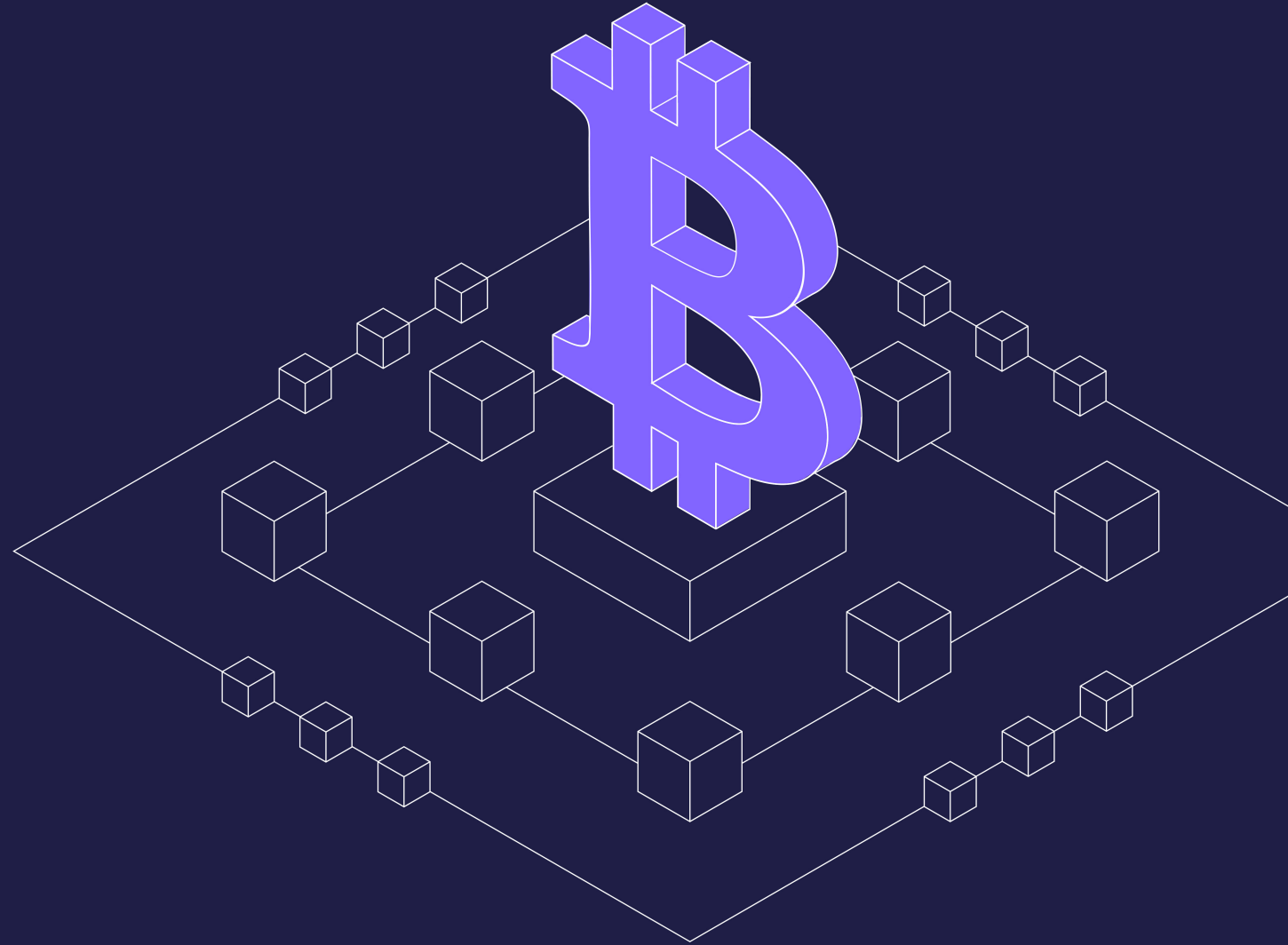




As of March 31, 2024

THE BITCOIN MONTHLY

**PUSHING AND PULLING
AT ALL-TIME HIGHS**



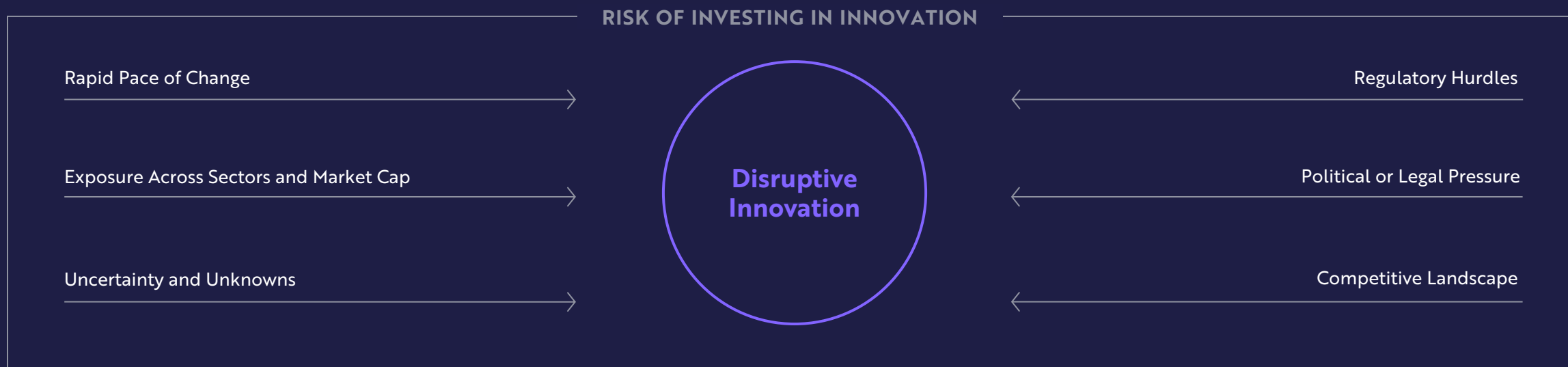
For Informational Purposes Only. ARK Investment Management LLC, 2024 This is not investment advice or a recommendation in relation to any named particular securities or cryptocurrencies and no warranty or guarantee is provided. Any references to particular securities or cryptocurrencies are for illustrative 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)**



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Section 01

Market Summary





Bitcoin Consolidated At Prior Cycle Highs During March

Bitcoin Digests Profit-Taking

- In March, bitcoin's price rose 16.5% to \$71,288, taking its appreciation during the first quarter to 68.6%.
- Based on its MVRV Z-Score,¹ bitcoin has not entered overbought territory.
- During the past six months, some long-term bitcoin holders—those with dormant balances for the last year or more—have been taking profits, while others—those with dormant balances for 5 years or more—have stayed put on balance.
- As measured by price appreciation and risk-adjusted returns, bitcoin's momentum reignited during the first quarter.

Fiat Currencies And Other Metrics Challenge The Market Narrative

- Many fiat currencies are depreciating against the USD and gold.
- Discrepancies among real Gross Domestic Product (GDP), real Gross Domestic Income (GDI), and S&P 500 earnings signal economic weakness and/or a loss of pricing power.

ARK'S KEY TAKEAWAYS

- In March, bitcoin's price rose 16.53% to \$71,288, appreciating 68.58% during the first quarter.
- On a cyclical basis, bitcoin's MVRV Z-Score suggests that it is not overbought.
- One-year bitcoin holders have taken profits while five-year holders remain relatively steady.
- Global fiat currency exchange rates and stalling S&P 500 earnings suggest economic weakness.

[1] The MVRV Z-Score is calculated by dividing the difference between market cap and realized cap by the standard deviation of market cap since inception. Source: ARK Investment Management LLC, 2024. Data from [Glassnode](#) unless otherwise specified. Data valid as of March 31, 2024, and subject to change. For more information on certain terms, please read our Glossary Of Terms in the Appendix 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. Past performance is not indicative of future results.



