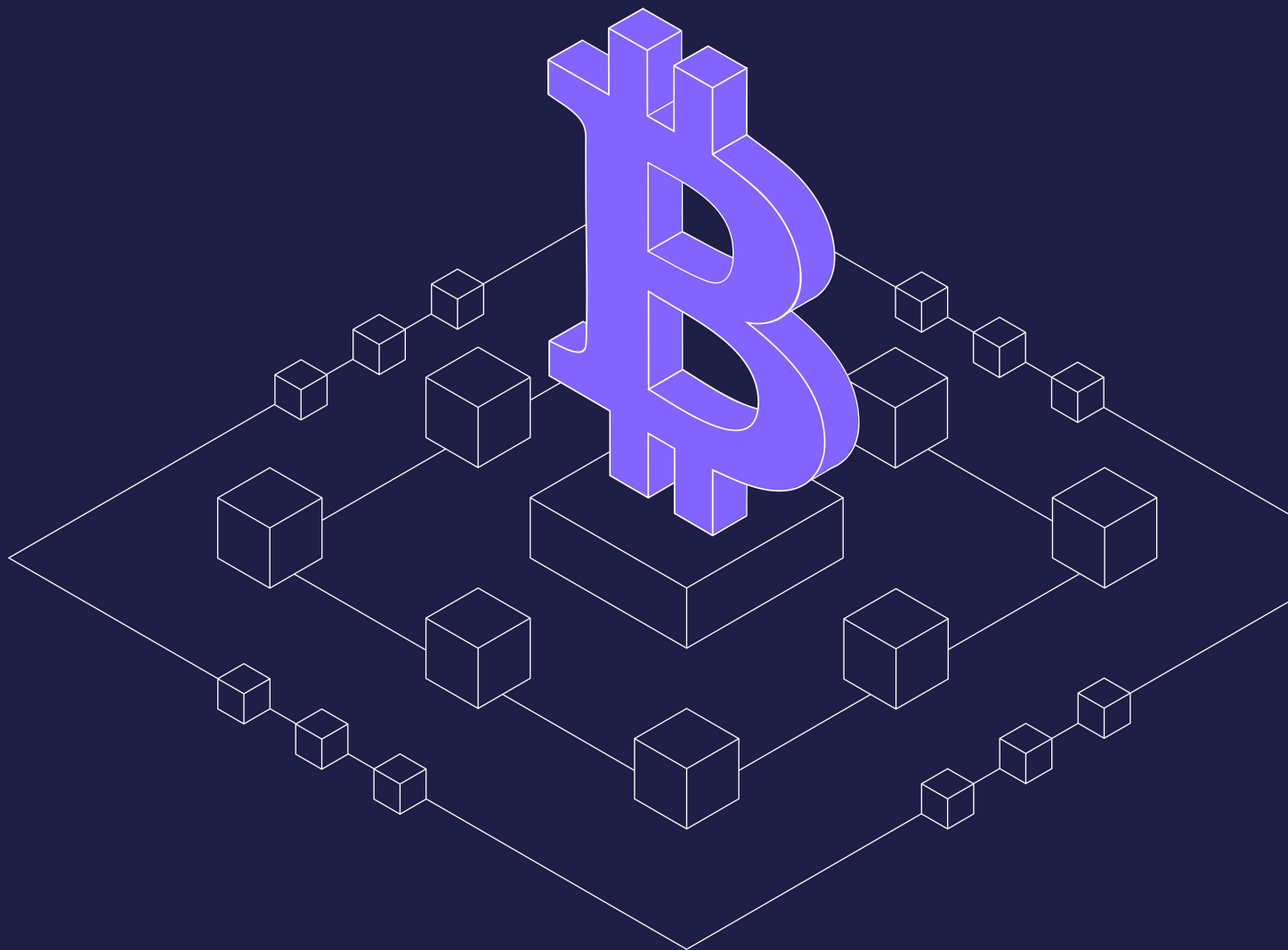




As of April 30, 2023

THE BITCOIN MONTHLY

**BITCOIN CONSOLIDATES AS
FUNDAMENTALS STRENGTHEN**



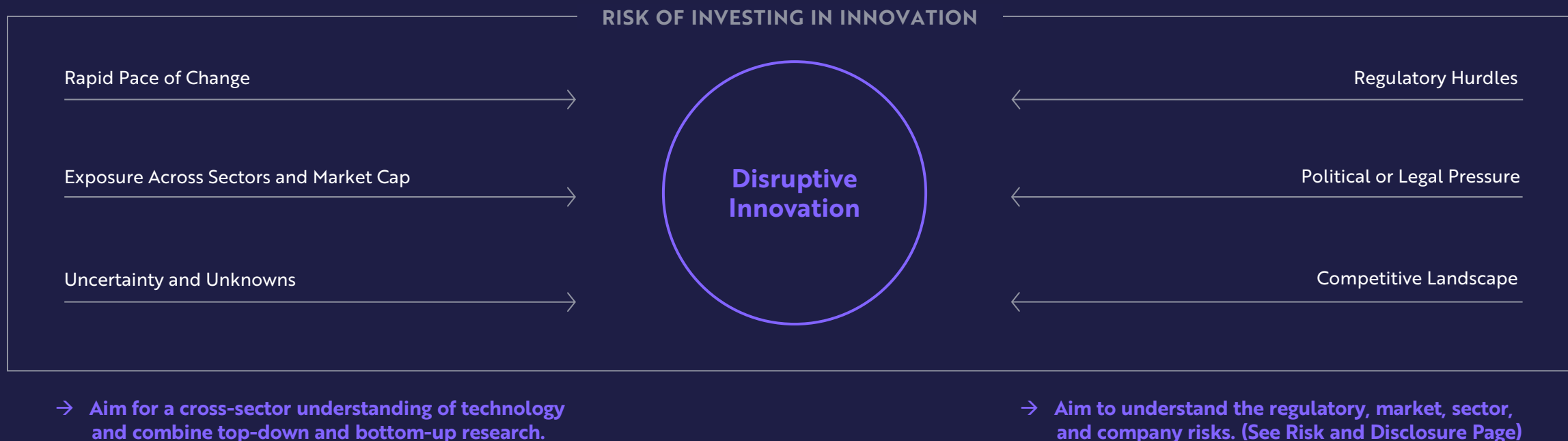
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RISKS OF INVESTING IN INNOVATION

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Please read risk disclosure carefully.





