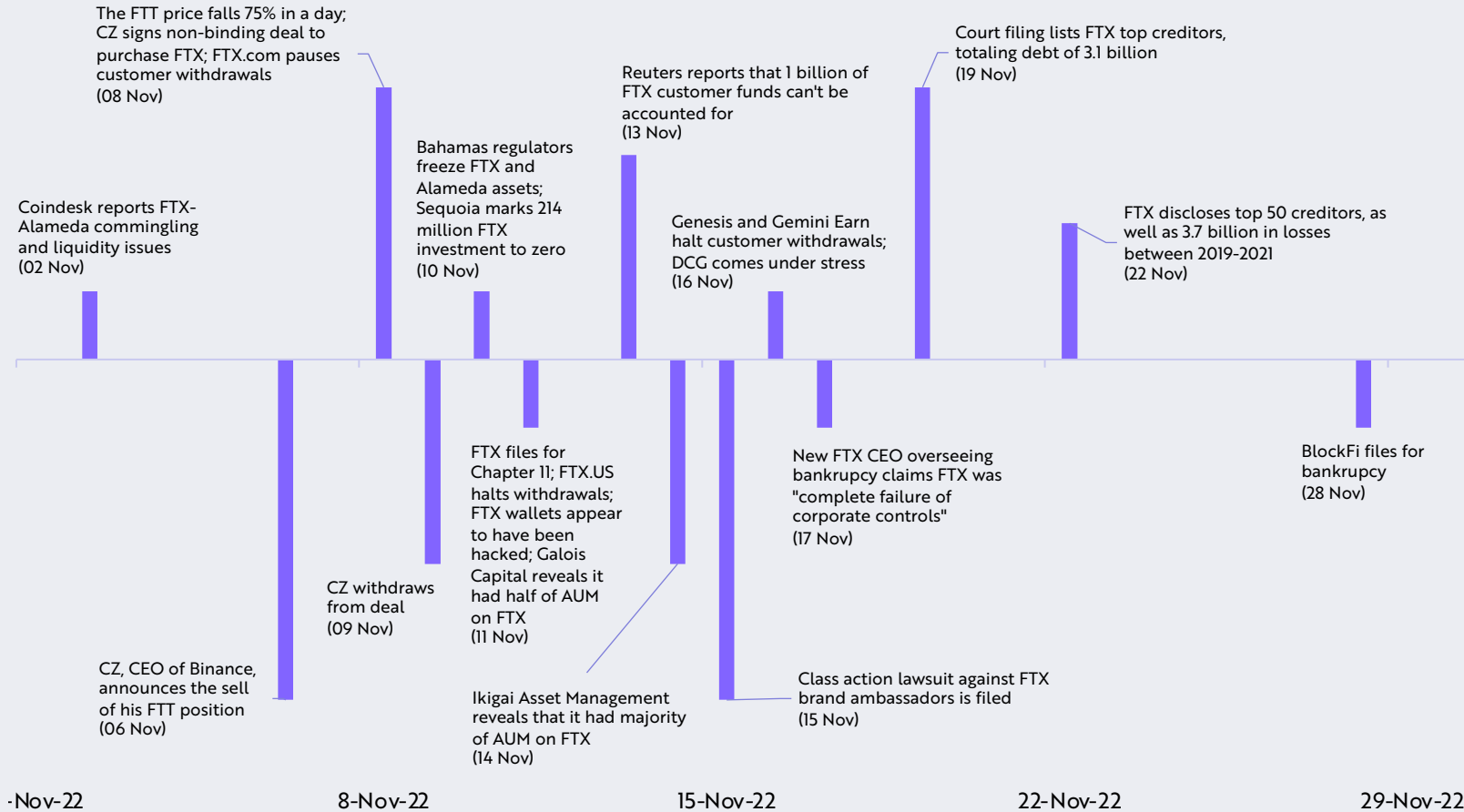
FTX Files For Chapter 11





The Fall Of FTX Could Be The Most Damaging Event In Crypto's History

The Fall of FTX: A Timeline



ARK'S VIEW: NEUTRAL

In our view, FTX's insolvency is one of the most damaging events—worse than the 2014 Mt. Gox hack—in crypto history. Caused by one of the reversed leaders of the industry, this collapse could delay institutional crypto adoption by years and give regulators license to take draconian measures.

Filings suggest that, unethically and likely illegally, Sam Bankman-Fried (SBF) transferred \$4 billion of FTX customer deposits and other assets to sister trading firm Alameda to meet margin calls during the deleveraging around Terra/Luna's collapse in May.