News Of The Month

[MicroStrategy Announces Proposed Private Offering Of \\$600 Million Of Convertible Senior Notes](#)

[BlockFi Settles With FTX, Alameda Estates For \\$874.5 Million](#)

[SEC Postpones Decisions On Bitcoin ETF Options Proposals](#)

[BlackRock Plans To Purchase Spot Bitcoin ETFs For Its Global Allocation Fund](#)

[Craig Wright Is Not Satoshi, Didn't Author Bitcoin Whitepaper, Judge Rules](#)

[El Salvador Has Thousands More Bitcoins Than Previously Known](#)

[Genesis Agrees To Pay \\$21 Million Penalty To Settle SEC Charges](#)

[Nigeria Charges Binance With Tax Evasion After Detained Exec Escapes](#)

[SEC Plans To Ask Judge For \\$2 Billion In Fines And Penalties From Ripple Labs](#)

[Exchange KuCoin And Two Of Its Founders Criminally Charged By SEC With Bank Secrecy Act And Unlicensed Money Transmission Offenses](#)

[Court Largely Rules Against Coinbase's Dismissal Efforts In SEC Case](#)

[SBF Is Sentenced To 25 Years In Prison](#)



Consolidating At An All-Time High Price, Bitcoin's Health Is Net Positive

	Bitcoin Metrics ¹	Unit	March 2024	1M Change	1Y Change	ARK's View	Upgrade/Downgrade ³
Network Security	<u>Mining Difficulty</u>	Exahash/sec ¹ (Thousands)	357	+1.7%	+77.4%	Bullish	No Change
	<u>Miner Revenue</u> (7-Day Moving Average)	USD (Millions)	63.8	+24.1%	+146.3%	Bullish	No Change
Network Usage	<u>Active Owners</u> ² (Active Entities, 7-Day Moving Average)	Thousands	250.2	-6.7%	-16.1%	Bearish	↓ ↓
	<u>Transaction Volume</u> ² (7-Day Moving Average)	BTC (Thousands)	128.4	-29.1%	+1.8%	Neutral	↓
Holder Behavior	<u>Long-Term-Holder Supply</u> ² (Coins Held for 155 Days+)	BTC (Millions)	15.1	-3.06%	-0.36%	Neutral	No Change
	<u>Locked Supply</u> ² (Illiquid Supply)	BTC (Millions)	15.04	+1.5%	+3.1%	Bullish	↑
	<u>Time-Weighted Turnover</u> ² (Coindays Destroyed, 7-Day Median)	Coindays (Millions)	13.6	-37.2%	+105.05%	Neutral	↑

[1] For more information on these metrics and their units of account, please read the Appendix: Glossary of Terms in the Appendix 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, 2024. Data sourced from [Glassnode](#). Some data may be subject to change over time since they are entity-adjusted in real time. Information as of March 31, 2024. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency.

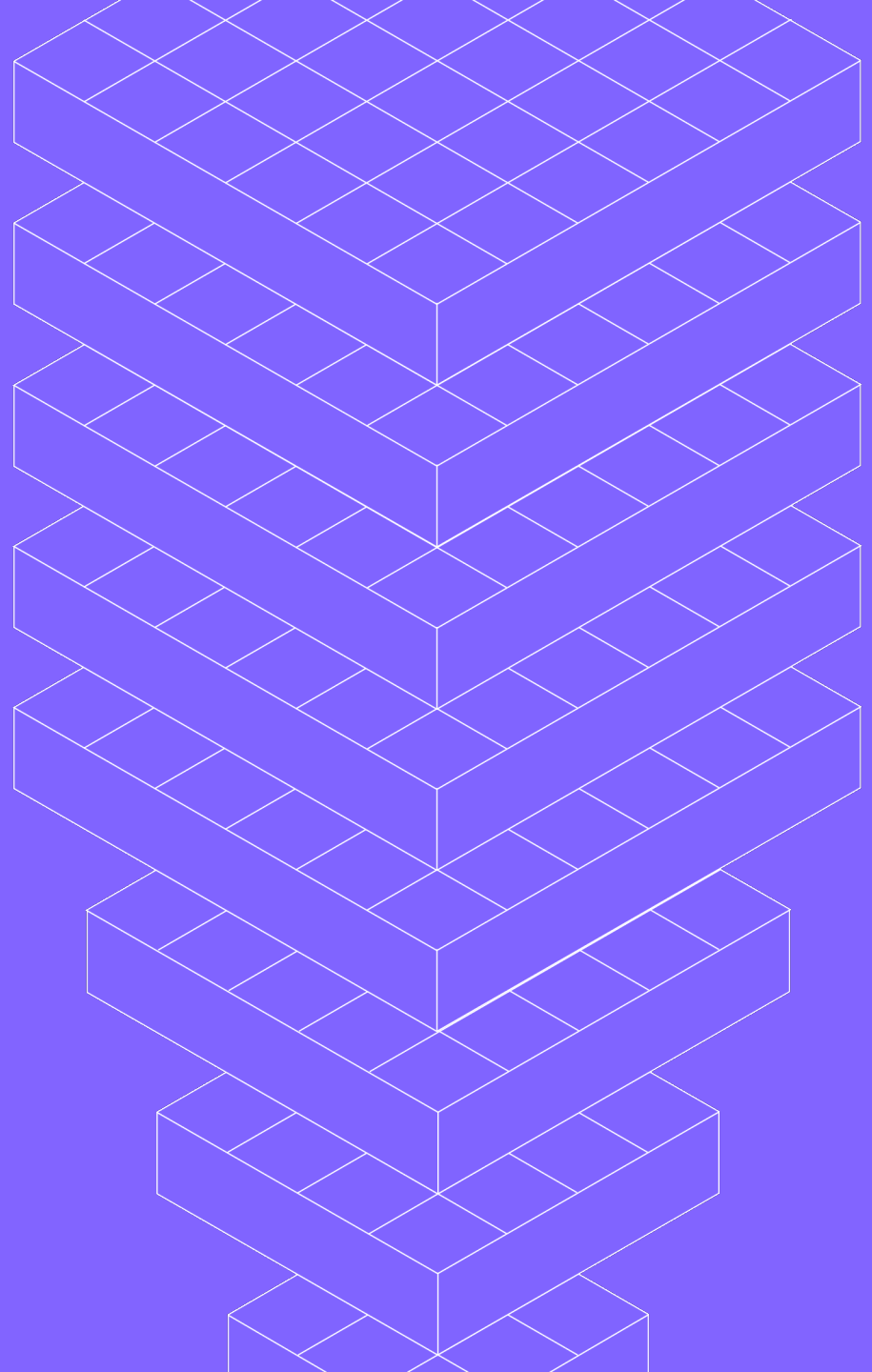


As Bitcoin's Cost Bases Grow, Derivative Contracts Remain Overheated

	Bitcoin Metrics ¹	Unit	March 2024	1M Change	1Y Change	ARK's View	Upgrade/Downgrade ³
Long-Term Valuation	<u>Market Cost Basis</u> (Realized Price)	USD	\$27,889	+14.9%	+41.2%	Bullish	No Change
	<u>Percent Supply In Profit</u>	pp	98.05%	-0.3	+21.6	Neutral	No Change
Short-Term Valuation	<u>Short-Term-Holder Cost Basis²</u> (STH Realized Price)	USD	\$57,547	+27.5%	+163.01%	Bullish	No Change
	<u>Realized Market Returns²</u> (SOPR-1, 7-day moving average)	pp	14.05%	-5	+8.09	Neutral	No Change
Market Sentiment	<u>Perpetual Futures Basis</u> (Binance, Estimated, 7-Day Exponential Moving Average)	pp	0.1%	0	+0.14	Bearish	No Change
	<u>Expirational Futures Basis</u> (Quarterly, All Exchanges, Annualized)	pp	30.4%	+13.3	+25.8	Bearish	No Change

[1] For more information on these metrics and their units of account, please read the Appendix: Glossary of Terms in the Appendix 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, 2024. 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 February March 31, 2024.. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security or cryptocurrency.