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Section 01

Market Summary





Bitcoin Consolidates As Fundamentals Strengthen

Bitcoin Resilience

- A boost in transaction count and active owners signaled strong network activity and a bullish market.
- Long-term-holder spent output price ratio (SOPR) surpassed 1, suggesting the market is trading at a profit.
- Bitcoin's 200-week moving average (\$25,900) and realized price (\$19,950) remain strong support levels for bitcoin.

Recession Watch

- The US Leading Economic Index (LEI) fell for the twelfth straight month, signaling the high probability of a recession.
- 1-month T-bill inversion with the Federal Funds Rate (FFR) may indicate impending rate cuts or investor concerns over the debt ceiling.
- Continuing jobless claims continued to increase, a trend historically associated with recessions.

ARK'S KEY TAKEAWAY

- Bitcoin closed the month of April at \$29,250, up 2.71%.
- Long-term-holder activity and strong network usage indicate a bullish trend for bitcoin.
- US economic indicators—including the Conference Board Leading Economic Index, T-bill inversions, and unemployment insurance claims—suggest that a recession is looming.

Source: ARK Investment Management LLC, 2023. Data from [Classnode](#) unless otherwise specified. Data valid as April 30, 2023, and subject to change. For more information on certain terms, please read our Appendix: Glossary Of Terms on page 20 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

[First Republic Bank Is Seized By Regulators And Sold To JPMorgan Chase](#)

[Ethereum's Shapella Upgrade Is Complete, Starting New Era Of Staking Withdrawals](#)

[EU Lawmakers Approve World's First Comprehensive Framework For Crypto Regulation](#)

[US SEC Charges Bittrex With Operating Unregistered Securities Exchange, Broker, And Clearing Agency](#)

[SEC Charges Crypto Trading Platform Beaxy And Its Executives For Operating an Unregistered Exchange, Broker, And Clearing Agency](#)

[Coinbase Responds To The SEC's Wells Notice](#)

[Coinbase Sues SEC Over Silence On Petition For Rule-Making](#)

[UK Treasury Opens Tax Policy Consultation On DeFi Staking And Lending](#)

[Circle Releases Cross-Chain Transfer Protocol \(CCTP\) To Facilitate Transfers Of USDC Across Blockchains](#)

[Google Cloud Platform To Support Polygon Nodes On Blockchain Node Engine](#)

[Franklin Templeton Expands Its OnChain US Government Money Fund To Polygon](#)

[Binance.US Terminates Deal To Purchase Voyager Digital](#)



Price And On-Chain Activity Are Consolidating

	Bitcoin Metrics ¹	Unit	April 2023	1M Change	1Y Change	ARK's View	Upgrade/ Downgrade ³
Network Security	<u>Mining Difficulty</u>	Exahash/sec ¹ (Thousands)	209.2	+3.9%	+63.4%	Bullish	No Change
	<u>Miner Revenue</u> (7-Day Moving Average)	USD (Millions)	\$25.6	-1.08%	-32.6%	Neutral	↓
Network Usage	<u>Active Owners²</u> (Active Entities, 7-Day Moving Average)	Thousands	299.5	+3.06%	+8.8%	Bullish	No Change
	<u>Transaction Volume²</u> (7-Day Moving Average)	BTC (Thousands)	97.9	-25.14%	-23.4%	Neutral	No Change
Holder Behavior	<u>Long-Term-Holder Supply²</u> (Coins Held for 155 Days+)	BTC (Millions)	14.31	+1.2%	+4.6%	Bullish	No Change
	<u>Locked Supply²</u> (Illiquid Supply)	BTC (Millions)	15.07	+0.45%	+5.4%	Bullish	No Change
	<u>Time-Weighted Turnover²</u> (Coindays Destroyed, 7-Day Median)	Coindays (Millions)	6.97	+8.01%	+1.1%	Neutral	↓

[1] For more information on these metrics and their units of account, please read the Appendix: Glossary of Terms on page 20 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. One arrow denotes a 1-tier change, and two arrows denote a 2-tier change. Source: ARK Investment Management LLC, 2023. Data sourced from [Classnode](#). Some data may be subject to change over time since they are entity-adjusted in real time. Information as of April 30, 2023. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency.