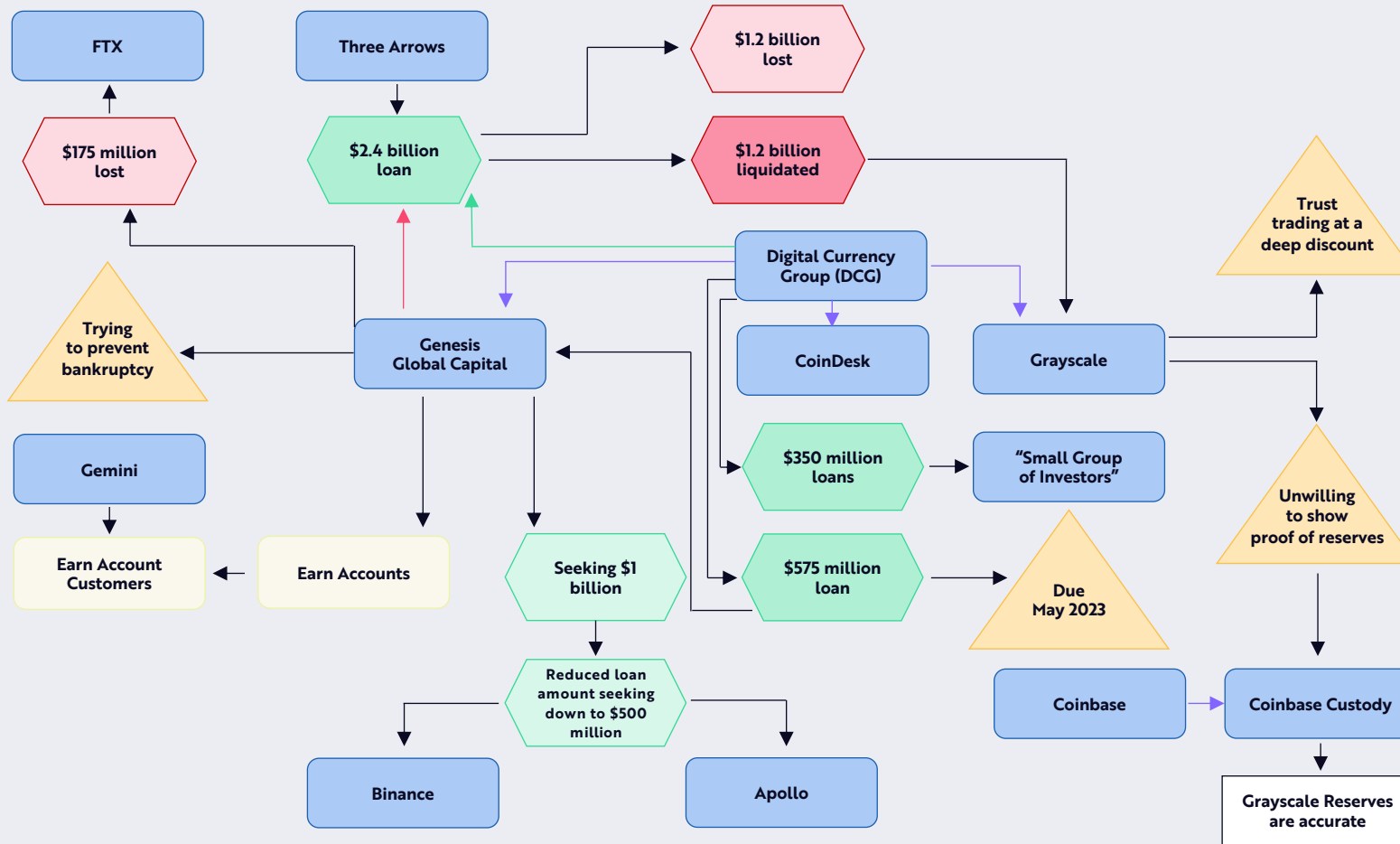
Additionally, the bankruptcy filing disclosed the lack of trustworthy financial information, use of corporate funds to purchase personal property, and large personal loans including \$1 billion to CEO SBF.

Source: ARK Investment Management LLC, 2022. Information as of November 30, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Digital Currency Group Appears Fragile As The FTX Collapse Sparks Contagion

DCG's Relationship With Partners And Subsidiaries (Per Scott Curry)



ARK'S VIEW: NEUTRAL

Contagion has spread in response to the FTX bankruptcy, forcing institutional lender Genesis to [pause customer withdrawals](#) and halt loan origination. Genesis's decision to halt withdrawals indicates the potential fragility of its parent company, Digital Currency Group (DCG).

Grayscale's Bitcoin Trust, a subsidiary of DCG, quickly became the center of attention as the discount reached new highs amid rumors of DCG's insolvency. In our view, Grayscale's continued discount pressure is unwarranted. Coinbase has confirmed that Grayscale's reserves are fully audited and wholly protected under a grantor trust, even in the face of a potential bankruptcy.

In a letter to shareholders responding to FTX's collapse, DCG CEO Barry Silbert disclosed that DCG owes \$575 million to Genesis's crypto lending arm and has an outstanding \$350 million credit facility from a small group of lenders.

Genesis presently seeks to raise as much as \$1 billion and has hired financial and legal advisors.

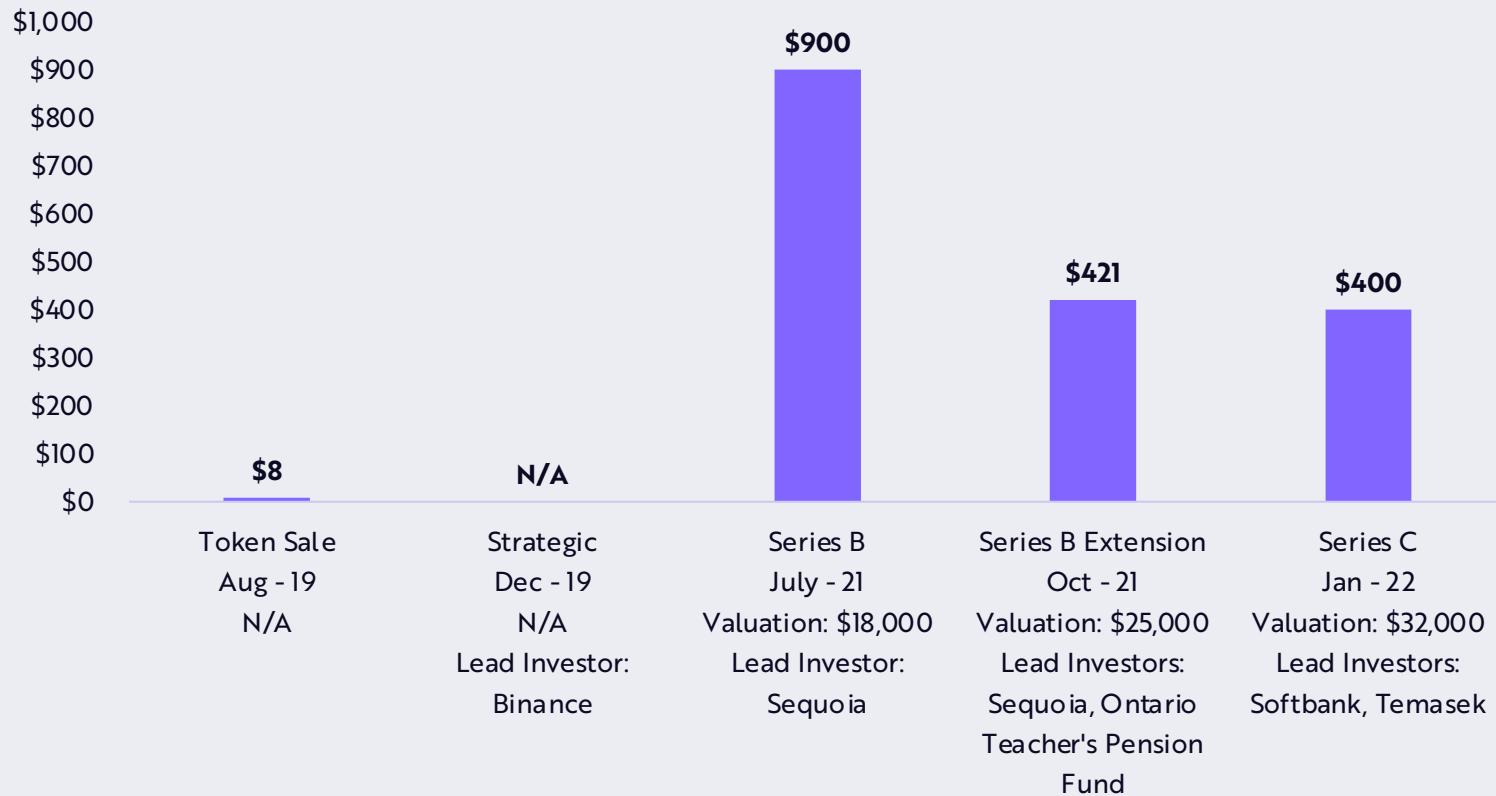
DCG also is the parent company of mining service provider Foundry Digital, news publication Coindesk, the Luno exchange, amongst others.