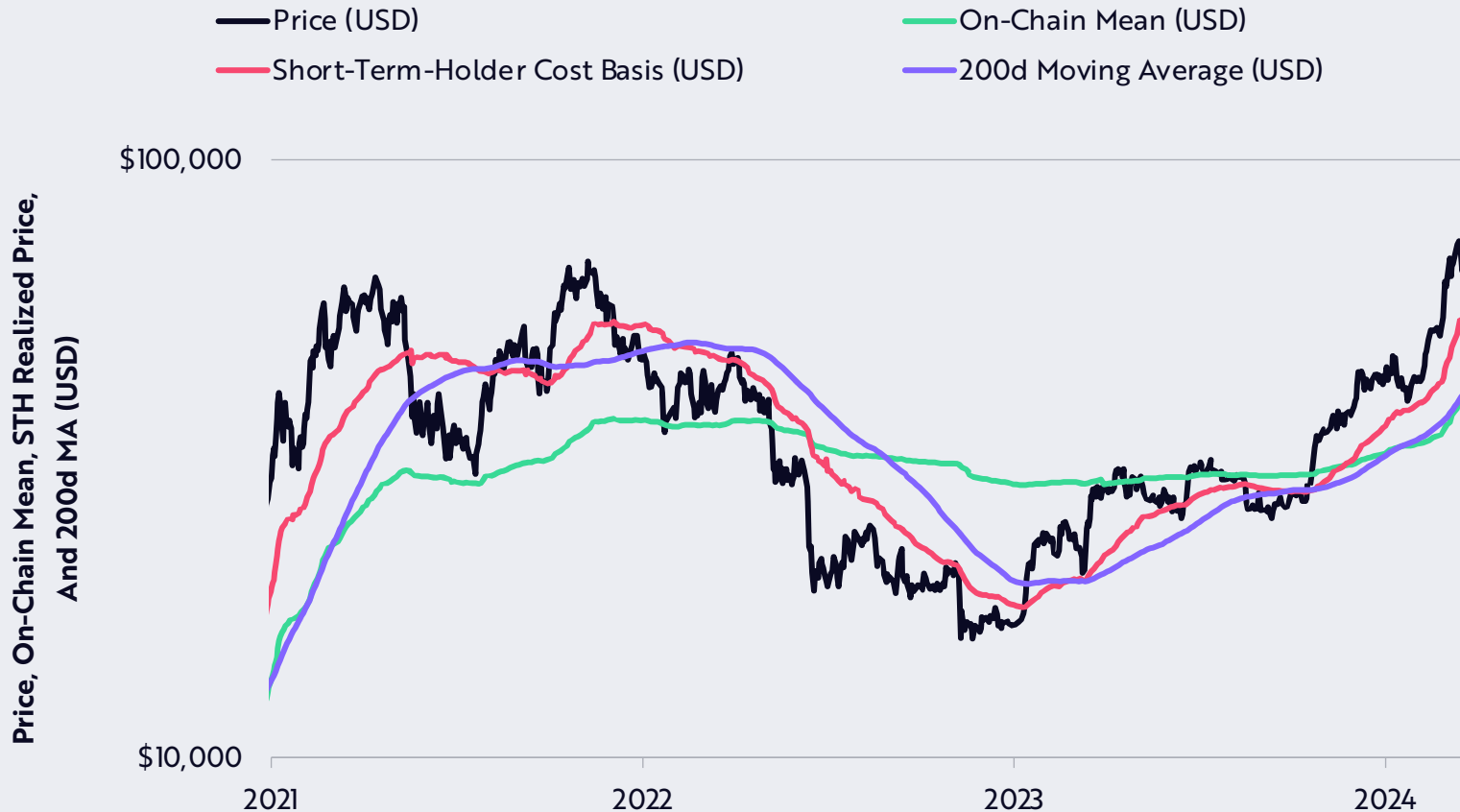
Bitcoin Digests Profit-Taking





Relative To Various Means, Bitcoin Is Overbought At The Margin Yet Neutral On A Cyclical Basis

Bitcoin Means



ARK'S VIEW: NEUTRAL

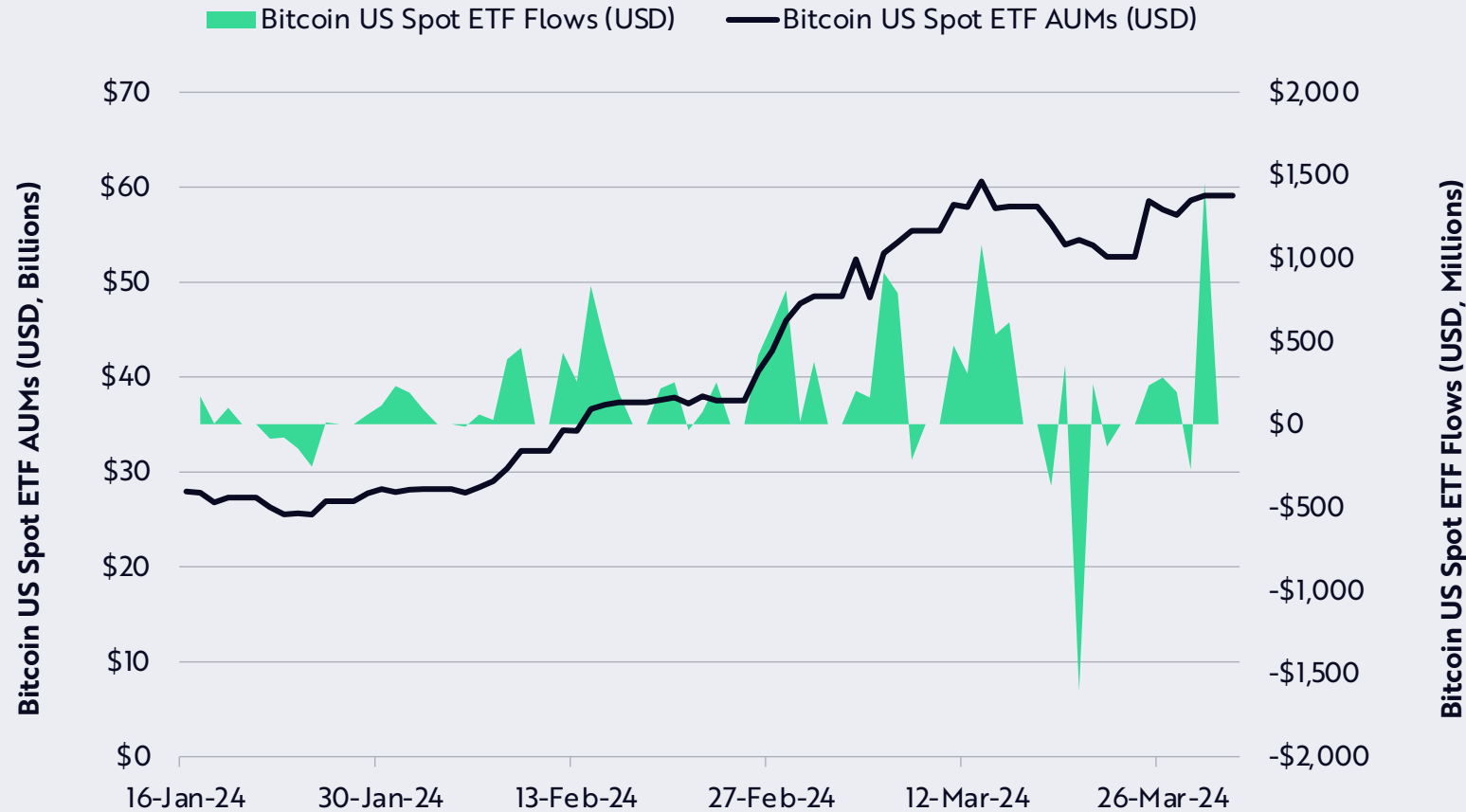
- In March, bitcoin's price increased 16.5% to \$71,288, taking its appreciation during the first quarter to 68.6%.
- As the delta between its price and most important means has increased, bitcoin's support levels are:
 - *Short-term-holder cost basis*: \$57,547, or 19.4% below its month-end price.
 - *200-day moving average*: \$43,343, or 39.3% below its month-end price.
 - *On-chain mean*: \$41,160, or 42.3% below its month-end price.