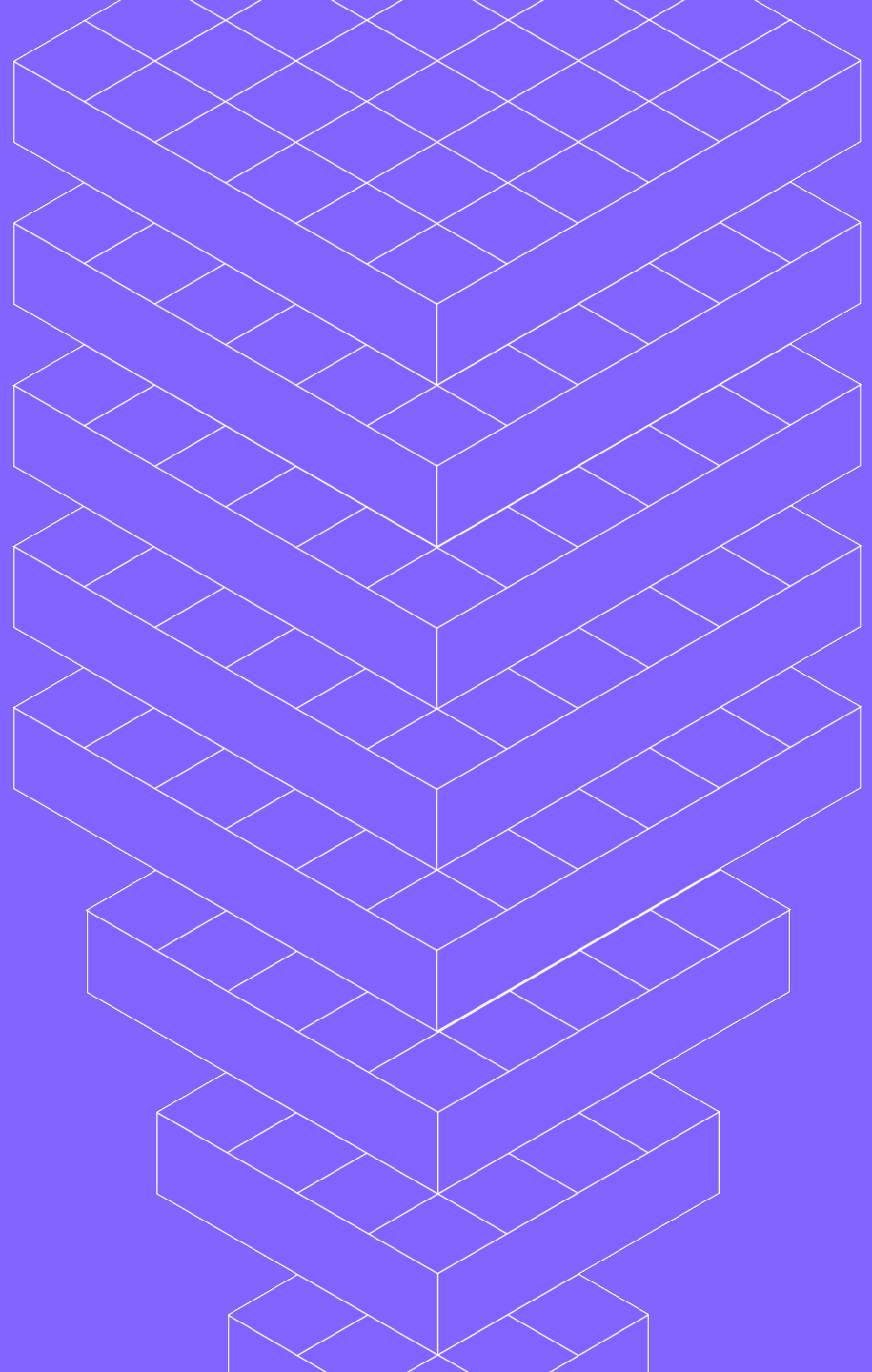


Bitcoin's Cost Base Is Providing Important Support

	Bitcoin Metrics ¹	Unit	April 2023	1M Change	1Y Change	ARK's View	Upgrade/ Downgrade ³
Long-Term Valuation	<u>Market Cost Basis</u> (Realized Price)	USD	\$19,959	+1.12%	-18.6%	Bullish	No Change
	<u>Percent Supply In Profit</u>	pp	75.1%	-0.1 pp	+15.1 pp	Bullish	No Change
Short-Term Valuation	<u>Short-Term-Holder Cost Basis²</u> (STH Realized Price)	USD	\$24,317	+11.3%	-42.6%	Bullish	No Change
	<u>Realized Market Returns²</u> (SOPR-1, 7-day moving average)	pp	4.6%	-0.2 pp	+1.5 pp	Bullish	No Change
Market Sentiment	<u>Perpetual Futures Basis</u> (Binance, Estimated, 7-Day Exponential Moving Average)	pp	-0.04%	-0.01 pp	0 pp	Bullish	No Change
	<u>Expirational Futures Basis</u> (Quarterly, All Exchanges, Annualized)	pp	2.4%	-1 pp	-0.11 pp	Bullish	No Change

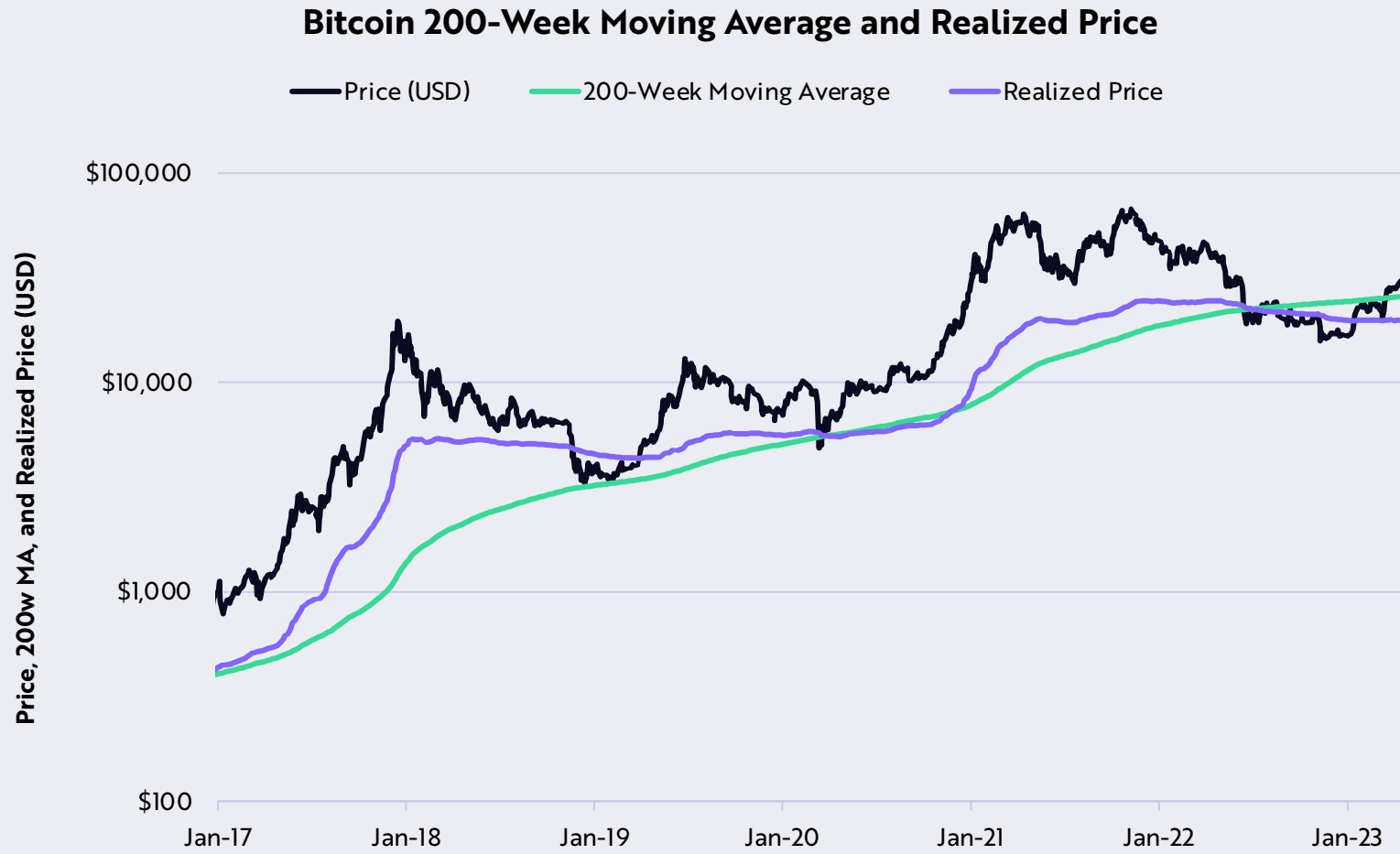
[1] For more information on these metrics and their units of account, please read the Appendix: Glossary of Terms on page 20 of this report. [2] Data may be subject to change over time since they are entity-adjusted in real time via a machine-learning algorithm. [3] Arrows displayed in the "Upgrade/Downgrade" 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. One arrow denotes a 1-tier change, and two arrows denote a 2-tier change. Source: ARK Investment Management LLC, 2023. Data sourced from [Classnode](#). 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 April 30, 2023. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency.