Source: DCG organization chart sourced directly from www.scottcurry.me. Information as of November 30, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Major Venture Capital And Crypto Industry Leaders Are Exposed To FTX's Bankruptcy

**FTX Funding Overview With Lead Investors
(Per The Block And Crunchbase)**



ARK'S VIEW: BEARISH

While the full financial ramifications remain unclear, FTX owes an overall sum of \$3 billion to its top 50 creditors, including \$220 million to its largest creditor.

FTX and Alameda have exposure to dozens of companies, including BlockFi, which now reports a ~\$1 billion hole in assets and has filed for bankruptcy.

After investing more than \$1.6 billion, equity investors Sequoia Capital, Temasek, Softbank, and Paradigm have marked their FTX down to \$0.

After custodying their assets with FTX, other high-profile hedge funds like Ikigai Asset Management and Galois Capital have disclosed losses of 50% or more of AUM.

Source: ARK Investment Management LLC, 2022, based on data and chart from The Block Research (www.theblockresearch.com/mapping-out-alameda-research-ftx-ventures-portfolio-185597) and Crunchbase (www.crunchbase.com/organization/ftx-exchange/investor_financials). Quantities of raises above may be incomplete since some are undisclosed. Information as of November 11, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Proof-of-Solvency Has Become A Central Topic In The Crypto Industry

Proof-of-Solvency “Wall of Fame” (Per Nic Carter)

Gold Standard

(Includes liabilities, Merkle-tree validation, and/or auditor-assisted)

BitMEX | Coinfloor | Gate.io | Kraken | OKX

Silver Standard

(Incomplete in lacking liabilities and/or auditor-assistance)

Binance (BTC only) | HBTC

Partial Validation

(Not user-validated, auditor- or forensics-assisted)

Bitbuy | Luno | Revix | Shakepay

Informal Attestations

(No cryptographic proof and no liabilities)

Binance (multi-asset) | Bitfinex | Crypto.com | Deribit | Huobi | KuCoin | OKX

Lenders

(Still opaque given the nature of the entity)

CakeDeFi | Nexo | Ledn

Stablecoins/ETP Issuers

TrustToken True Currency stablecoins | Paxos BUSD stablecoin | Circle USDC stablecoin | CoinShares XBT Provider ETP Real-Time Attest

ARK'S VIEW: BULLISH

While the cryptoasset market could find itself under selling pressure in the short term, we believe this crisis is purging bad actors and will enhance the health of the crypto ecosystem with more transparency and decentralization in the longer term.

After FTX's collapse, crypto market participants are pressuring exchanges to be more transparent in proving that their assets match their liabilities.

[Major crypto exchanges, including Binance, have agreed to adopt “proof-of-reserves”](#) cryptographically verified proof that assets match liabilities one-to-one. Many [market participants now understand the value of self-custodying their assets.](#)



DeFi May Be Benefiting From FTX Fallout As DEX Regains Share Of Trading Volume Relative To CEX

DEX-To-CEX Trading Volume Ratio (%)



ARK'S VIEW: BULLISH

In an apparent flight toward safe self-custody and away from centralized intermediaries, share shifts in trading volume suggest that traders favor the transparency of decentralized exchanges.