Source: ARK Investment Management LLC, 2024. Chart data from [Glassnode](#). Information as of March 31, 2024. Data may be subject to change over time since they are entity-adjusted in real time via a machine-learning algorithm. For more information on certain terms, please read our Glossary Of Terms in the Appendix 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. Past performance is not indicative of future results.



Spot Bitcoin ETF Assets Balanced Out Between Inflows And Outflows

Bitcoin US Spot ETF AUMs And Flows



ARK'S VIEW: NEUTRAL

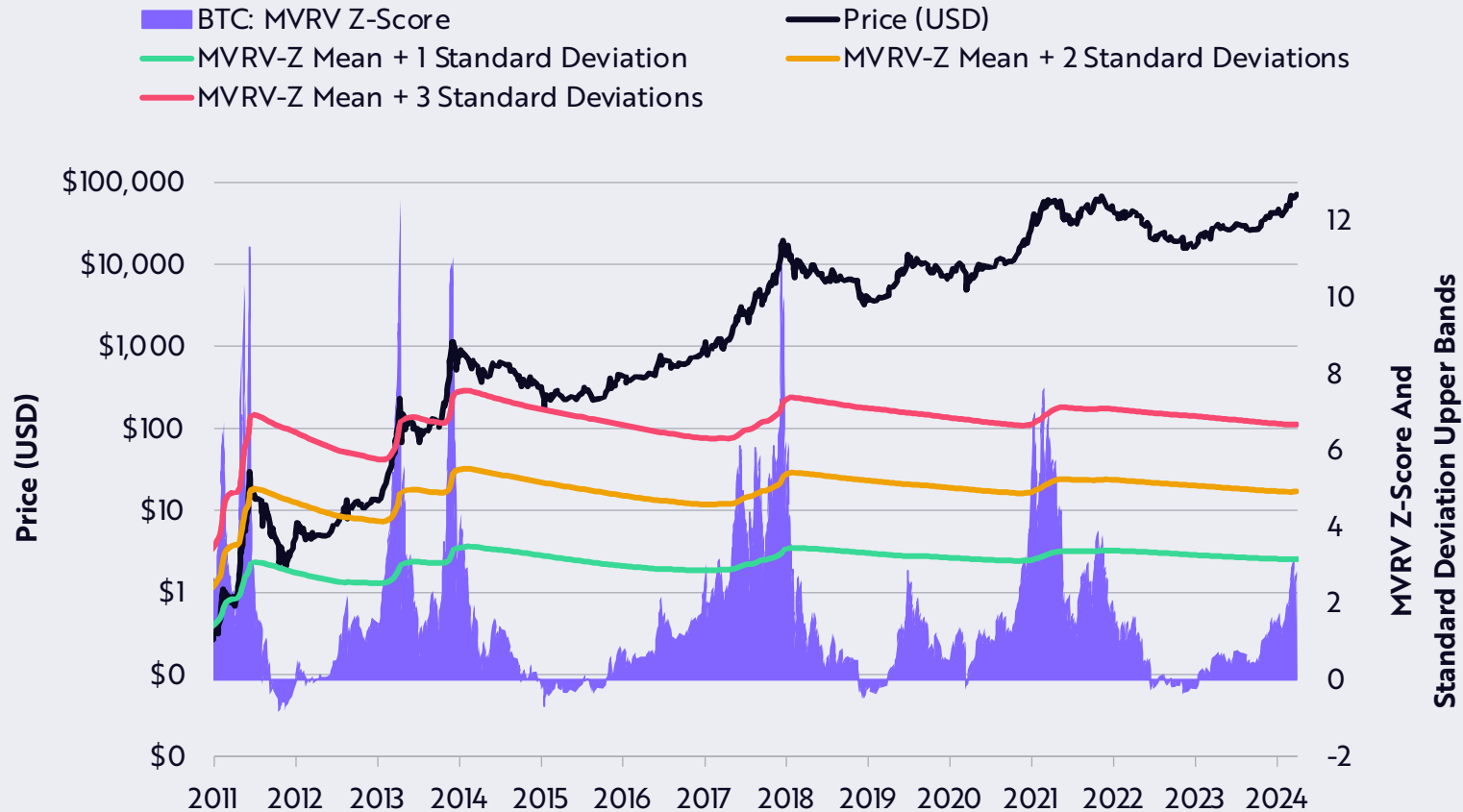
- In March, total AUM in spot bitcoin ETFs surpassed \$59.1 billion, up 21.8% from February's month-end.
- In March, US spot bitcoin ETF inflows and outflows hit records that nearly balanced at \$1.6 billion and \$1.4 billion, respectively.

Source: ARK Investment Management LLC, 2024. Chart data from [Glassnode](#) (DEFI ETF not included). Information as of March 31, 2024. 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.



Bitcoin Has Not Hit Levels Associated With Extreme Exuberance

Bitcoin MVRV¹ Z-Score Standard Deviation Upper Bands



ARK'S VIEW: BULLISH

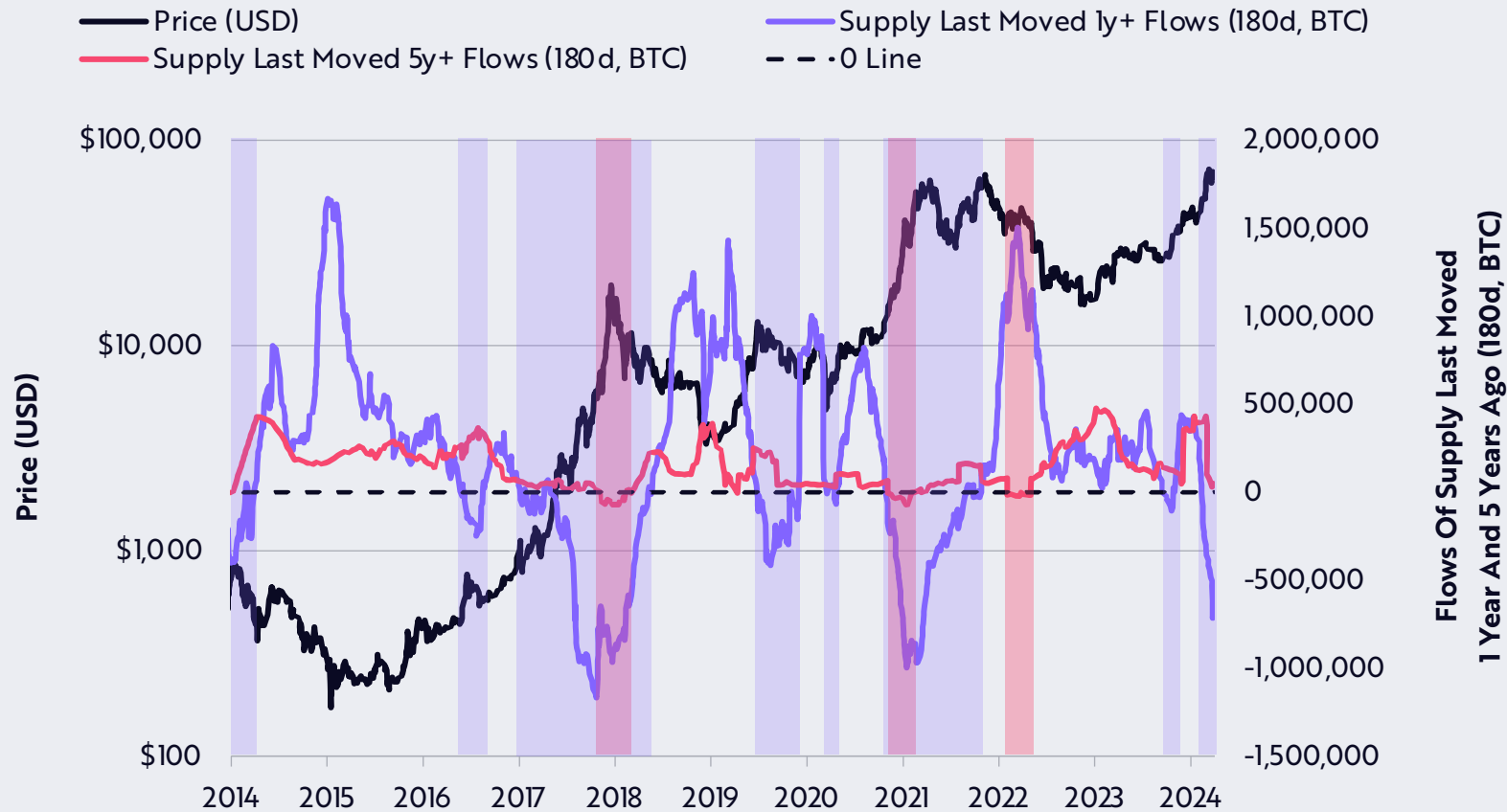
- Compared to past cycles, its MVRV Z-Score suggests that bitcoin's price is in the early-to-mid stages of a bull market.
- MVRV Z-Score measures the difference between bitcoin's market cap and realized cap.
- MVRV Z-Score gauges the stage of the market relative to its mean in terms of 1, 2, and 3 standard deviations. Currently, the three measures are 3.1 (green line), 4.9 (yellow line), and 6.6 (red line), respectively. Bitcoin has yet to cross any of those thresholds during this cycle.