Bitcoin's On-Chain Activity Is Consolidating In A Healthy Way After The Banking Crisis In March





The 200-Week Moving Average And Realized Price Are Now Bitcoin's Crucial Supports



ARK'S VIEW: BULLISH

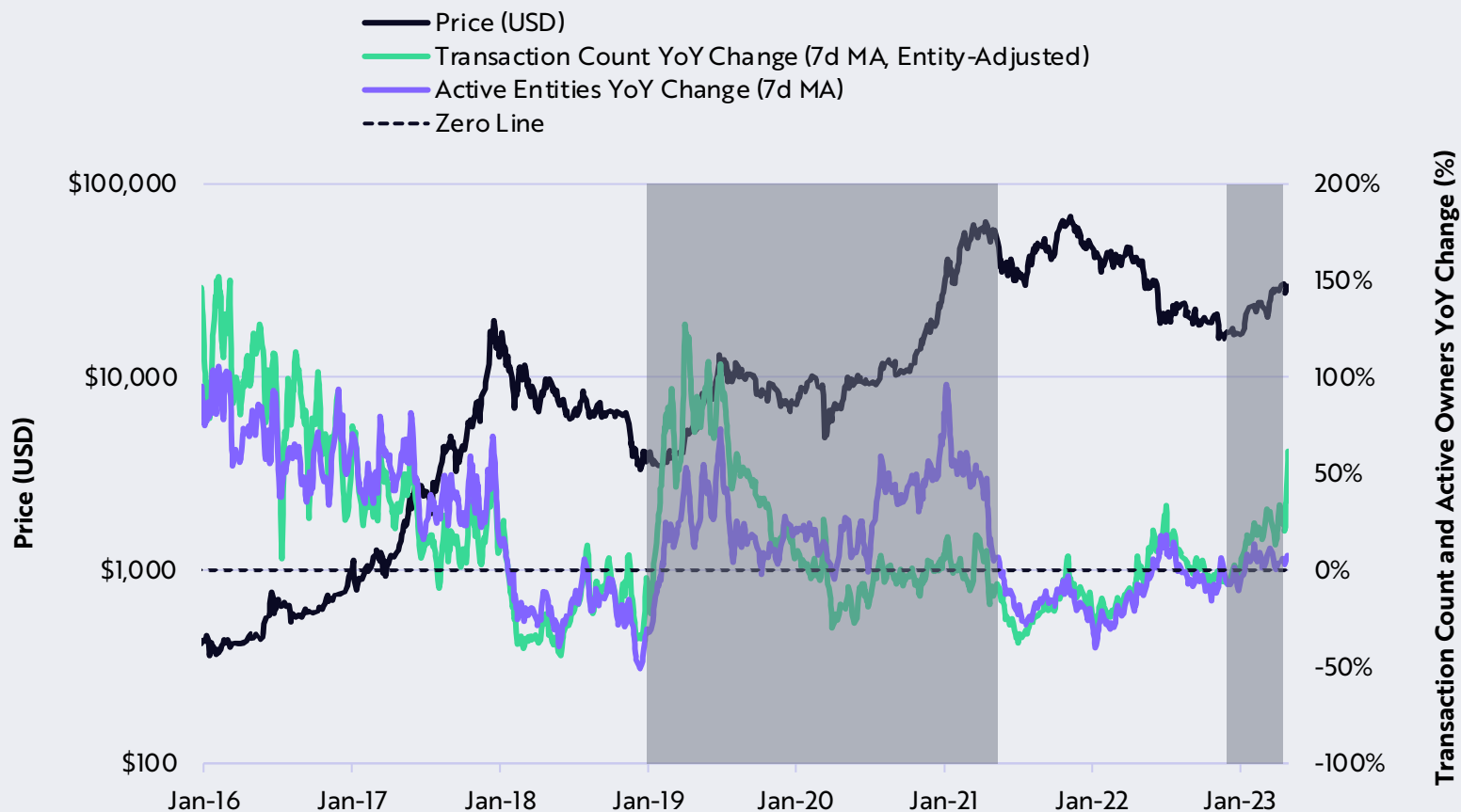
- Both the 200-week moving average (\$25,900) and bitcoin's realized price (\$19,950) are below market price (\$29,230), establishing important support levels.

Source: ARK Investment Management LLC, 2023. Chart data from [Glassnode](#). Information as of April 29, 2023. 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. Past performance is not indicative of future results.



