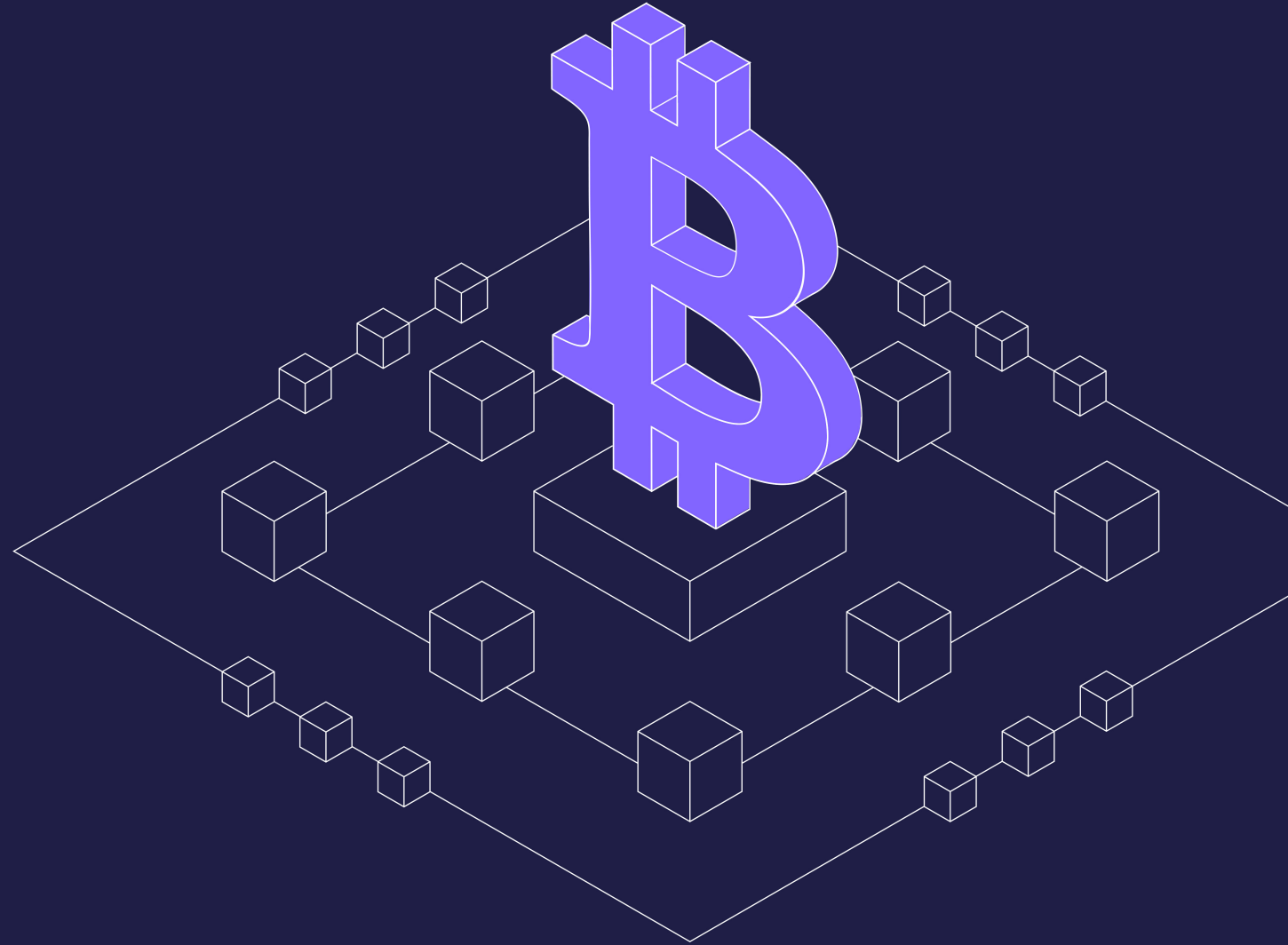




As of August 31, 2023

# THE BITCOIN MONTHLY

## BITCOIN BATTLES RESISTANCE AROUND ITS ON-CHAIN MEAN



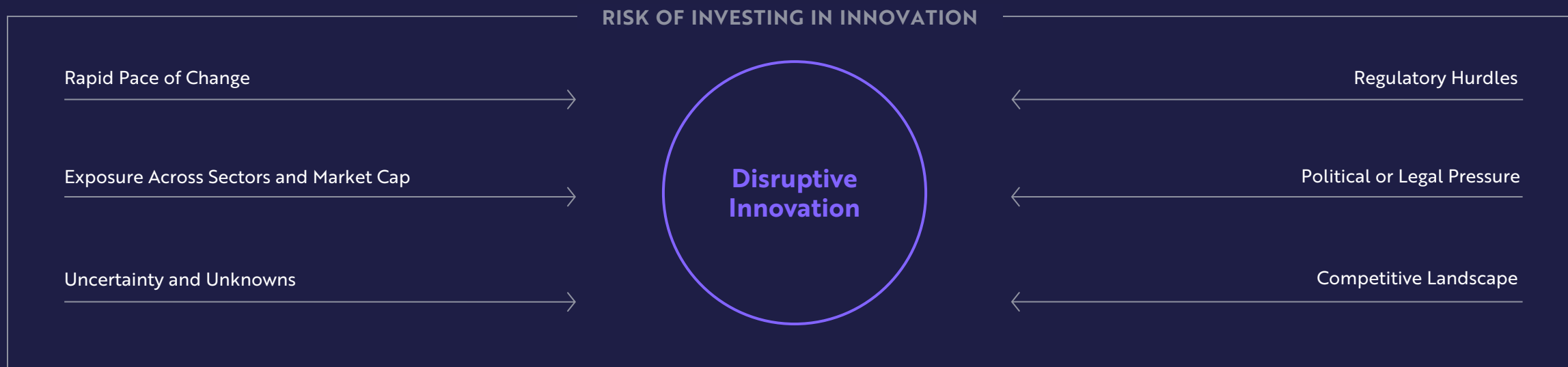
**For Informational Purposes Only.** ARK Investment Management LLC, 2023. This is not investment advice or a recommendation in relation to any named particular securities or cryptocurrencies and no warranty or guarantee is provided. Any references to particular securities or cryptocurrencies are for 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

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### **Appendix: Glossary Of Terms**

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Section 01

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# Market Summary





# Bitcoin Battles Resistance After Falling Back Below Its 200-Week Moving Average

## Bitcoin Support Turns To Resistance

- Bitcoin closed August at \$25,932, 5.4% below its 200-week moving average, with downside risk to \$20,300, the market's average cost basis.
- Bitcoin battled resistance at \$29,608, its on-chain mean, a new metric ARK Invest has developed collaboratively with Glassnode.
- Open interest in bitcoin futures experienced its largest liquidation cascade since 2021, a healthy recalibration of general market sentiment

## Macro Uncertainty Continues

- On a year-over-year basis, the difference in growth between real Gross Domestic Product (GDP) and Gross Domestic Income (GDI) is at a record high, suggesting that revisions to real GDP growth will be negative.
- According to U.S. Federal Reserve (Fed) Chairman Powell, the Real Federal Funds Policy Rate is above the Natural Rate of Interest for the first time since 2009.