[1] MVRV: market-value-to-realized-value, or market-cap-to-realized-cap. The MVRV Z-Score is calculated by dividing the difference between market cap and realized cap by the standard deviation of market cap since inception. Source: ARK Investment Management LLC, 2024. Chart data from [Glassnode](#). Information as of March 31, 2024. 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.



Long-Term Holders Have Taken Profits

Bitcoin 6-Month Flows Of Supply Last Moved 1+ Year And 5+ Years Ago



ARK'S VIEW: NEUTRAL

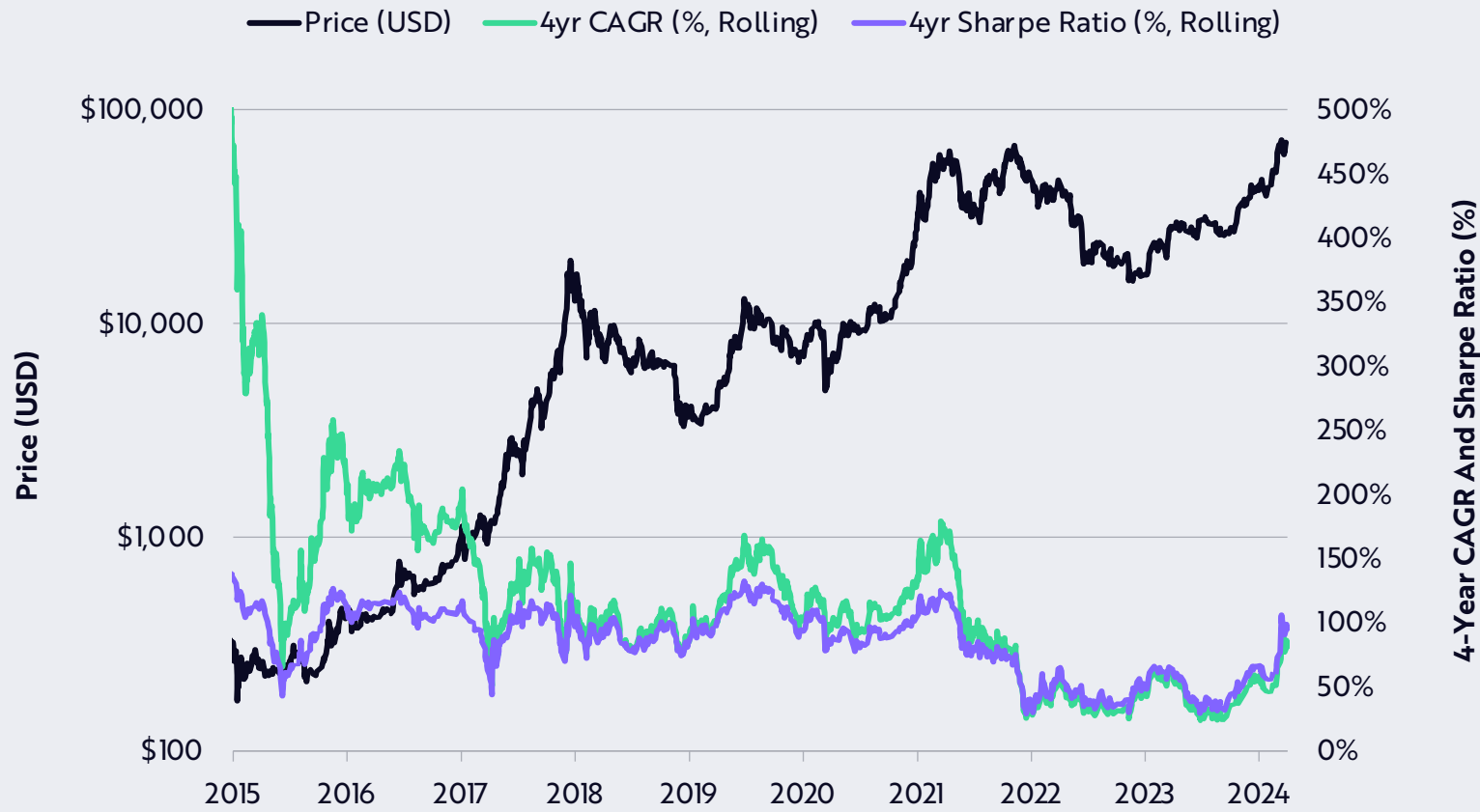
- Based on a six-month horizon, net outflows in “supply last moved one year ago or more” increased during the first quarter.
- According to our research, this phenomenon correlates with high-volatility in bull markets (purple periods).
- Over the same time horizon, net outflows have not taken place in “supply last moved five years ago or more” since early 2022 (red periods).
- In our view, the five-year outflows are a better indicator of the disciplined response to exuberance during the late stages of a bull market.

Source: ARK Investment Management LLC, 2024. Chart data from [Glassnode](#). Information as of March 31, 2024. 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.