Transaction Count And Active Owners Signal Strong Network Activity

Bitcoin Transaction Count and Active Entities



ARK'S VIEW: BULLISH

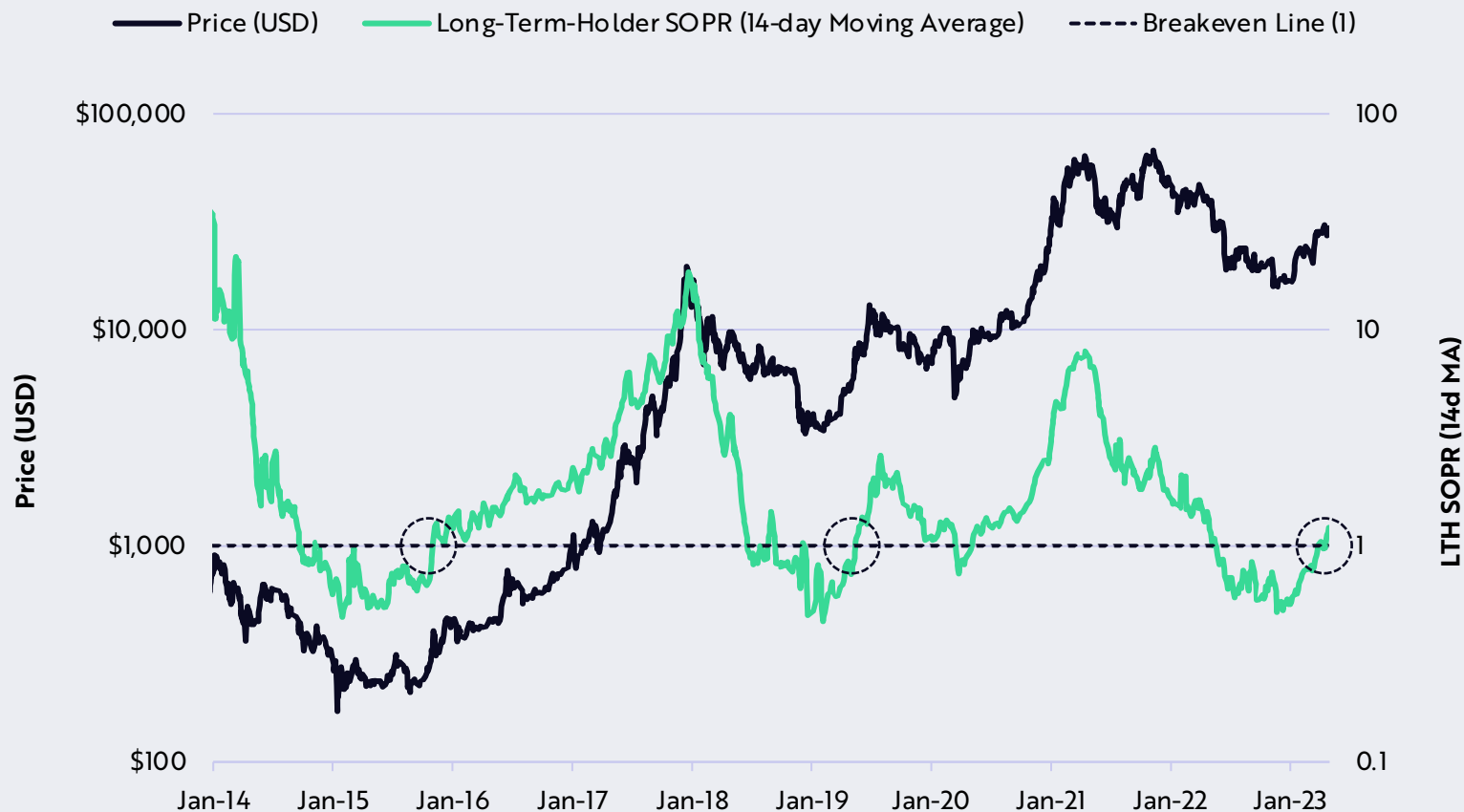
- Typical proxies for network usage and activity, bitcoin transaction count and active owners (active entities) have been increasing year-over-year, signaling bullish market conditions.
- Growth in transaction count has been especially strong, closing up 66% in April.
- Most of the increase in the number of transactions on the Bitcoin network seems to have been caused by a [rise in Ordinals and Inscriptions](#).^{1, 2}

[1] "Ordinals" refer to the creation of non-fungible tokens (NFTs) in the Bitcoin network by making Inscriptions, where metadata such as images or videos are attached to individual satoshis (the smallest unit of account). [2] <https://www.theblock.co/post/228882/bitcoin-transactions-inscriptions-record>. Source: ARK Investment Management LLC, 2023. Chart data from [Glassnode](#). Data may be subject to change over time since they are entity-adjusted in real time via a machine-learning algorithm. Information as of April 29, 2023. 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. Past performance is not indicative of future results.



The Long-Term-Holder Spent Output Price Ratio Seems To Have Entered A Primary Bullish Trend

Bitcoin Long-Term-Holder SOPR



ARK'S VIEW: BULLISH

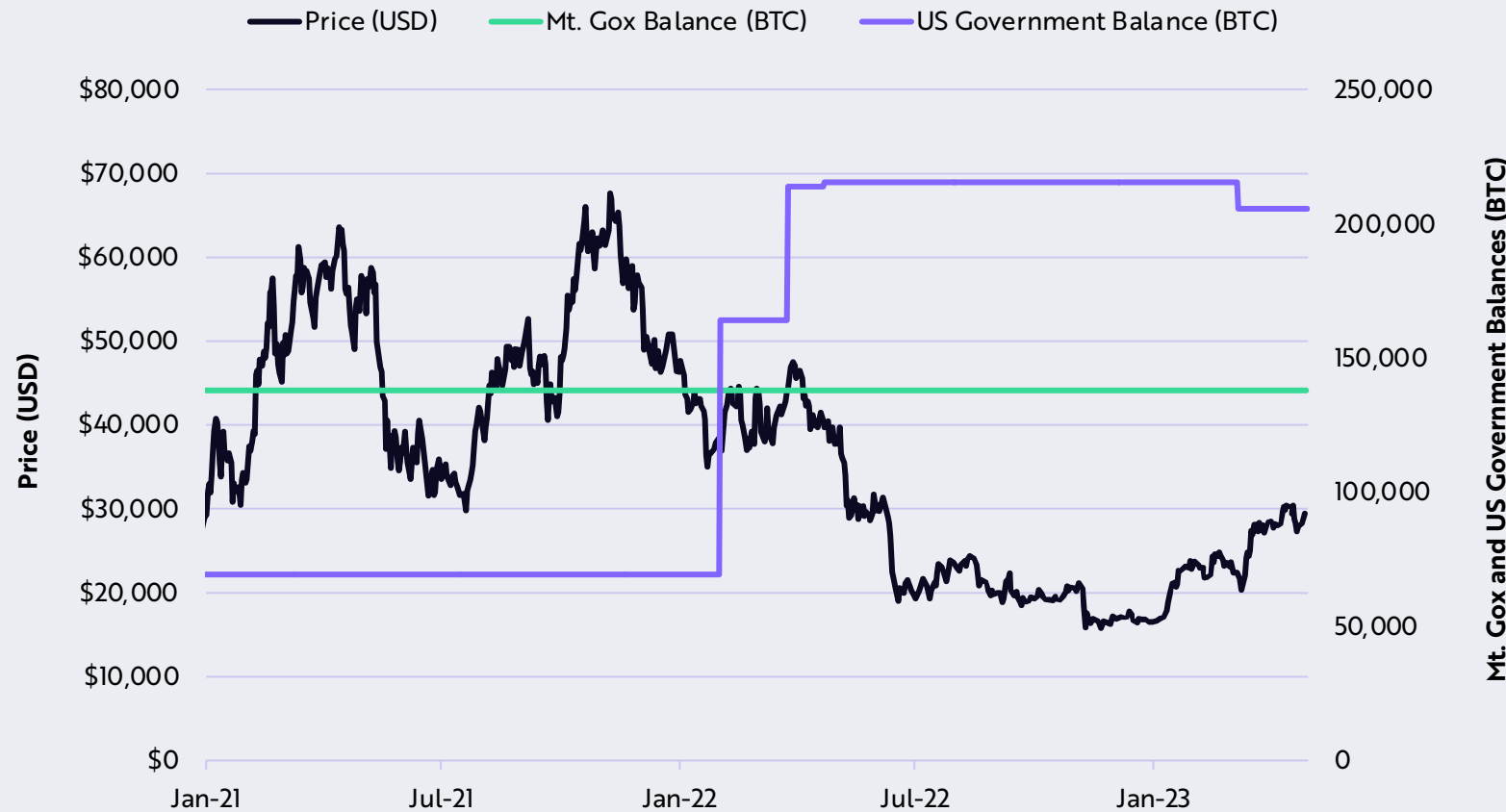
- For the first time in nearly a year, the Spent Output Price Ratio (SOPR) of long-term holders (LTH) in the Bitcoin network has crossed 1, a major turning point and the breakeven line for this market cohort.
- According to our research, an SOPR above 1 suggests that the market is trading at a profit.
- Long-term-holders, or participants holding coins for 155+ days, are pointing to higher conviction in this turning point.