## ARK'S KEY TAKEAWAYS

- In August, bitcoin's price fell 11.3%, from \$27,580 to \$25,932, breaking below its 200-week moving average.
- Grayscale won its court battle with the U.S. Securities and Exchange Commission (SEC), potentially bringing a Bitcoin ETF a step closer to approval.
- Despite price resistance, activity on the Bitcoin network remains healthy.



# News Of The Month

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[Crypto Staking Rewards Must Count As Taxable Income, IRS Says](#)

[SEC Can Try To Appeal Groundbreaking XRP Ruling, Judge Rules](#)

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[MicroStrategy Announces Second Quarter 2023 Financial Results; Now Holds 152,800 BTC In Total](#)

[SEC Charges LA-Based Media And Entertainment Co. Impact Theory For Unregistered Offering Of NFTs](#)

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[Coinbase Looks To Add Bitcoin Lightning For Payments](#)

[DCG Reaches Crucial In-Principle Deal With Genesis Creditors, Recoveries Could Be Up To 90%](#)

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[Binance User Base Surges To 150 Million, CZ Says — Despite US Regulatory Lawsuits](#)

[SEC Must Review Grayscale's Bitcoin ETF Bid After Previous Rejection, Appeals Court Rules](#)

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[Coinbase Revenue Beat Estimates, Executives Expect To Win Battle With SEC](#)

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[New York AG Probes Transactions At Genesis, Ties With Barry Silbert](#)

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[Tether And Bitfinex Win Comprehensive Legal Victory As U.S. District Court Dismisses Class Action Lawsuit](#)

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[PayPal Launches U.S. Dollar Stablecoin](#)

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[Crypto Custodian Prime Trust Files For Chapter 11 Bankruptcy](#)

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[Coinbase Financial Markets, Inc. Secures Approval To Bring Federally Regulated Crypto Futures Trading To Eligible US Customers](#)

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[Genesis, FTX Strike Deal For \\$175M Bankruptcy Claim](#)

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[SpaceX Wrote Down Bitcoin Holdings By \\$373 Million](#)

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[SEC Set To Greenlight Ether-Futures ETFs In Win For Crypto Industry](#)

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[Checkout.com Ends Binance Partnership Over Regulatory And Money Laundering Concerns](#)

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# On-Chain Fundamentals Remain Healthy

	Bitcoin Metrics <sup>1</sup>	Unit	August 2023	1M Change	1Y Change	ARK's View	Upgrade/Downgrade <sup>3</sup>
Network Security	<u>Mining Difficulty</u>	Exahash/sec <sup>1</sup> (Thousands)	238	+6.29%	+79.55%	Bullish	No Change
	<u>Miner Revenue</u> (7-Day Moving Average)	USD (Millions)	\$25.9	-15.56%	+10.35%	Bullish	No Change
Network Usage	<u>Active Owners</u> <sup>2</sup> (Active Entities, 7-Day Moving Average)	Thousands	287	+3.18%	+20.98%	Bullish	No Change
	<u>Transaction Volume</u> <sup>2</sup> (7-Day Moving Average)	BTC (Thousands)	123	+12.34%	-34.74%	Neutral	↑
Holder Behavior	<u>Long-Term-Holder Supply</u> <sup>2</sup> (Coins Held for 155 Days+)	BTC (Millions)	14.71	+0.98%	+8.14%	Bullish	No Change
	<u>Locked Supply</u> <sup>2</sup> (Illiquid Supply)	BTC (Millions)	15.32	+0.68%	+5.81%	Bullish	No Change
	<u>Time-Weighted Turnover</u> <sup>2</sup> (Coindays Destroyed, 7-Day Median)	Coindays (Millions)	6.85	+9.77%	-3.72%	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. One arrow denotes a 1-tier change, and two arrows denote a 2-tier change. Source: ARK Investment Management LLC, 2023. Data sourced from [Glassnode](#). Some data may be subject to change over time since they are entity-adjusted in real time. Information as of August 31, 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.



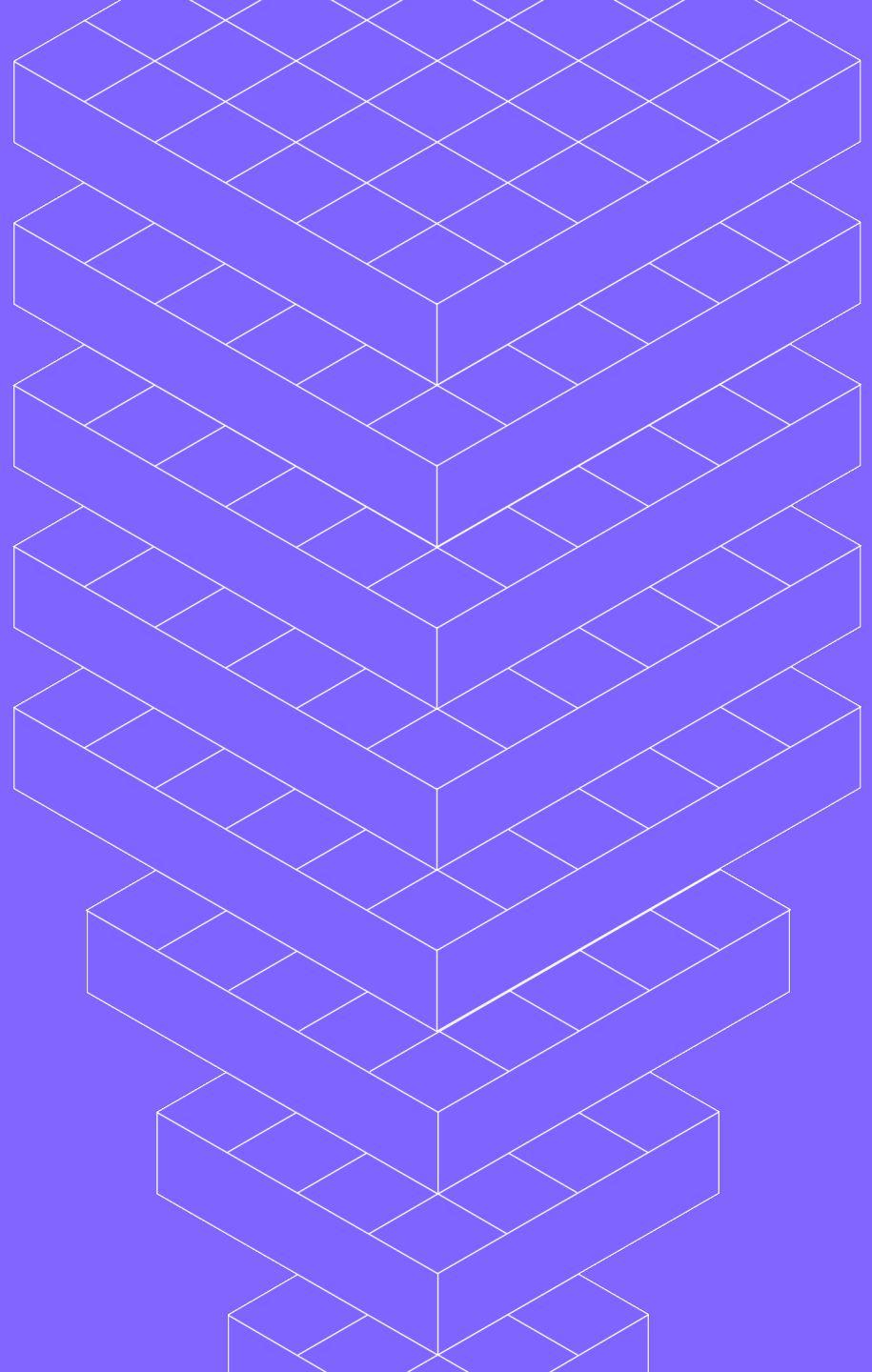
# The Percent Of Bitcoin Supply In Profit Fell ~14 Percentage Points, Suggesting Local Capitulation