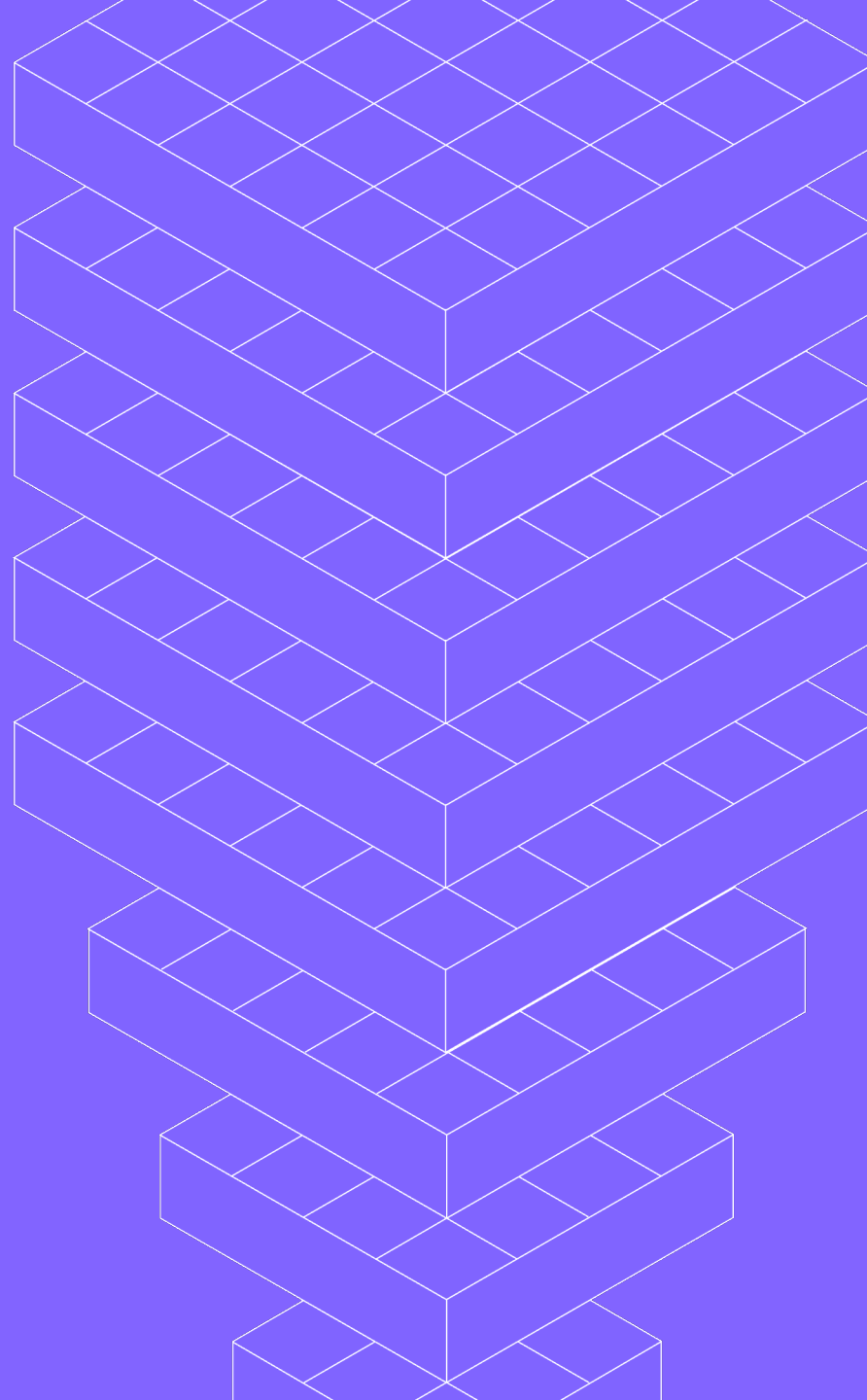
On the rise since 2020, decentralized exchange (DEX) trading volume—as a percentage of centralized exchange (CEX) trading volume—peaked at 25% in February 2022.

After falling since February, the DEX-to-CEX ratio shot up 40% month-on-month in November, from 11.8% to 16.1%. Now, traders increasingly appear to value the transparency of DEXs.



Section 03

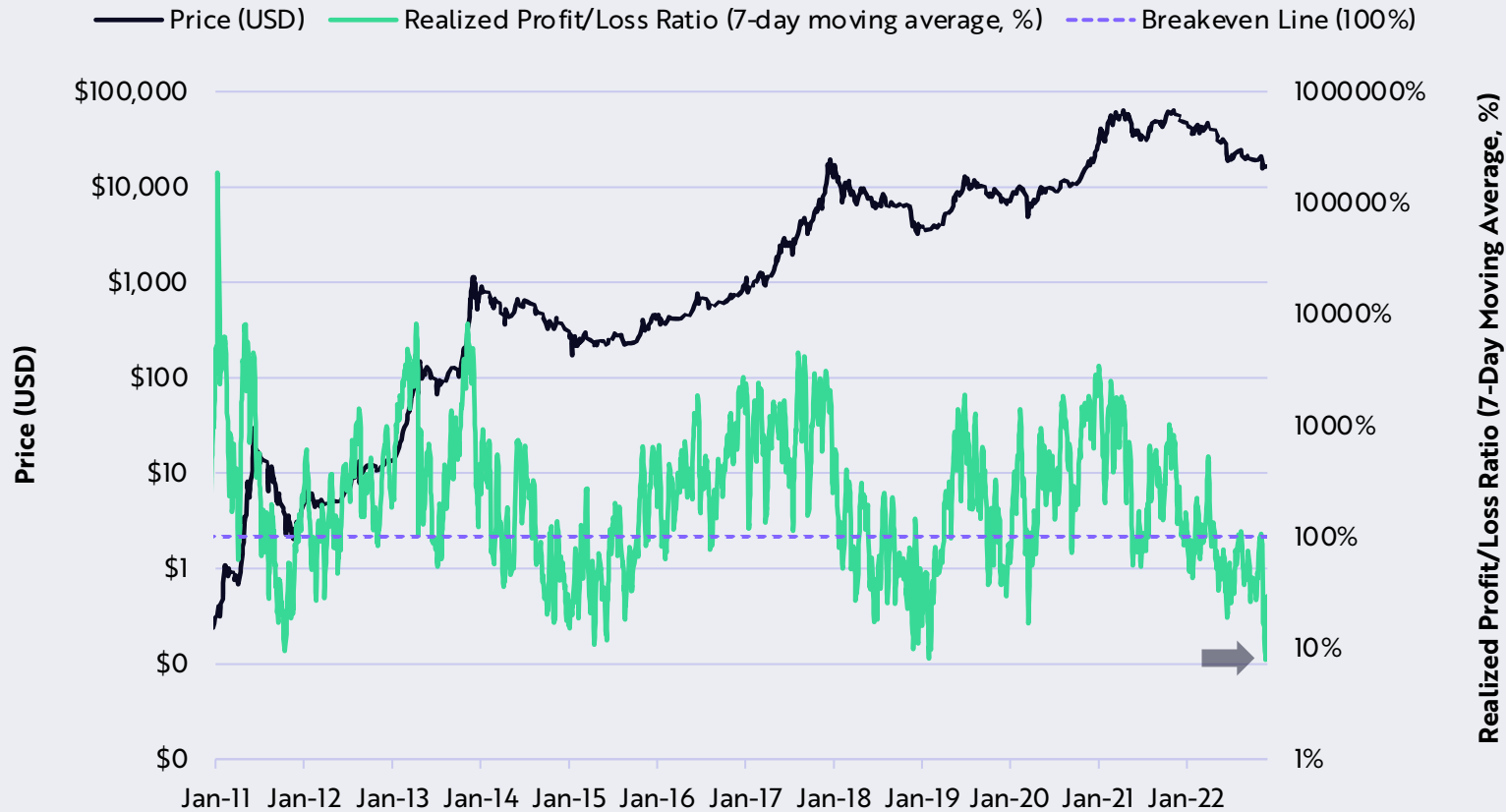
Market Contagion Pushes Bitcoin Into Further Capitulation





Bitcoin's Realized Profit/Loss Ratio Reaches An All-Time Low

Bitcoin Realized Profit/Loss Ratio



ARK'S VIEW: BULLISH

The ratio between bitcoin's realized profits and realized losses on-chain hit an all-time low of 7.2% in November 2022. Bitcoin found meaningful bottoms in every previous instance—2011, 2015, and 2019—in which that metric reached <10%.