Source: ARK Investment Management LLC, 2023. Chart data from [Glassnode](#). Data may be subject to change over time since they are entity-adjusted in real time via a machine-learning algorithm. Information as of April 29, 2023. 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. Past performance is not indicative of future results.



Despite Speculation To The Contrary, The Mt. Gox And DoJ Bitcoin Balances Have Been Stable

Mt. Gox Case and US Government Bitcoin Balances



ARK'S VIEW: NEUTRAL

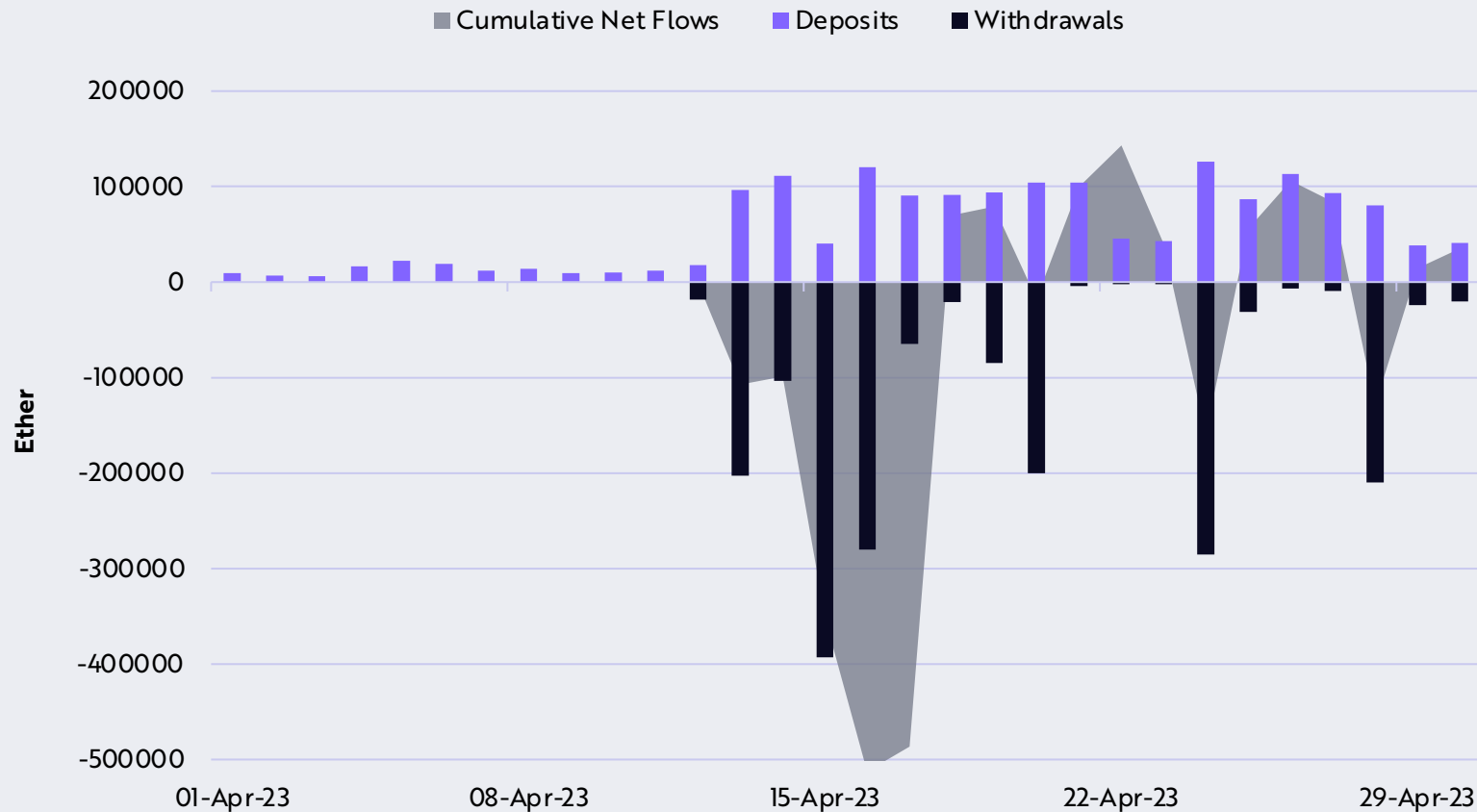
- In 2023, bitcoin could see selling pressure, based on the [release of coins to Mt. Gox trustees](#),¹ as well as the [unloading of funds seized by the US Government related to the Silk Road case](#).²
- Recent announcements have increased online speculation about the balances associated with these cases: 137k bitcoin from Mt. Gox and 205k from the Silk Road and Bitfinex hack seizures.
- Our research suggests that the balance related to the Mt. Gox case has not moved.
- The US Government did sell approximately 10k coins during April as part of a [plan to sell 41k bitcoin during 2023](#).²

[1] <https://www.theblock.co/post/216083/mt-gox-creditors-may-finally-start-seeing-their-bitcoins-this-month>, [2] <https://cointelegraph.com/news/us-government-plans-to-sell-41k-bitcoin-connected-to-silk-road>. Source: ARK Investment Management LLC, 2023. Chart data from Glassnode. Information as of April 29, 2023. 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. Past performance is not indicative of future results.