	Bitcoin Metrics <sup>1</sup>	Unit	August 2023	1M Change	1Y Change	ARK's View	Upgrade/Downgrade <sup>3</sup>
Long-Term Valuation	<u>Market Cost Basis</u> (Realized Price)	USD	\$20,294	-0.3%	-6.02%	Neutral	No Change
	<u>Percent Supply In Profit</u>	pp	59.67%	-14.13 pp	+7.58 pp	Bullish	No Change
Short-Term Valuation	<u>Short-Term-Holder Cost Basis<sup>2</sup></u> (STH Realized Price)	USD	\$28,247	-0.24%	+12.13%	Bullish	No Change
	<u>Realized Market Returns<sup>2</sup></u> (SOPR-1, 7-day moving average)	pp	-1.55%	-3 pp	+5.31 pp	Bullish	No Change
Market Sentiment	<u>Perpetual Futures Basis</u> (Binance, Estimated, 7-Day Exponential Moving Average)	pp	-0.05%	-0.01 pp	-0.01 pp	Bullish	No Change
	<u>Expirational Futures Basis</u> (Quarterly, All Exchanges, Annualized)	pp	3.84%	-1.18 pp	+3.59 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. 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 August 31, 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.

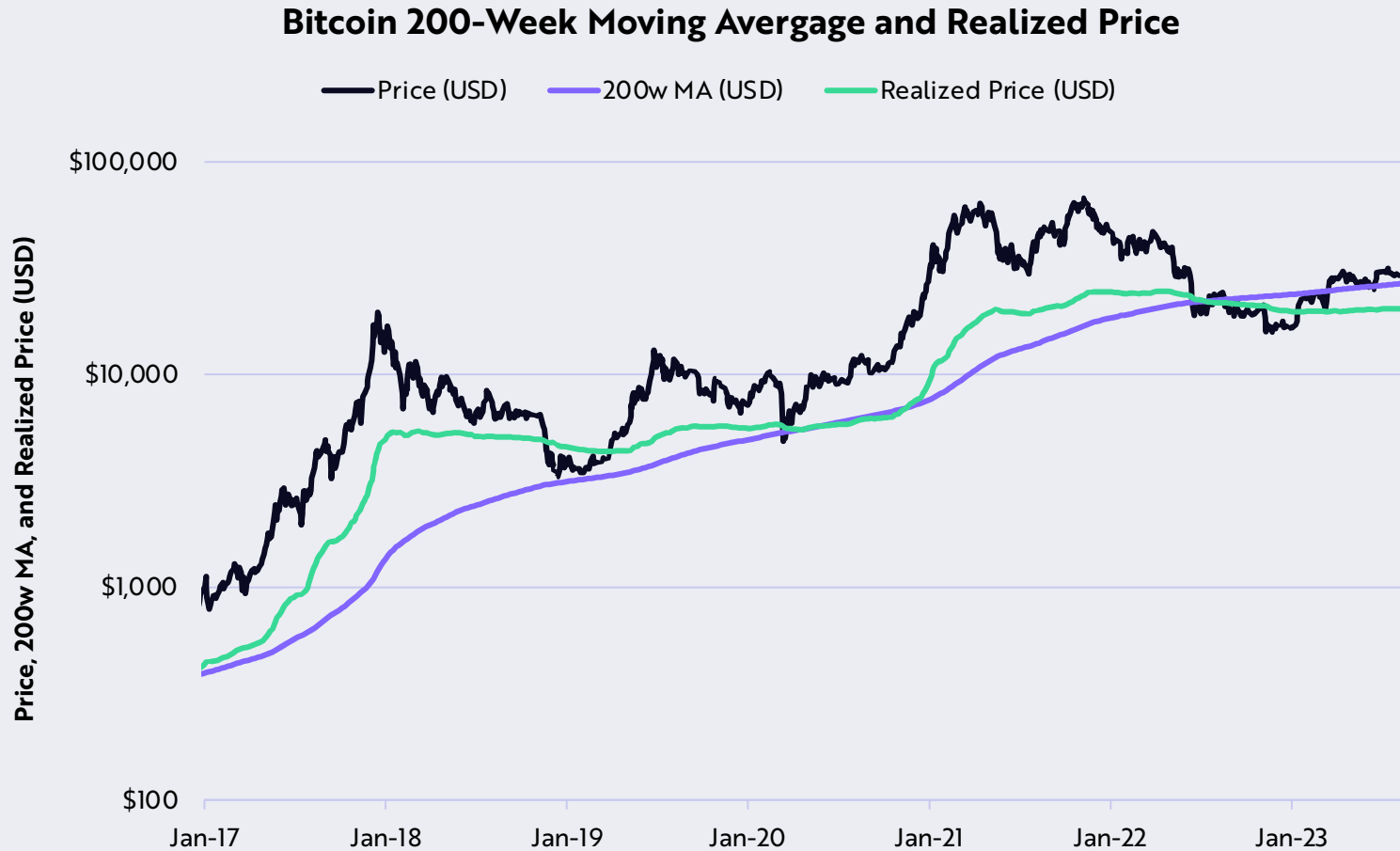


# Volatility Returns





# The Bitcoin Price Broke Below Its 200-Week Moving Average In August

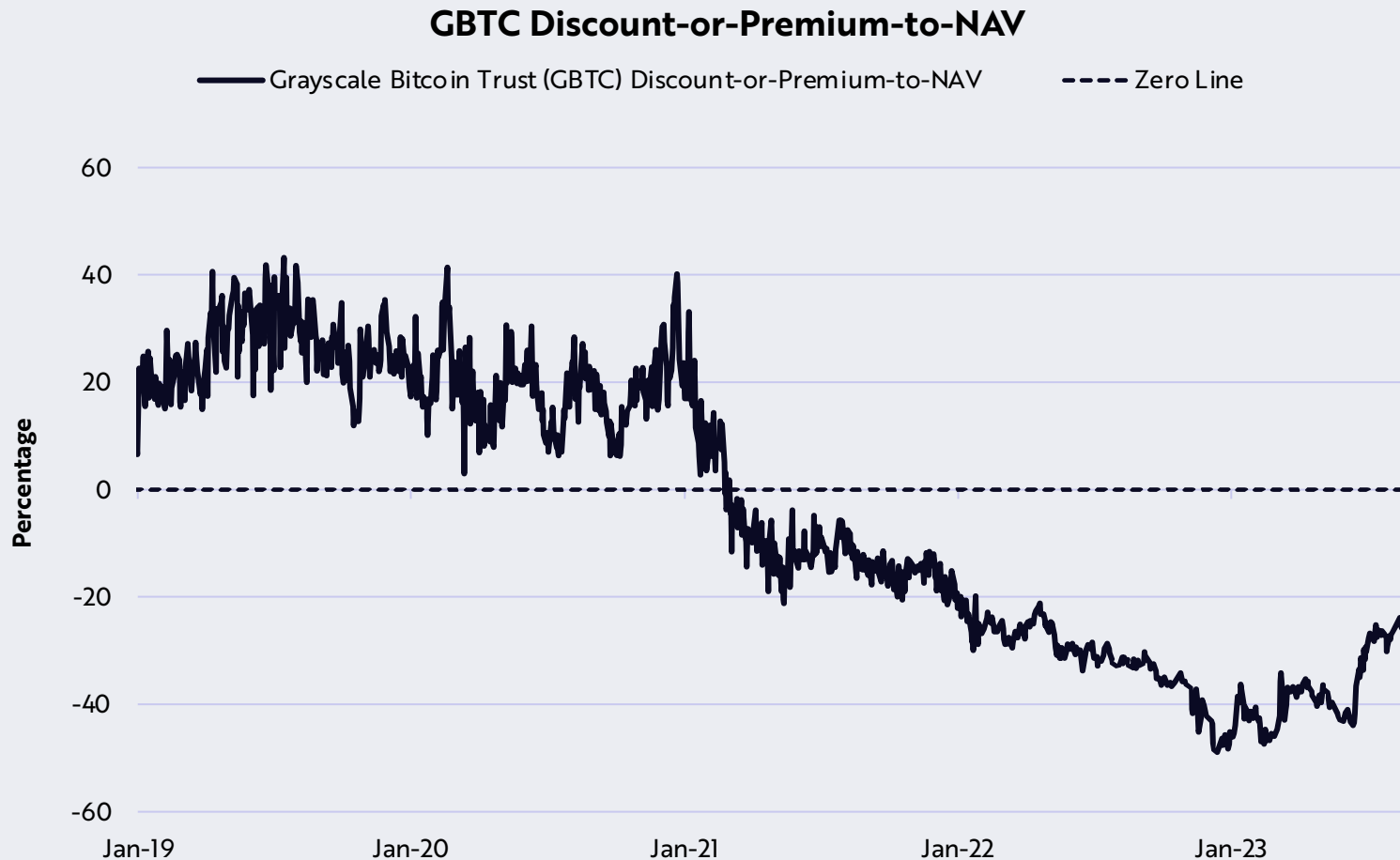