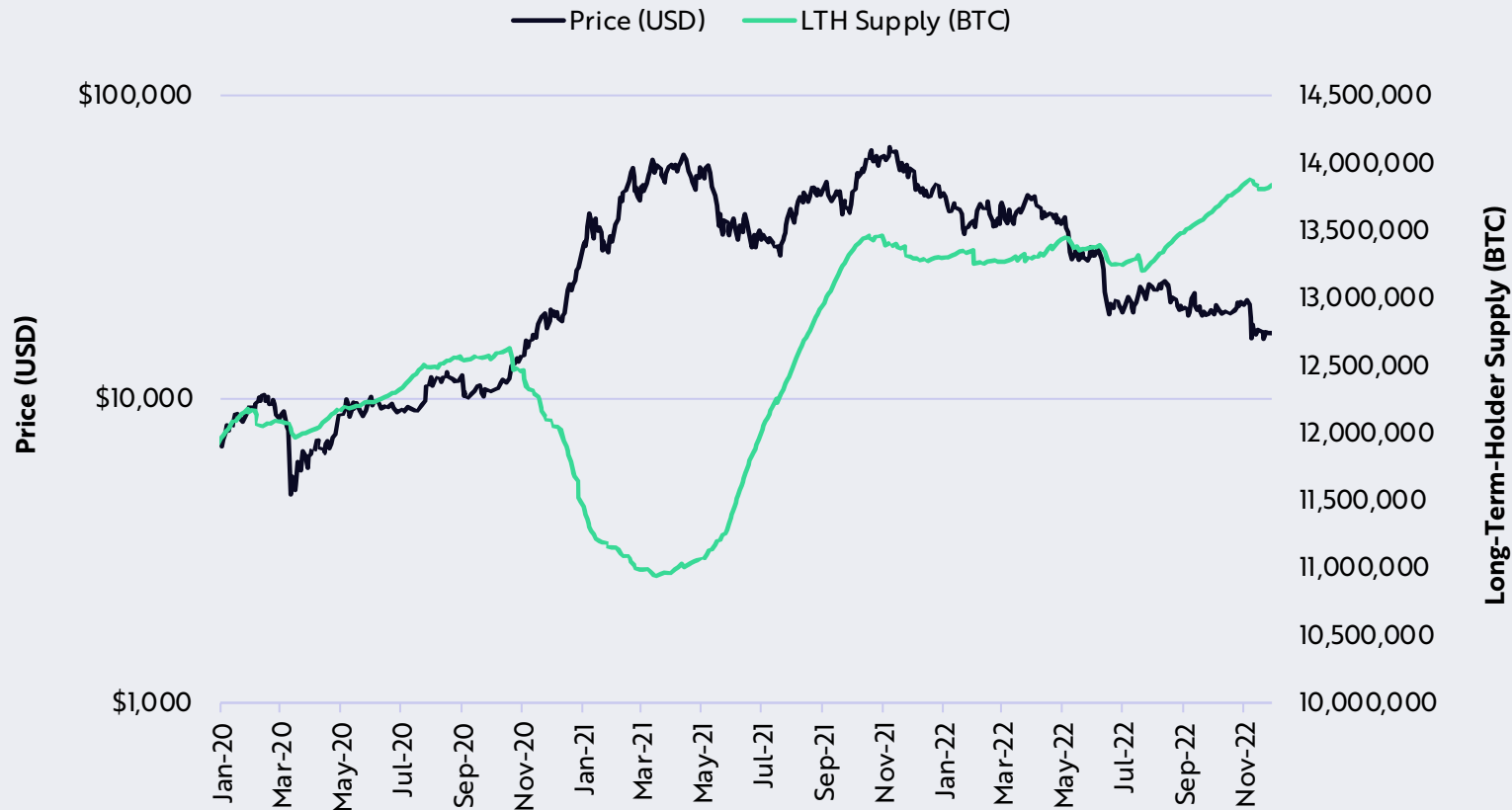
November's realized profit/loss data inform our view that a historically-significant capitulation event is underway. .

Source: ARK Investment Management LLC, 2022. Data from [Glassnode](#). Information as of November 30, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Long-Term-Holders Remain Strong

Bitcoin Long-Term-Holder Supply



ARK'S VIEW: BULLISH

Despite market volatility associated with FTX's demise, the supply held by long-term holders (LTH)—or the supply last moved 155 days ago or more—closed flat for the month.

We believe this datapoint indicates holders' long-term focus and high conviction, despite recent events.