Deposits Begin To Outpace Withdrawals On Ethereum After The Shapella Upgrade

Ethereum Proof-of-Stake Deposits and Withdrawals



ARK'S VIEW: BULLISH

- Following a successful upgrade on April 12th, Ethereum's Proof-of-Stake network enabled withdrawals for the first time since deposits began in December 2020.
- After an initial burst of withdrawals, flows have turned positive on a net basis. We expect this trend to continue, as withdrawals provide would-be stakers with liquidity for the first time, de-risking the activity.
- Currently, the percent of ether staked is [~14.7%](#),¹ a low percentage compared to other Proof-of-Stake blockchains like Cardano, Polygon, and Solana with [staking ratios of 65%, 39%, and 72%](#),² respectively.

[1] <https://query.nansen.ai/public/dashboards/Hk93n66vsO0uvycfui8ypF2xcpNhpraxfwX5AWZJ>.

[2] https://www.stakingrewards.com/?sort=marketcapUsd_DESC. Source: ARK Investment Management LLC, 2023. Chart data from [Dune Analytics](#). Information as of April 30, 2023. 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. Past performance is not indicative of future results.



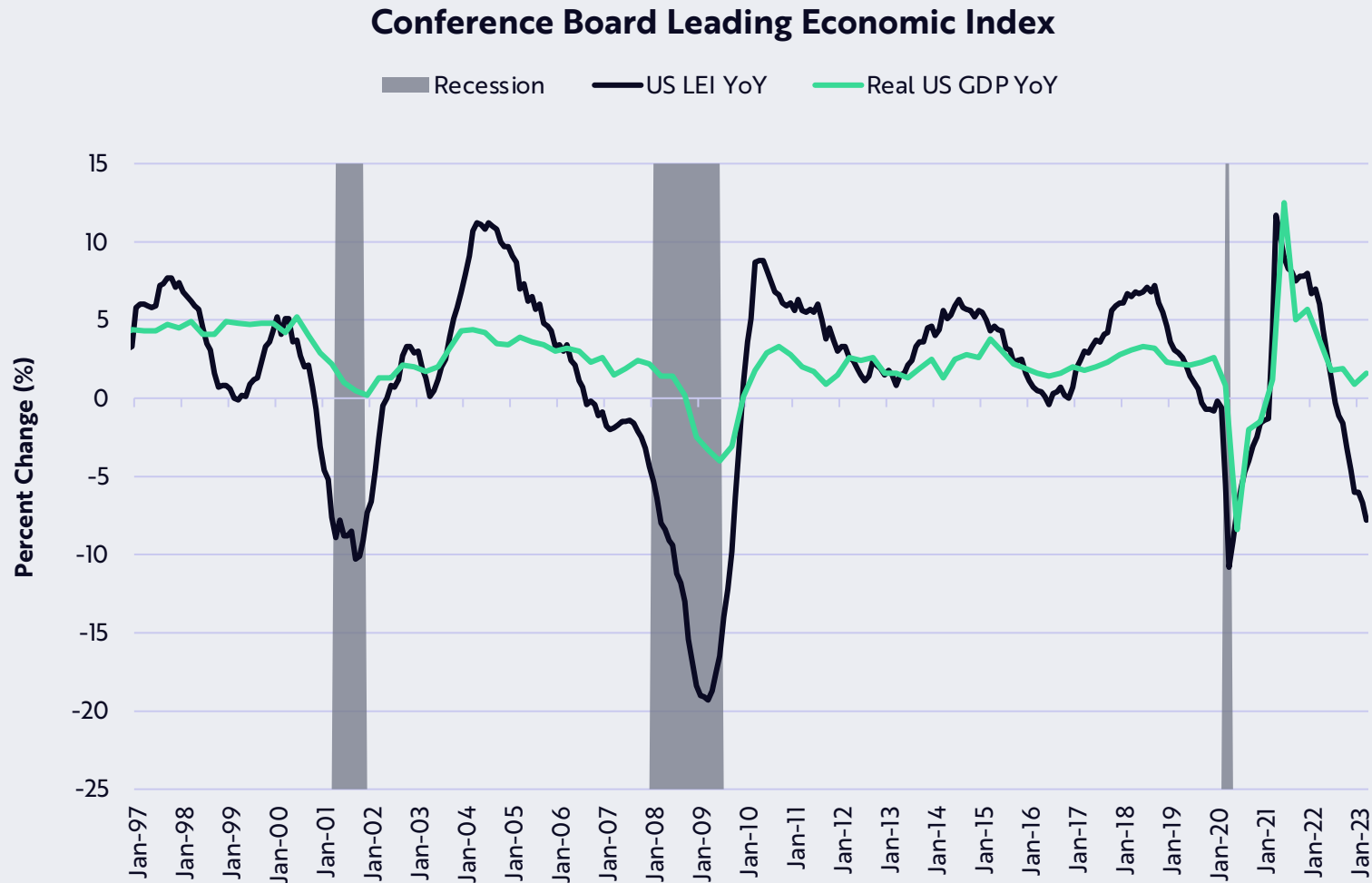
Section 03

Recession Watch





The US Leading Economic Index (LEI) Is Still Signaling A Recession



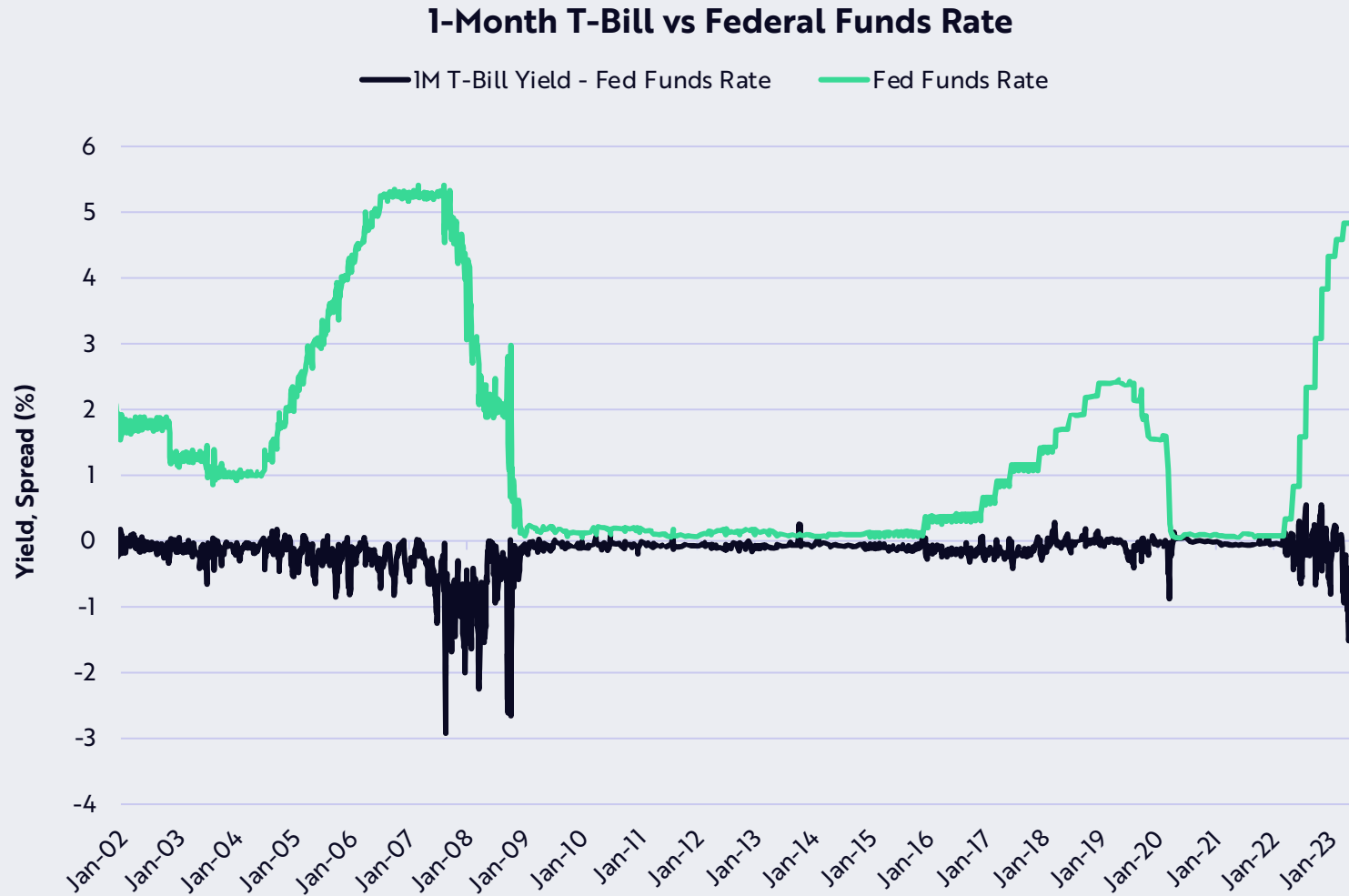
ARK'S VIEW: BEARISH

- The LEI fell for the twelfth straight month and is down 7.8% year-over-year.
- The index comprises economic variables that tend to move before changes in the overall economy, among them average workweek, jobless claims, Institute of Supply Management (ISM) new orders, and interest rate spreads.
- All components were flat to down month-over-month.
- The index has a strong correlation with Gross Domestic Product (GDP) growth. The consensus forecast for real GDP growth in 2023 is 1.2% year-over-year.

Source: ARK Investment Management LLC, 2023. Chart data from The Conference Board. Information as of April 30, 2023. 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. Past performance is not indicative of future results.



Typically, The 1-Month Treasury-Bill Yield Leads The Federal Funds Rate (FFR)



ARK'S VIEW: BEARISH

- The 1-month T-bill is 65 bps (0.65%) lower than the FFR.
- Historically, when significant and sudden inversions have happened, the U.S. Federal Reserve (Fed) has followed the market and cut rates.
- This time, the market could be signaling that:
 - history is repeating itself and the Fed will cut rates; or