## ARK'S VIEW: NEUTRAL

- During August, the price of bitcoin dropped 5.4%, ending below its 200-week moving average at \$27,580 for the first time since June 2023.
- Bitcoin should find significant downside support at \$20,300, its realized price, as shown by the green line on the chart.
- Realized support, or realized price, is realized cap divided by the total supply. This measures the aggregate cost basis of coins in the primary and secondary markets according to the price when they last moved.



# As The Odds Of A Grayscale Spot ETF May Have Increased, GBTC's Discount To NAV Narrowed



## ARK'S VIEW: BULLISH

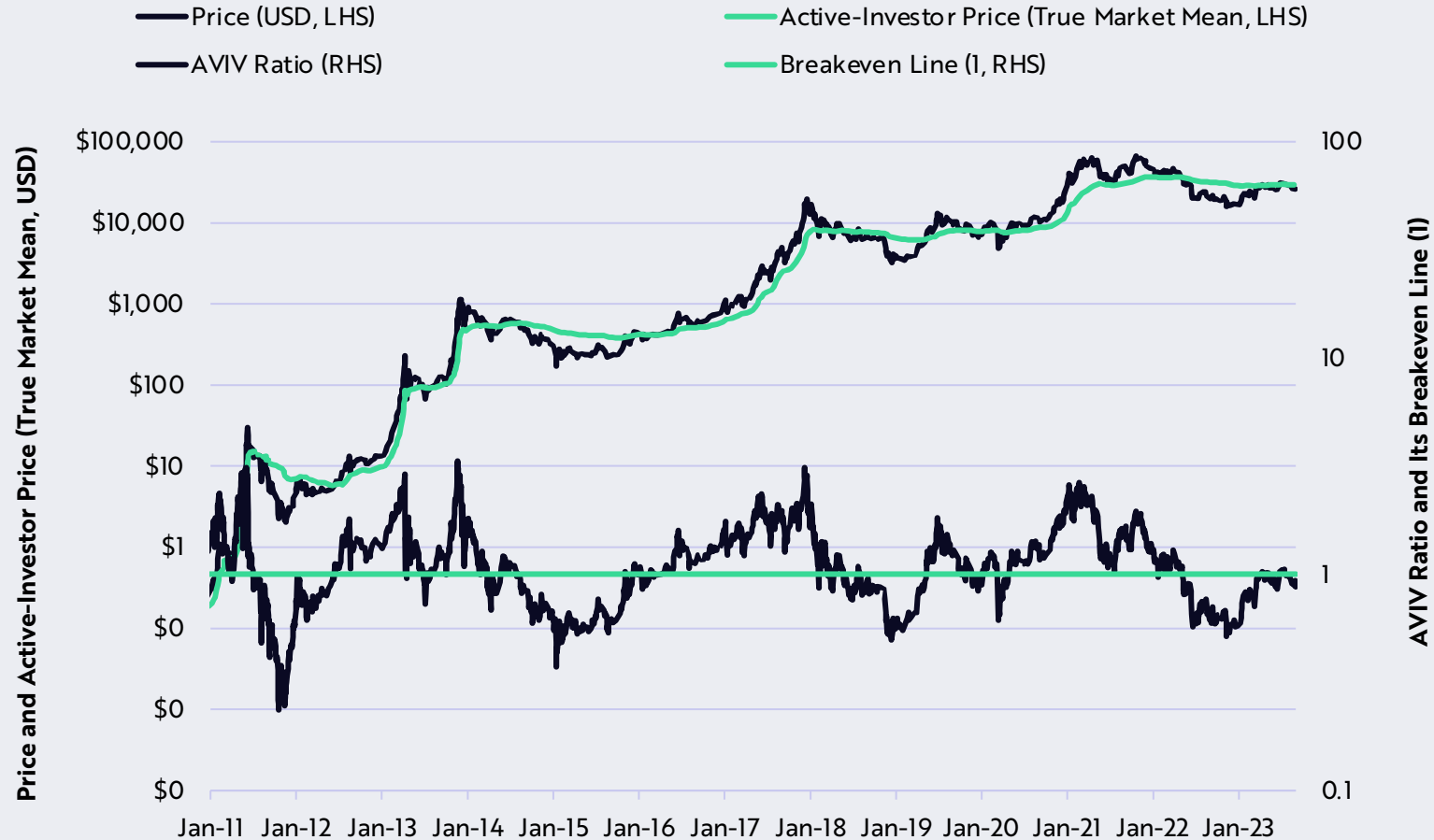
- On August 29, a U.S. Federal Appeals Court ruled that the U.S. Securities and Exchange Commission (SEC) must review and reconsider the terms of its rejection of Grayscale Bitcoin Trust's (GBTC's) application to convert into a spot ETF.
- That day, GBTC's discount-to-NAV increased from -24% to -18%, suggesting market optimism that the odds of a Bitcoin spot ETF in the short term have increased.
- GBTC closed August at a discount-to-NAV of -20.6%.