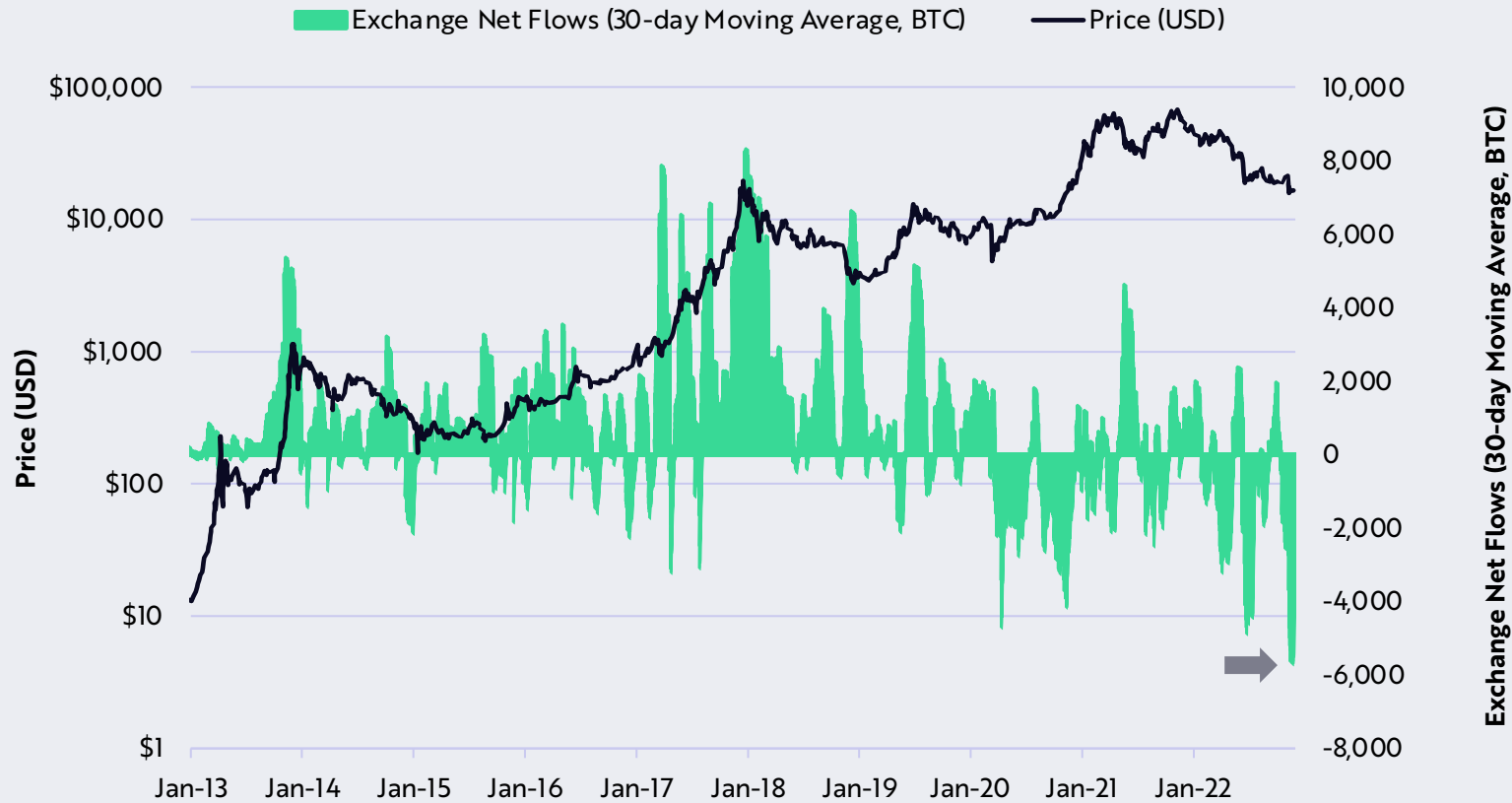
Today, long-term-holder supply is 72% of bitcoin's total circulating supply.

Source: ARK Investment Management LLC, 2022. Data from [Glassnode](#). Information as of November 30, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Net Outflows From Exchanges Reach An All-Time High

Bitcoin Exchange Net Flows



ARK'S VIEW: NEUTRAL

Net outflows from centralized exchanges averaged 5,870 BTC on a 30-day basis, the largest in bitcoin's history.

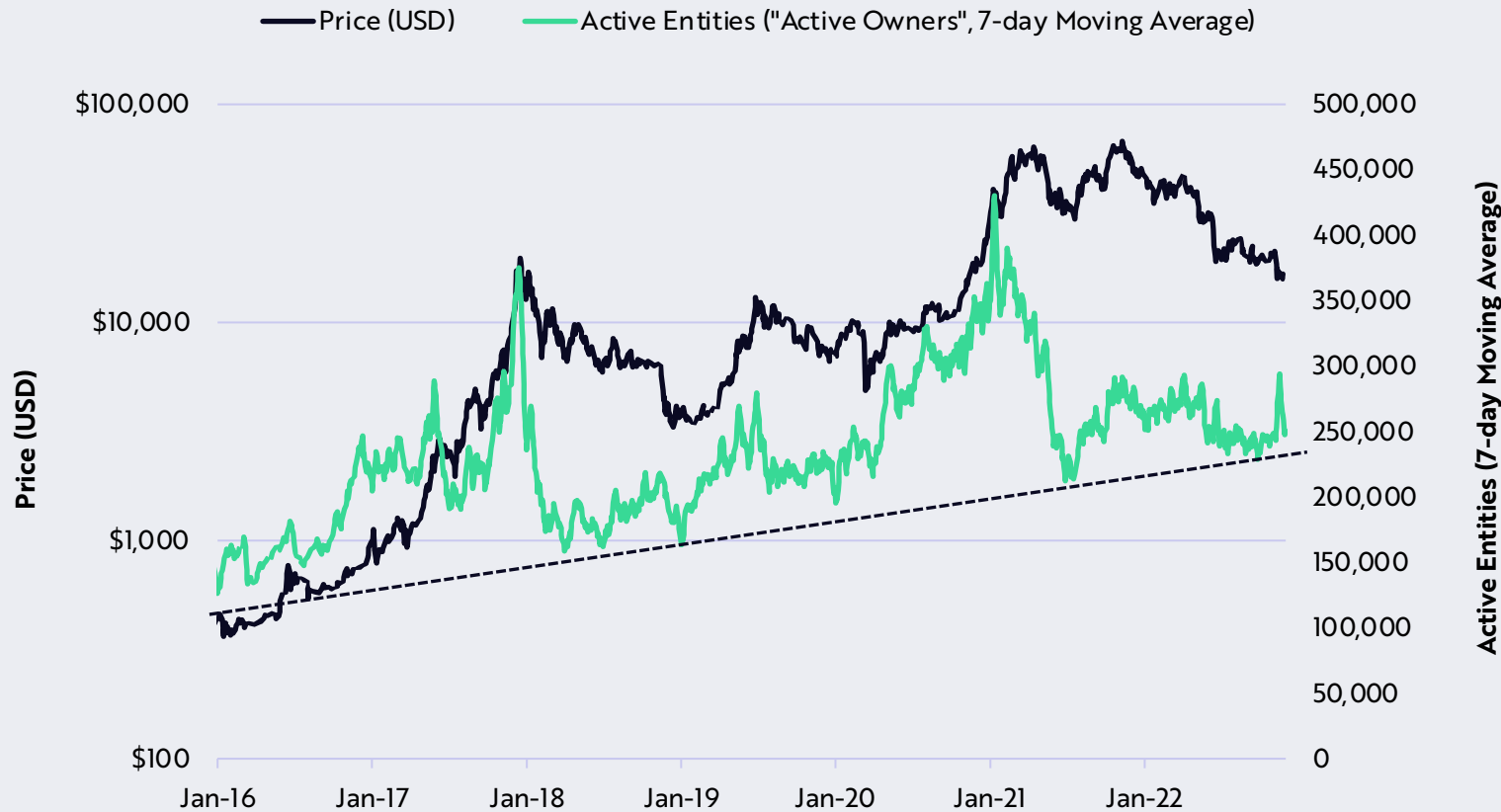
We believe a "flight to self-custody" is driving those outflows as, post-FTX, investors lose trust in centralized crypto entities.