Bitcoin's 4-Year Annualized And Risk-Adjusted Returns Rose To Three-Year Highs

Bitcoin 4-Year CAGR¹ And Sharpe Ratio



ARK'S VIEW: BULLISH

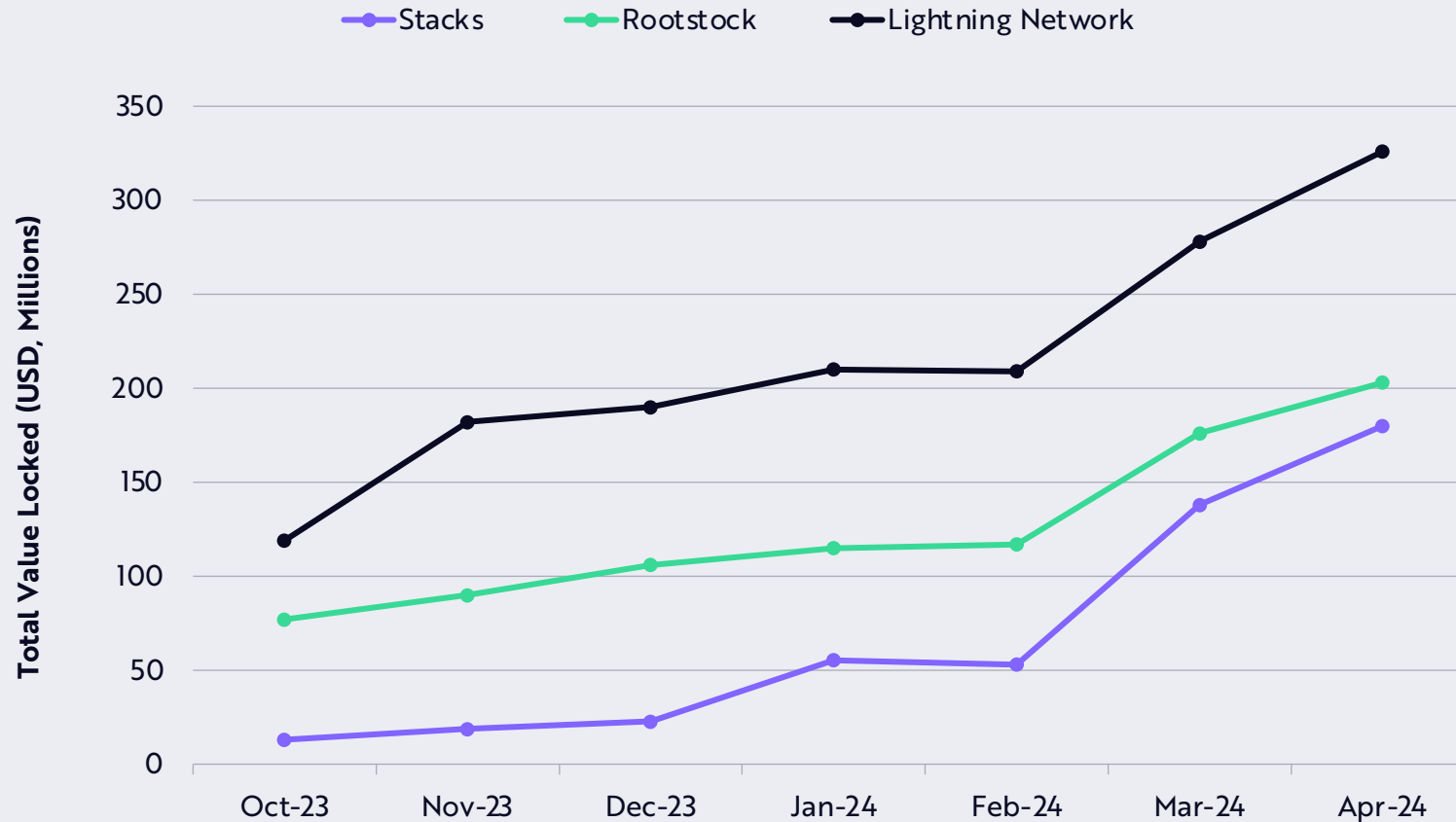
- Bitcoin's 4-year annualized rate of return and its 4-year Sharpe ratio—a core measure of risk-adjusted returns—peaked in March at 96% and 1.06 (or 106%), respectively.
- Those rates are the highest since the second quarter of 2021, highlighting increased momentum after a stretch of stagnancy during 2022 and 2023.
- The four-year time horizon for this analysis aligns with the time between periods when the Bitcoin network cuts bitcoin issuance in half. The so-called halving occurs every 210,000 blocks.

[1] CAGR: Compound Annual Growth Rate. Source: ARK Investment Management LLC, 2024. Chart data from [Glassnode](#). Information as of March 31, 2024. 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.



Bitcoin's Scaling Solutions Have Been Gaining Momentum

Bitcoin Scaling Solutions (Total Value Locked)



ARK'S VIEW: BULLISH

- Since the second half of 2023, Bitcoin scaling solutions have gained momentum: more than 50 independent projects are building on the Bitcoin base layer.
- Roll-ups, State Channels, and Sidechains are the primary technological architectures used to build scaling solutions.
- The Lightning Network, Rootstock, and Stacks have accumulated 700 million USD in total value locked since October 2023.
- Given bitcoin's price appreciation and increasing venture capital commitments, these trends could continue in the current bullish cycle.

Source: ARK Investment Management LLC, 2024. Chart data from DefiLlama. Information as of March 31, 2024. 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

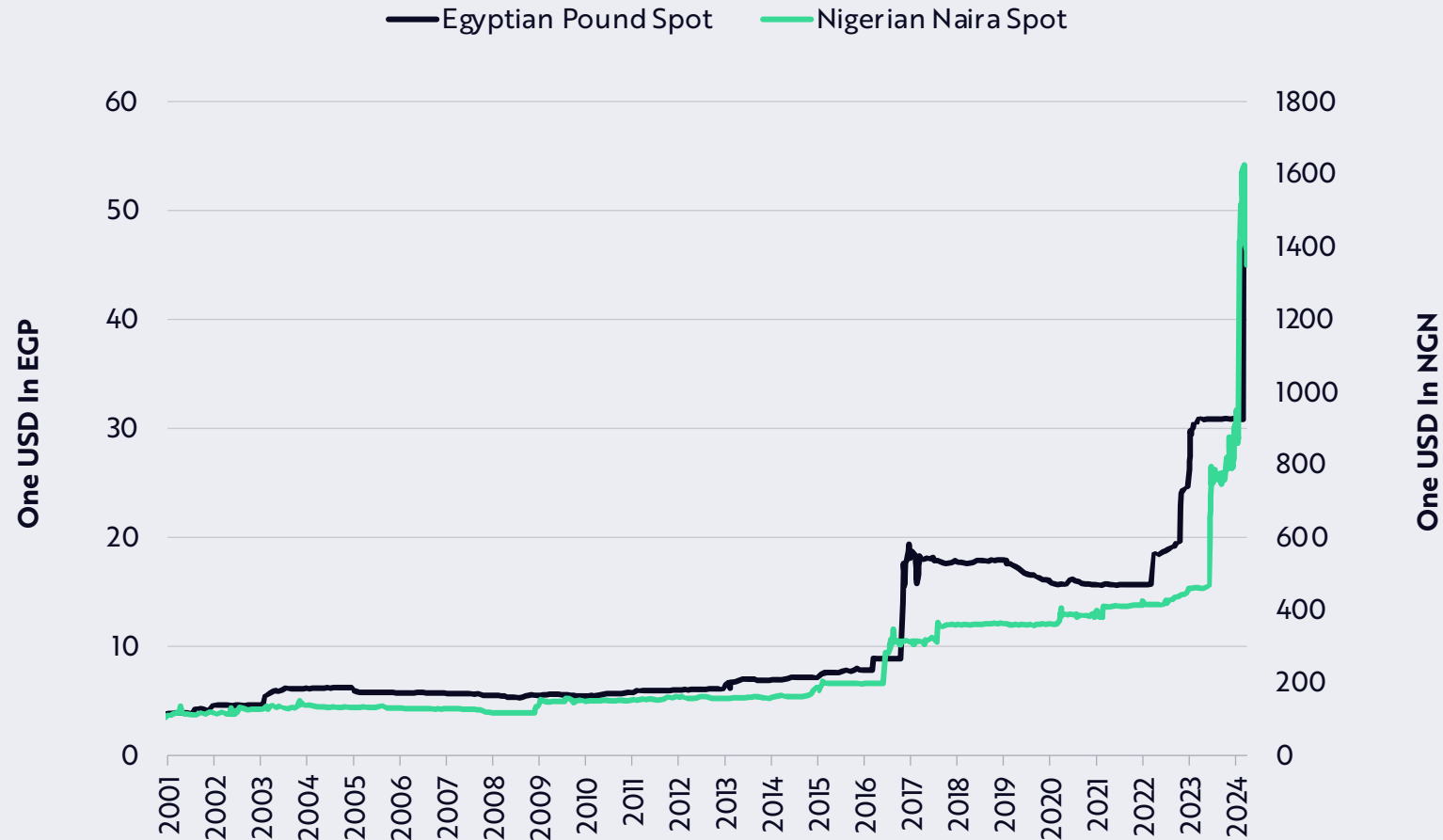
Fiat Currency And Other Metrics Challenge The Market Narrative