Source: ARK Investment Management LLC, 2023. Chart data from YCharts.com. Information as of August 31, 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.



# Bitcoin Seems To Have Hit Resistance At Its On-Chain Mean

## Bitcoin True Market Mean and AVIV Ratio



### ARK'S VIEW: NEUTRAL

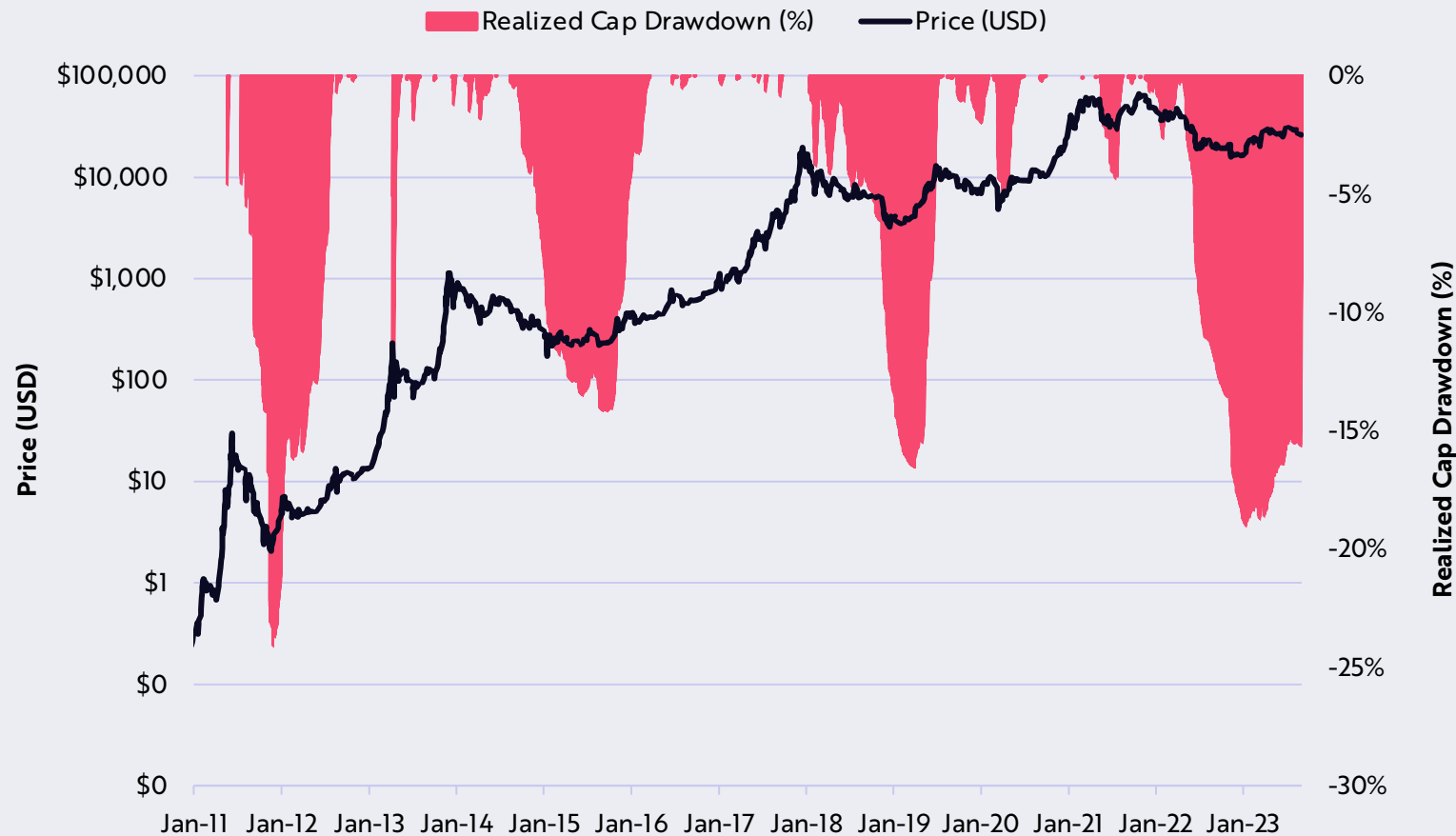
- Bitcoin's "on-chain mean"—also known as "active-investor price" or "true market mean"—hit \$29,608 in August, establishing potential important resistance.
- Developed collaboratively by ARK Invest and Glassnode, the on-chain mean is a new metric. See [Covertime Economics](#) for details.
- Bitcoin's on-chain mean is calculated by dividing investors' cost basis by the number of active coins, the latter based on the aggregate time they have been dormant relative to total supply.
- The Active-Value-to-Investor-Value (AVIV) Ratio divides the active capitalization of bitcoin by its investor cost basis. Whenever AVIV equals 1, investors in the secondary market are at breakeven.

Source: ARK Investment Management LLC, 2023. Chart data from [Glassnode](#). Information as of August 31 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.