Source: ARK Investment Management LLC, 2022. Data from [Glassnode](#). Information as of November 30, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Active Owners Spike As Retail Investors Shift To Self-Custody

Bitcoin Active Entities (Active Owners)



ARK'S VIEW: NEUTRAL

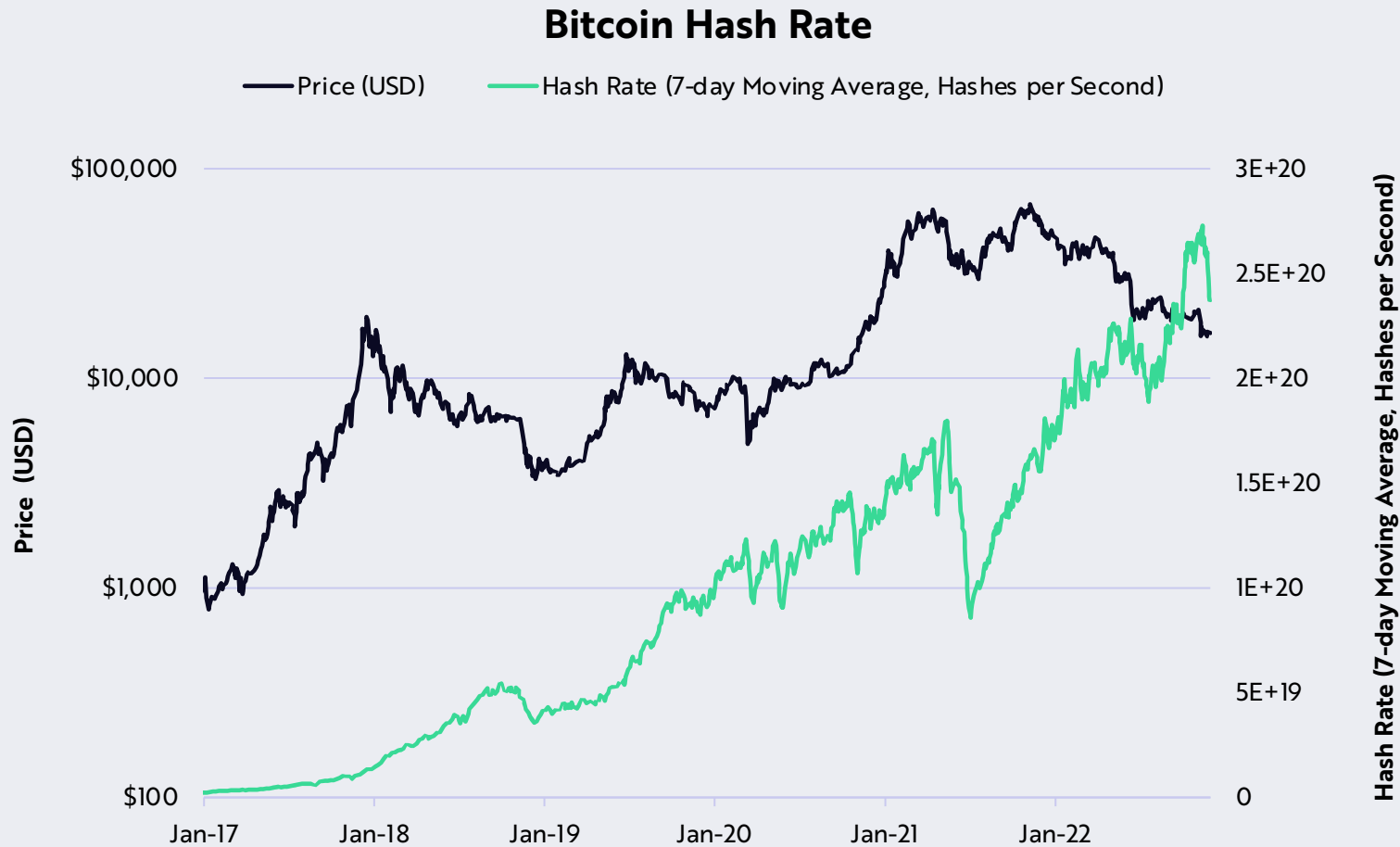
During November, the number of active owners in the Bitcoin network spiked 18.5%, the largest positive percent change since January of 2021. This datapoint suggests that a "flight to self-custody" may be underway as market participants at the margin shift away from centralized exchanges.

Although the number of owners decreased to levels similar to those prior to FTX's demise, we remain focused on this metric to confirm that self-custody and network adoption continue their long-term upward trajectories, as seen in the chart's dotted line.

Source: ARK Investment Management LLC, 2022. Data from [Glassnode](#). Information as of November 30, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Hash Rate Corrects As Miners Face Profit Compression



ARK'S VIEW: BEARISH

Miners seem to be stressed. Miner hash rate—estimated hashes per second produced by miners—on a 7-day basis dropped 12.9% abruptly as bitcoin's price fell in November.

Since hash rate follows price, the recent market environment seems to be forcing miners out of production at an accelerated rate.

Source: ARK Investment Management LLC, 2022. Data from [Glassnode](#). Information as of November 30, 2022. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency. Forecasts are inherently limited and cannot be relied upon.



Section 04

Appendix: Glossary Of Terms





Glossary Of Terms

Active Owners: An individual or organization managing the same set of addresses sending and receiving funds. Also known as active entities.

Backwardation: Describes when futures trade at a price lower than spot, denoting bullish market sentiment.

Contango: Describes when expirational futures contracts are trading at a price higher than spot, suggesting a bearish market environment.