Many Fiat Currencies Are Depreciating Relative To The Dollar

Egyptian Pound And Nigerian Naira Spot Rates To USD



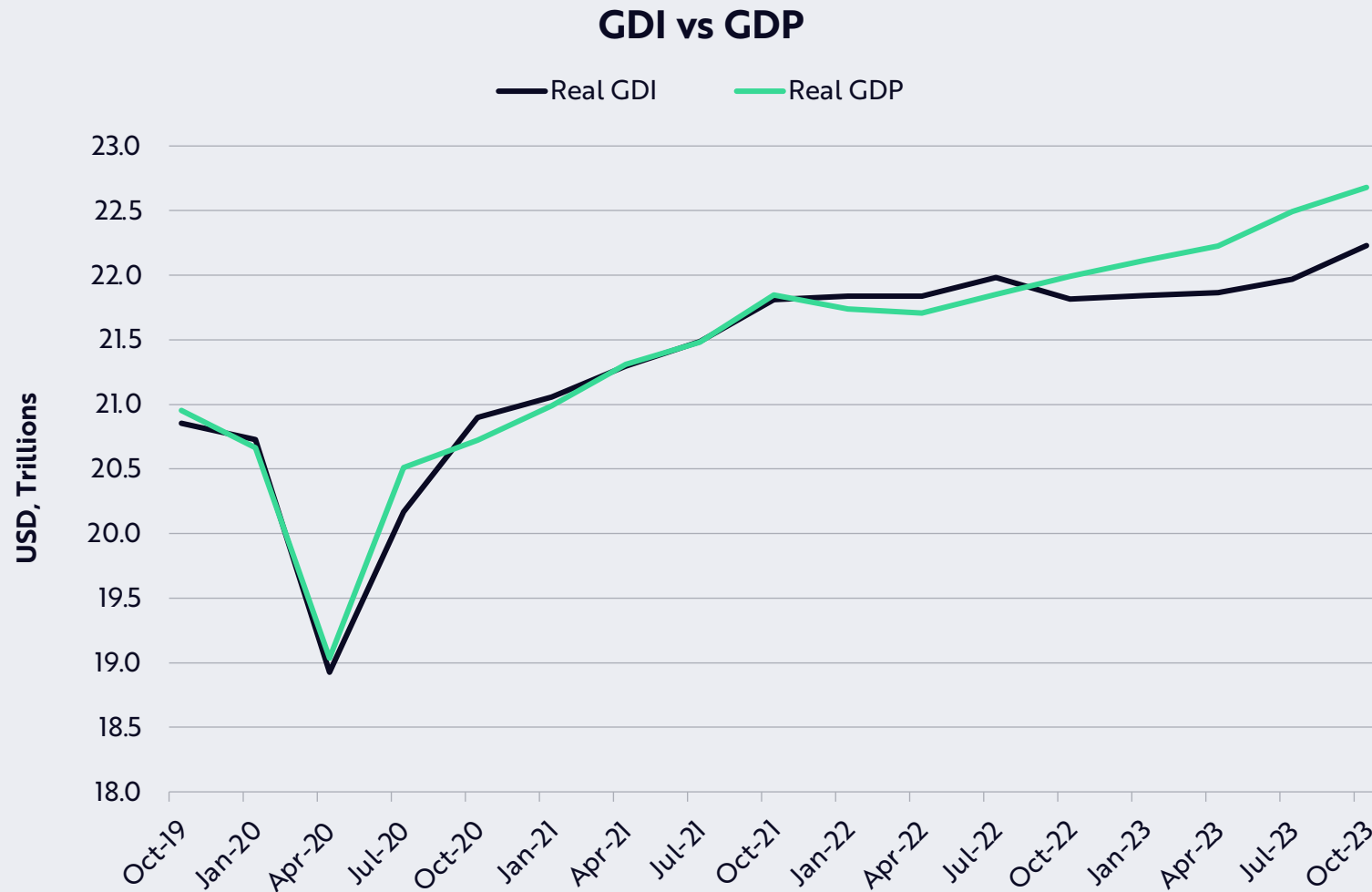
ARK'S VIEW: BEARISH

- During March, the depreciation of the Egyptian pound and the Nigerian naira accelerated.
- Hurt by the drop in tourism associated with the Red Sea conflict, Egypt—Africa's largest economy by GDP—has been unable to contain high inflation rates. Similarly, Nigeria's central bank blames inadequate dollar liquidity for its exchange rate volatility.
- Both Nigeria and Egypt have devalued their official exchange rates in an attempt to increase the competitiveness of their exports and improve dollar liquidity.

Source: ARK Investment Management LLC, 2024. Chart data from Bloomberg. Information as of March 31, 2024. 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.



GDI And GDP Have Continued To Diverge



ARK'S VIEW: NEUTRAL

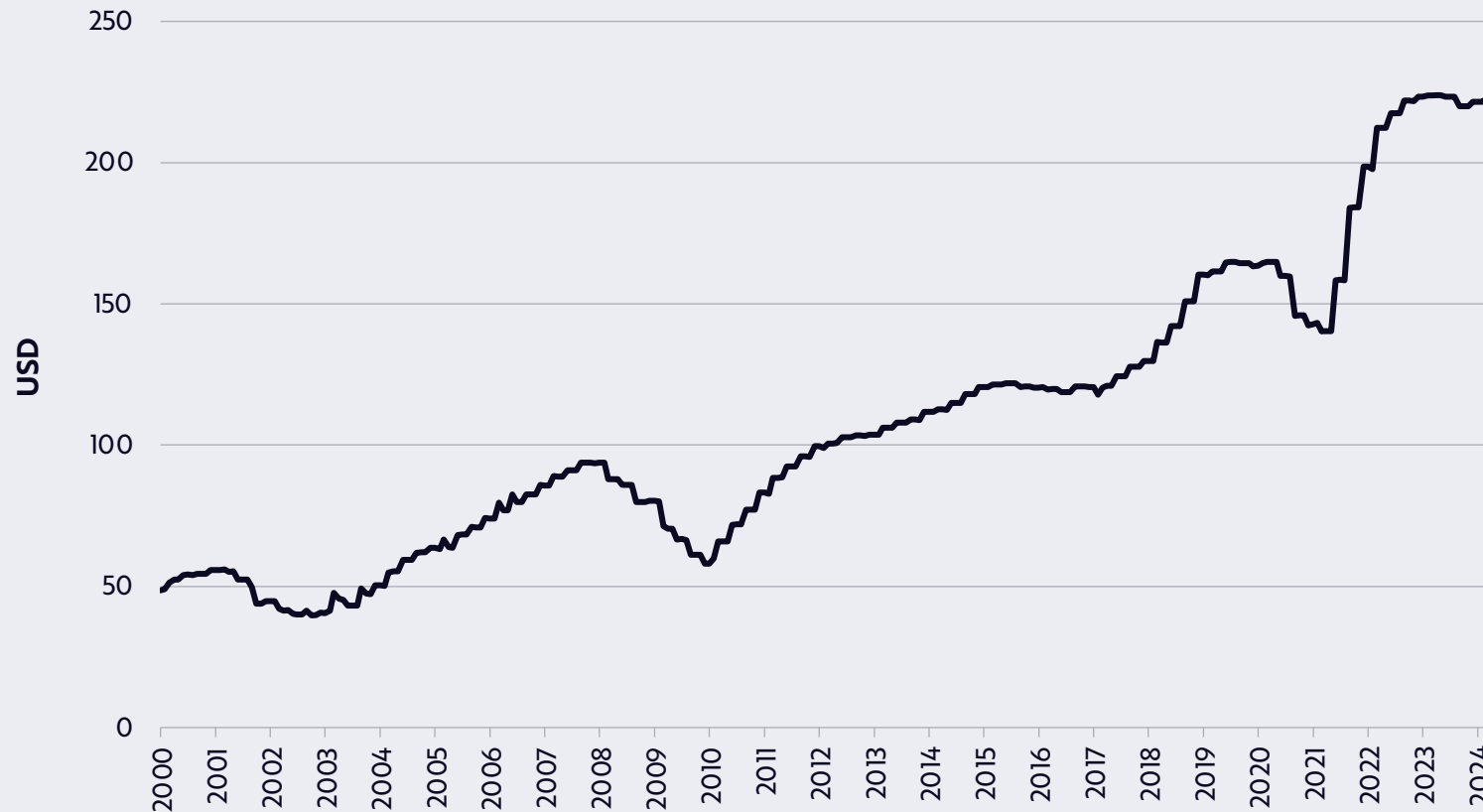
- Real Gross Domestic Income (GDI) should equal Real Gross Domestic Product (GDP) over time.
- As of the fourth quarter, Real GDI was up 1.9% on a year-over-year basis, still below the 3.1% growth in Real GDP.
- In absolute terms, the gap between Real GDP and GDI is at a historic high.