# Bitcoin's General Cost Basis Has Been Recovering From Its Largest Drawdown Since 2012

## Bitcoin Realized Cap Drawdown From All-Time High



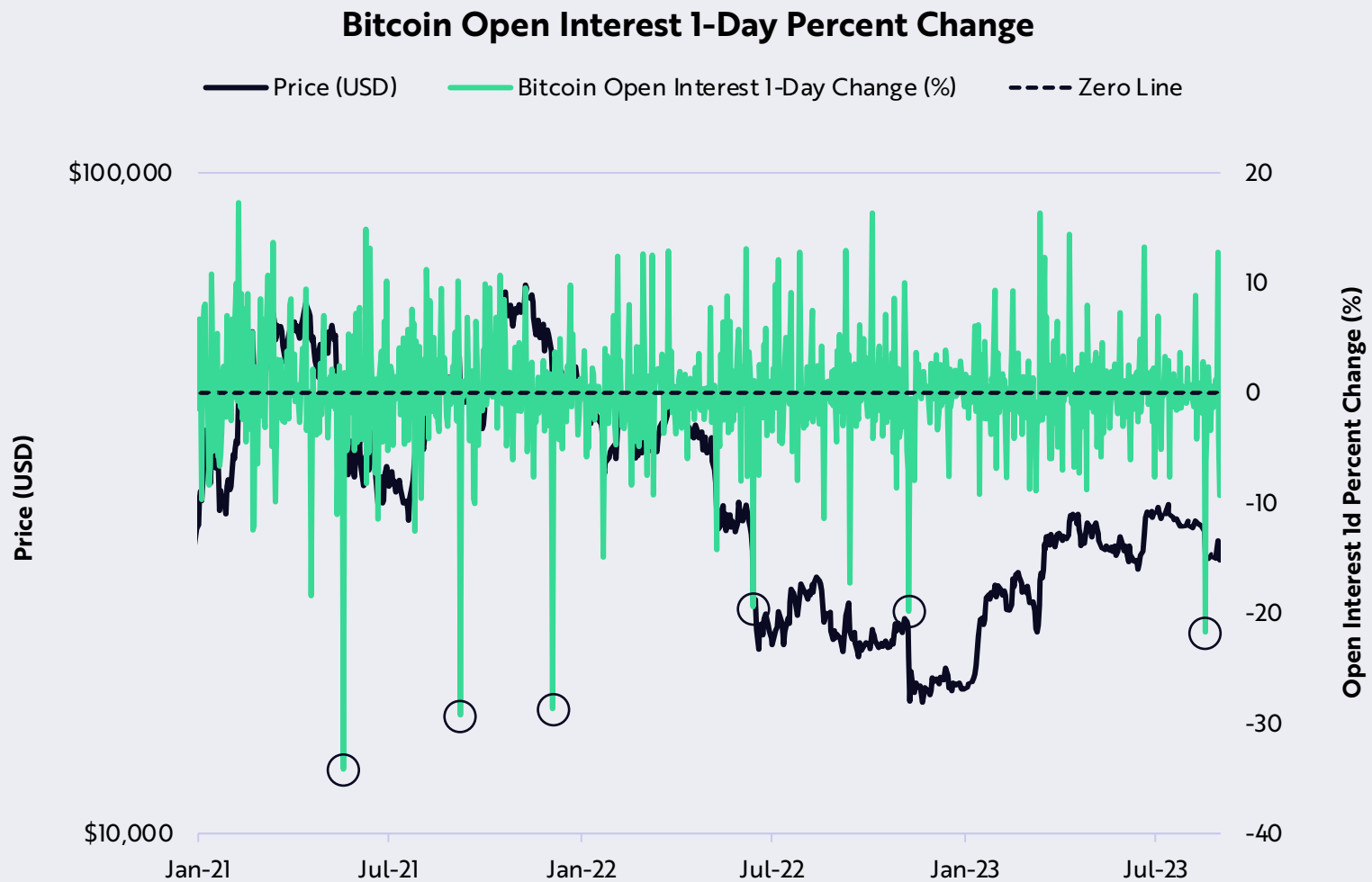
### ARK'S VIEW: BULLISH

- Encompassing both its primary and secondary markets—miners and investors, respectively—realized capitalization (cap) is the aggregate cost basis of bitcoin.
- During the fourth quarter of 2022 and the first quarter of 2023, the realized cap drawdown was -19%, its largest since 2012.
- The realized cap drawdown is a gauge of capital outflows from the network. In our view, the more severe the drawdown, the more likely bitcoin holders have exited the market—paving the way for a healthier bull market.
- Realized cap is down 15.6% from its all-time high in 2021, above the 19% low hit after the FTX collapse in November 2022. The move from 19% to 15.6% is pointing to capital inflows during the past 8 months.

Source: ARK Investment Management LLC, 2023. Chart data from [Glassnode](#). Information as of August 31, 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.



# Futures Open Interest Collapsed At A Rate Not Seen Since December 2021



**ARK'S VIEW: BULLISH**

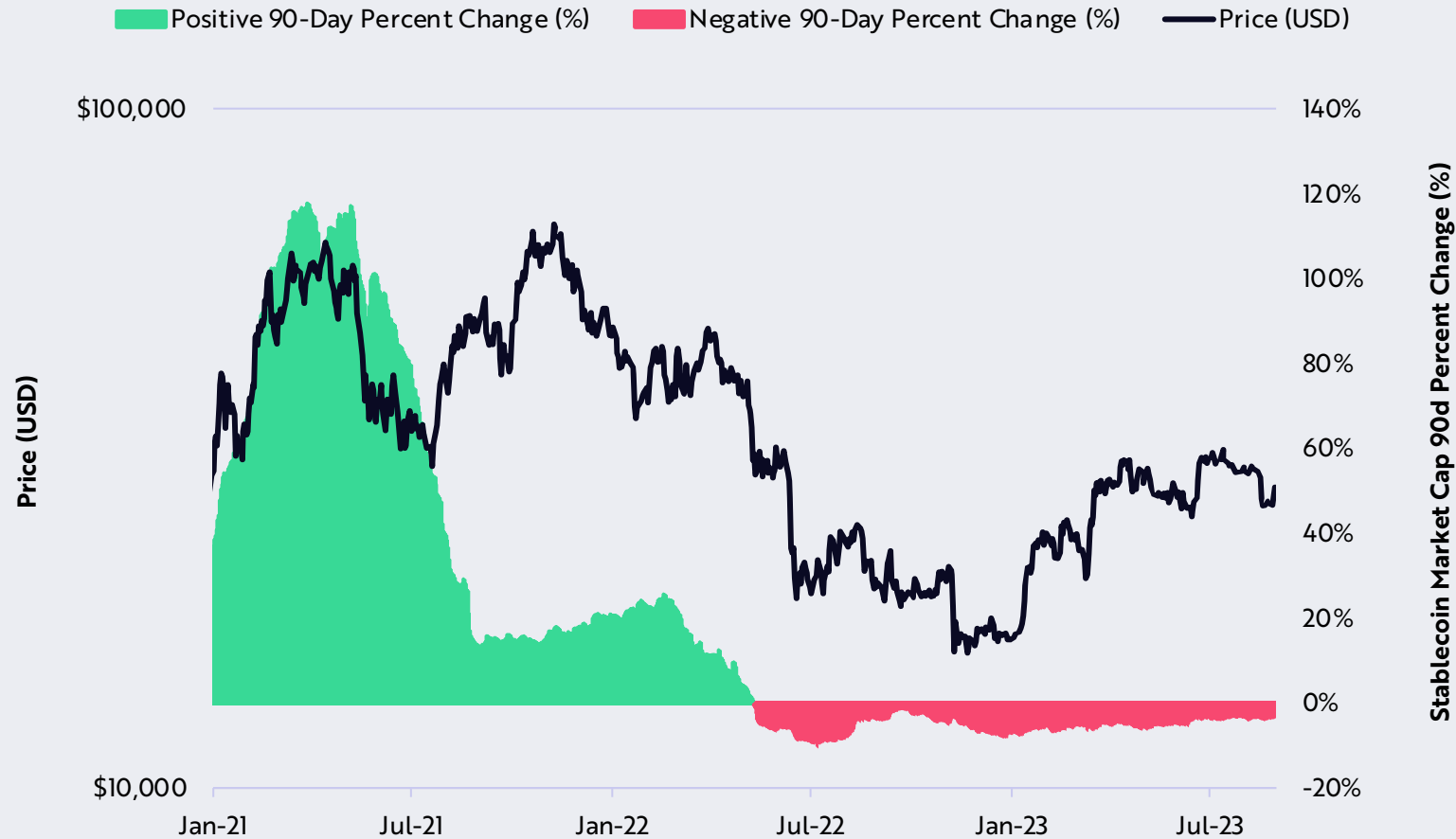
- On August 17, bitcoin futures liquidated by 21.7%, the fastest rate since December 2021.
- In our view, the price correction was a cathartic sentiment correction.