Delta Cost Basis: An adjusted version of the market cost basis. It is calculated by subtracting the life-to-date moving average of bitcoin's price from its realized price. The measure is used to gauge the downside risk of a bear market. Also known as delta price or delta cap.

Difficulty: Computational power required to validate transactions in the network. "Exa-" and "tera-" hashes per second refer to units of account to a factor of 10^{18} and 10^{12} , respectively. Higher difficulty implies higher network security.

Exchange Supply: The number of bitcoins held in addresses controlled by exchanges.

Expirational Futures Basis: The difference between the price of spot and the price of expirational futures contracts.

Futures Basis: The difference between the price of spot and the price of a perpetual or expirational contract.

Investor Cost Basis: An adjusted version of the market cost basis. It is calculated by subtracting the life-to-date cumulative miner revenue in USD (thermo cap) from realized price. Also known as investor price or investor cap.

Locked Supply: The supply held by entities that have <25% probability of spending, as per their historical behavior. Also known as illiquid supply.

Long-term Holding and Holders (LTH): Related to supply last moved 155 days ago or more, the threshold at which the possibility of a bitcoin to remain unmoved increases drastically.

Market Cost Basis: The on-chain volume-weighted average price of the market, calculated by aggregating the value of all bitcoins in circulation at the time when they last moved. Also known as realized price or realized cap.

Miner Revenue: The number of bitcoins (in USD value) block miners obtain for securing the network.

MVRV Ratios: Market cap divided by different on-chain cost bases of the market, such as realized cap or short-term-holder realized cap.

Net Realized Profit/Loss (NRPL): The difference between realized profit and realized loss, normalized by market cap.

Net Unrealized Profit/Loss (NUPL): The difference between unrealized profit and unrealized loss, normalized by market cap. It measures current value relative to the aggregate cost basis (realized cap) of the market to determine how much the network is in profit or loss.

Patoshi: Entity estimated to be Satoshi Nakamoto, the creator and first miner of bitcoin.

Perpetual Futures Basis: The difference between the price of spot and the price of non-expirational futures contracts.

Puell Multiple: Miner revenue (USD) divided by the 365-day moving average of miner revenue (USD). It measures miner earnings relative to their yearly average.

Realized Returns: The ratio reached by dividing the average price of bitcoins spent that day by the average price when they last moved. In essence, it is the ratio of price sold and price bought for the coins that moved that day. Also known as spent output ratio, or SOPR.

Regional Cumulative Price Change: The sum of month-over-month (30-day) price action during the business hours of the major financial hubs worldwide: New York for the US, London for Europe, and Hong Kong for Asia.

Short-term Holding and Holders (STH): Related to supply that moved in the last 155 days, the threshold at which the possibility for a bitcoin to move again increases drastically.

Supply in Profit: The percentage of bitcoins currently at a higher price compared to the price at which they last moved.

Time-weighted Turnover: The number of bitcoins traded that day, multiplied by the amount of time each coin had remained dormant. Also known as coindays destroyed.

Transaction Volume: The number of bitcoins that changed hands on any given day.



For more research on disruptive innovation visit www.ark-invest.com

©2022-2026, ARK Investment Management LLC. No part of this material may be reproduced in any form, or referred to in any other publication, without the express written permission of ARK Investment Management LLC ("ARK").

Please note, companies that ARK believes are capitalizing on disruptive innovation and developing technologies to displace older technologies or create new markets may not in fact do so and/or may face political or legal attacks from competitors, industry groups, or local and national governments.

ARK aims to educate investors and to size the potential opportunity of Disruptive Innovation, noting that risks and uncertainties may impact our projections and research models. Investors should use the content presented for informational purposes only, and be aware of market risk, disruptive innovation risk, regulatory risk, and risks related to Deep Learning, Digital Wallets, Battery Technology, Autonomous Technologies, Drones, DNA Sequencing, CRISPR, Robotics, 3D Printing, Bitcoin, Blockchain Technology, etc. **Cryptocurrency Risk.** Cryptocurrencies (also referred to as "virtual currencies" and "digital currencies") are digital assets designed to act as a medium of exchange. Cryptocurrency is an emerging asset class. There are thousands of cryptocurrencies, the most well-known of which is bitcoin. Cryptocurrency generally operates without central authority (such as a bank) and is not backed by any government. Cryptocurrency is not legal tender. Federal, state and/or foreign governments may restrict the use and exchange of cryptocurrency, and regulation in the U.S. is still developing. The market price of bitcoin and other cryptocurrencies have been subject to extreme fluctuations. Similar to fiat currencies (i.e., a currency that is backed by a central bank or a national, supra-national or quasi-national organization), cryptocurrencies are susceptible to theft, loss and destruction. Cryptocurrency exchanges and other trading venues on which cryptocurrencies trade are relatively new and, in most cases, largely unregulated and may therefore be more exposed to fraud and failure than established, regulated exchanges for securities, derivatives and other currencies. Cryptocurrency exchanges may stop operating or permanently shut down due to fraud, technical glitches, hackers or malware, which may also affect the price of cryptocurrencies. **Cryptocurrency Tax Risk.** Many significant aspects of the U.S. federal income tax treatment of investments in bitcoin and other cryptocurrencies are uncertain and still evolving.

The content of this presentation is for informational purposes only and is subject to change without notice. This presentation does not constitute, either explicitly or implicitly, any provision of services or products by ARK and investors are encouraged to consult counsel and/or other investment professionals as to whether a particular investment management service is suitable for their investment needs. All statements made regarding companies or securities are strictly beliefs and points of view held by ARK and are not endorsements by ARK of any company or security or recommendations by ARK to buy, sell or hold any security. Historical results are not indications of future results. Certain of the statements contained in this presentation may be statements of future expectations and other forward-looking statements that are based on ARK's current views and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in such statements. The matters discussed in this presentation may also involve risks and uncertainties described from time to time in ARK's filings with the U.S. Securities and Exchange Commission. ARK assumes no obligation to update any forward-looking information contained in this presentation. Certain information was obtained from sources that ARK believes to be reliable; however, ARK does not guarantee the accuracy or completeness of any information obtained from any third party. ARK and its clients as well as its related persons may (but do not necessarily) have financial interests in securities or issuers that are discussed.

ARK Investment Management LLC