Source: ARK Investment Management LLC, 2024. Chart data from Bloomberg. Information as of March 31, 2024. For more information on certain terms, please read our Glossary Of Terms in the Appendix 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. Past performance is not indicative of future results.



Earnings Have Stagnated During The Past 16 Months

**S&P 500 Earnings Per Share
(Trailing 12-Month)**



ARK'S VIEW: BEARISH

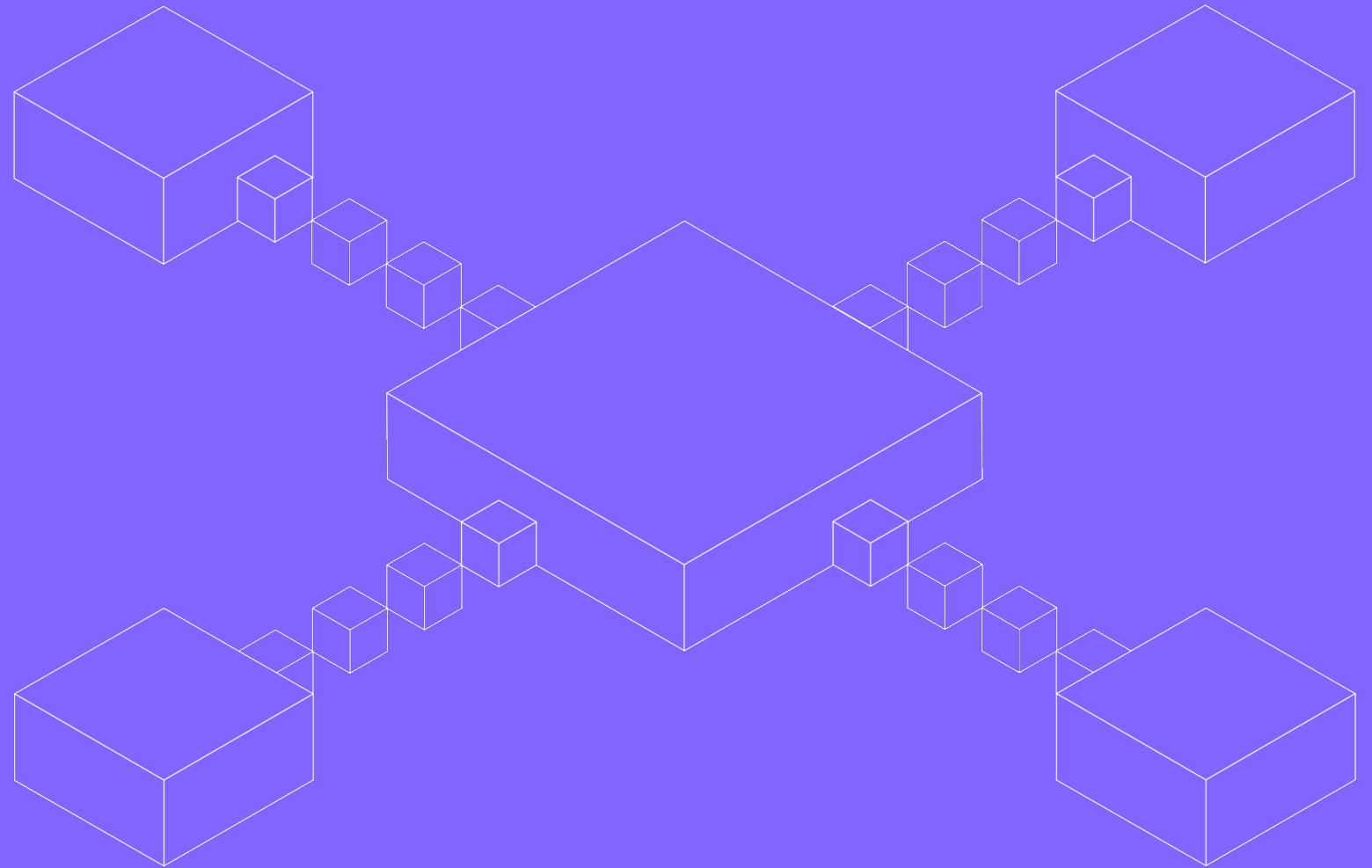
- The S&P 500 earnings per share have stalled at \$223—a level first reached in November 2022.
- Earnings plateaus tend to occur at the end of business cycles, such as 2019, 2007, and 2000.
- The setback could intensify if companies continue to lose pricing power and/or until they harness innovation like artificial intelligence to drive productivity gains.
- To limit the margin damage in the interim, companies are likely to cut employment after hoarding labor in response to shortages created by COVID.

Source: ARK Investment Management LLC, 2024. Chart data from Bloomberg. Information as of March 31, 2024. For a definition of the S&P 500 Index, please read our Glossary Of Terms in the Appendix 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. 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.

BRC-20: A token standard that enables the minting and transaction of fungible tokens via the Ordinals protocol on the Bitcoin network.

Coinblocks Created: The number of coins in the Bitcoin network times the number of blocks at any given day.

Coinblocks Destroyed: The number of coins transacted at any given day times the number of blocks each coin remained dormant.

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

Consumer Price Index (CPI): Measurement that tracks how the average price of a basket of consumer goods and services changes over time. It's often used to calculate inflation.

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.

Federal Funds Policy Rate: This is the interest rate at which banks lend money to each other overnight. It's set by a country's central bank (like the Federal Reserve in the U.S.) and influences other interest rates throughout the economy.

Fiat Currency: Government-issued money that is not backed by a commodity like gold or silver, but rather by the government that issues it.

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

Gross Domestic Income (GDI): This is the *nominal* total income earned by a country's residents and businesses, including wages, profits, and taxes minus subsidies. It's a way to measure the economic health of a country, much like GDP. The *real* GDI adjusts for price change by expressing values at base-year prices, not current market prices.

Gross Domestic Product (GDP): This is the *nominal* total value of all goods and services produced in a country over a certain period of time, usually a year. It's another way to measure a country's economic performance. The *real* GDP adjusts for price change by expressing values at base-year prices, not current market prices.

Hash Rate: The estimated computational power mining within and providing security to the Bitcoin network.

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.

Liveliness: The ratio of the sum of coindays created to the sum of coindays destroyed. Liveliness rises when old coins move and decreases when participants hold on to their bitcoin. In essence, it's the ratio of coin movement to coin dormancy in the network.

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.

Natural Rate of Interest: Theoretical interest rate that at which the economy is neither expanding nor contracting.

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



Glossary Of Terms, Continued

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.

On-Chain Mean: Developed collaboratively by ARK Invest and Glassnode, on-chain mean is calculated by dividing the cost basis capitalization of investors—the secondary market of the Bitcoin network—by the number of active coins in the network based on their aggregate time of dormancy proportional to total supply. Also known as “active-investor price” or “true market mean.”

Ordinals: Refers 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).

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 to 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.

S&P 500 Index: Short for “The Standard and Poor’s 500,” it is a stock market index tracking the performance of 500 of the largest public companies in the United States.

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 is (the smallest unit of account).



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

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