Source: ARK Investment Management LLC, 2023. Chart data from [Glassnode](#). Information as of August 31, 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 Market Cap Of Stablecoins Suggests That Buyers Are On The Sidelines

## Stablecoin Aggregate Market Cap 90-Day Percent Change



### ARK'S VIEW: NEUTRAL

- Stablecoins are a liquidity gauge for the crypto market: a higher number of circulating stablecoins suggests more capital on the sidelines—and vice versa.
- The 90-day supply of aggregate stablecoins has dropped more than 20% from \$162 billion in March 2022 to \$120 billion today, pointing to a decline in on-chain liquidity.
- That said, during the same period of time, net inflows would suggest that bullish market momentum is building.

Source: ARK Investment Management LLC, 2023. Chart data from [Glassnode](#). Information as of August 31, 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

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# Rates, Revisions, & Retail

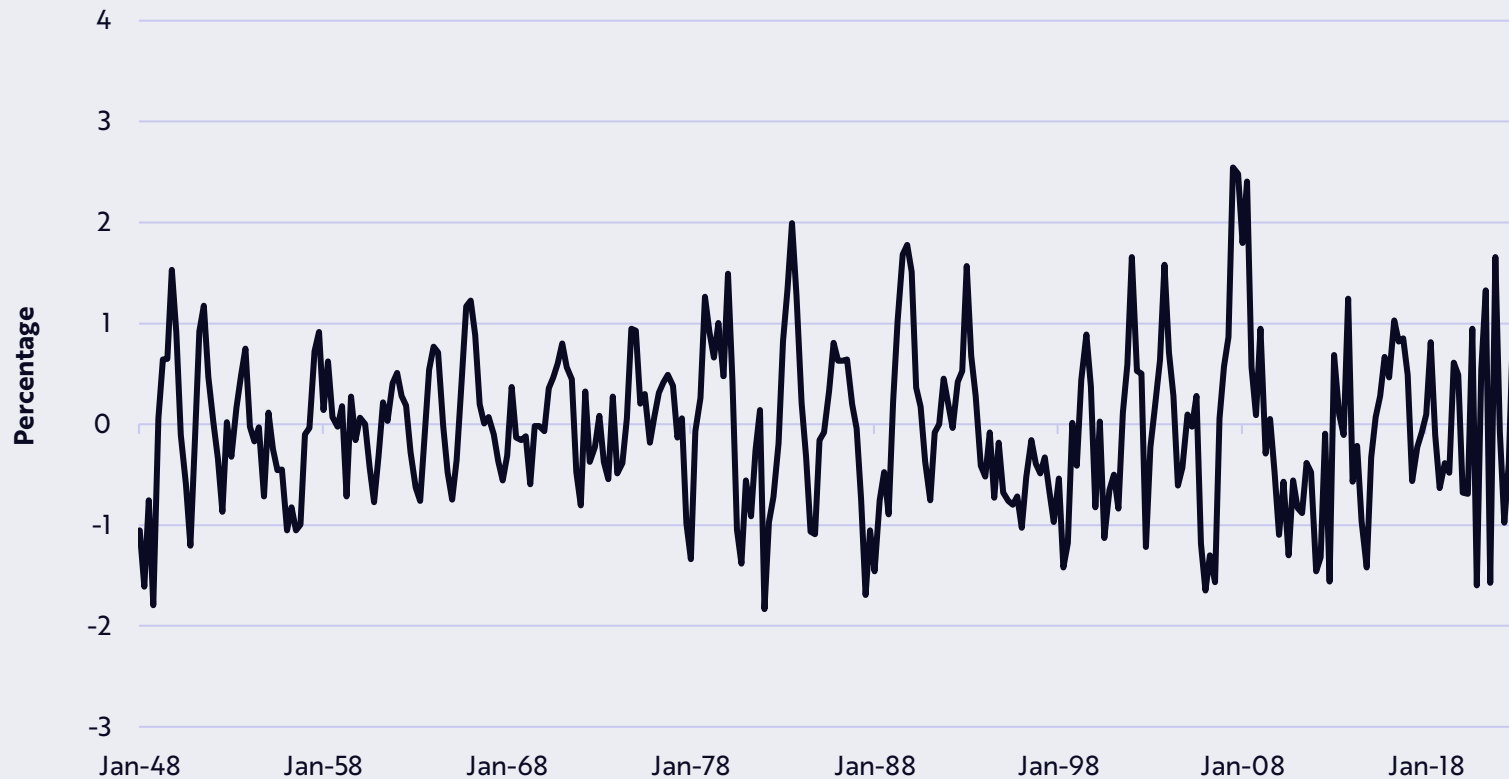






# The Record Divergence Between Real GDP And Real GDI Growth Rates Suggests Downward Revisions To Real GDP

Difference Between Year-Over-Year Percent Change in Real GDP and Real GDI



## ARK'S VIEW: BEARISH

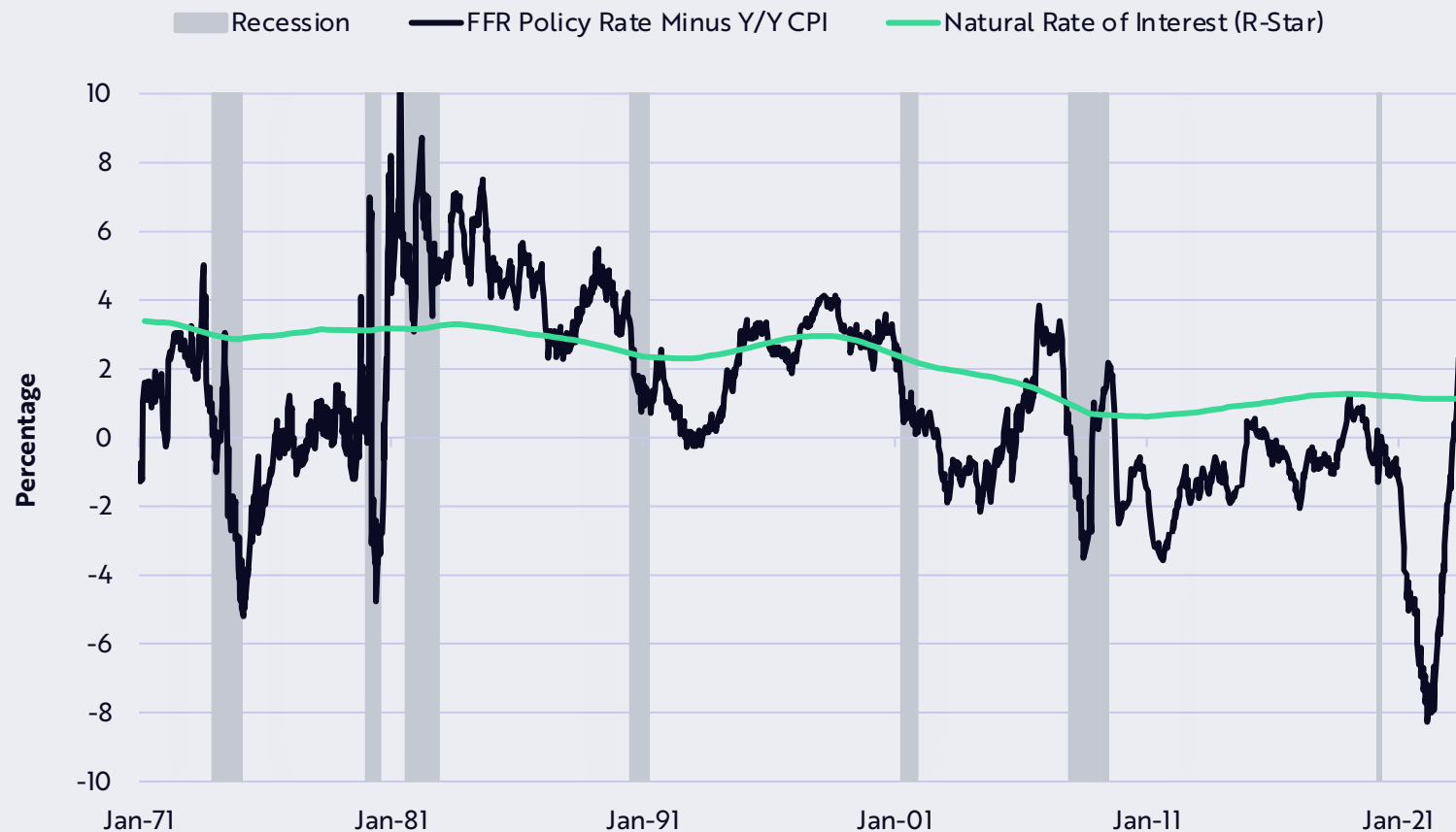
- The difference between the year-over-year percent changes in real Gross Domestic Product (GDP) and real Gross Domestic Income (GDI) is the largest on record.
- In theory, GDP and GDI should be equal: income earned should equal the value of the production of goods and services. Revisions to GDI and GDP, the latter more often than not, resolve any discrepancy over time.
- Former Federal Reserve economist, Jeremy Nalewaik, argued that GDI could be a better indicator than GDP. His research suggests that advance estimates of GDI are closer to the final estimates of both measures.