 - the looming debt ceiling debate has investors on edge, pushing 1-month yields down relative to 3-month yields.

Source: ARK Investment Management LLC, 2023. Chart data from Bloomberg. Information as of April 30, 2023. 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. Past performance is not indicative of future results.



Continuing Unemployment Insurance Claims Trend Upward

Continuing Jobless Claims



ARK'S VIEW: BEARISH

- From their September low, continuing claims have increased 44%.
- Historically, up-trends of this magnitude have been associated with recessions.
- The US unemployment rate is 3.5%, and the Fed is forecasting 4.5% by year-end. Based on the Fed's forecast and a constant labor force, the total number of unemployed would rise by 1.7 million people, from 5.8 million to 7.5 million.

Source: ARK Investment Management LLC, 2023. Chart data from the US Department of Labor. Information as of April 30, 2023. 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. Past performance is not indicative of future results.



Section 04

Appendix: Glossary Of Terms





Glossary Of Terms

Accumulation Addresses: Defined as those addresses that have received two or more economically meaningful transactions (non-dust transactions) and have never spent funds. Exchange and miner addresses are discarded. "Accumulation balance" refers to coins held in these addresses.

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 remaining 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.

On-Chain: Refers to metrics or economic activity occurring on the blockchain ledger of most cryptocurrencies.

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 (SOPR): 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.

Seller Exhaustion Constant: A metric created by ARK to measure the convergence of two market factors: high losses denoting capitulation and low volatility denoting market exhaustion.

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

Supply in Profit (Percentage): 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.

Velocity-Adjusted Cost Basis: It subtracts the cumulative dollar value of coins spent over time from the general cost basis of the market (realized price). Also known as balanced price.



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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.

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