Source: ARK Investment Management LLC, 2023. Chart data from Macrobond. Information as of August 31, 2023. See the Appendix: Glossary of Terms on page 22 of this report for term definitions. 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 Real Federal Funds Policy Rate Has Surpassed The Natural Rate Of Interest

## Real Federal Funds Policy Rate vs. Natural Rate of Interest



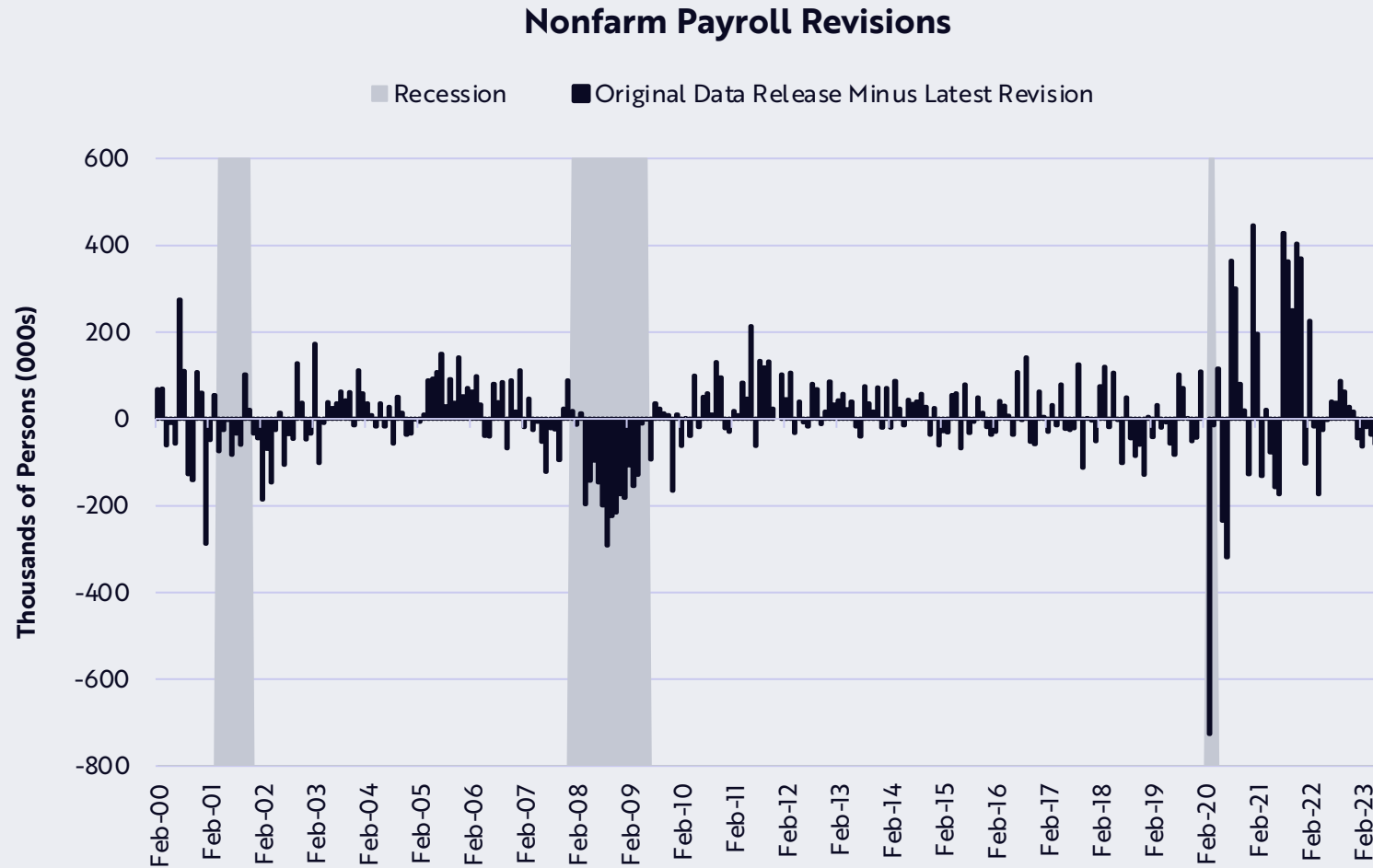
### ARK'S VIEW: BEARISH

- The Real Federal Funds Policy Rate has surpassed the Natural Rate of Interest, signaling restrictive monetary policy for the first time since 2009.
- Developed by New York Federal Reserve President, John Williams, the Natural Rate of Interest is a theoretical rate at which the economy is neither expanding nor contracting.
- Because monetary policy impacts the economy with long and variable lags, the downward pressure on lending and borrowing should intensify.
- Inflation should continue to decelerate, pushing the Real Federal Funds Policy Rate higher and increasing the spread above the Natural Rate of Interest.

Source: ARK Investment Management LLC, 2023. Chart data from Macrobond. Information as of August 31, 2023. Note: Consumer Price Index (CPI). See the Appendix: Glossary of Terms on page 22 of this report for term definitions. 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 Government Revised Employment Down For A Sixth Consecutive Month



## ARK'S VIEW: BEARISH

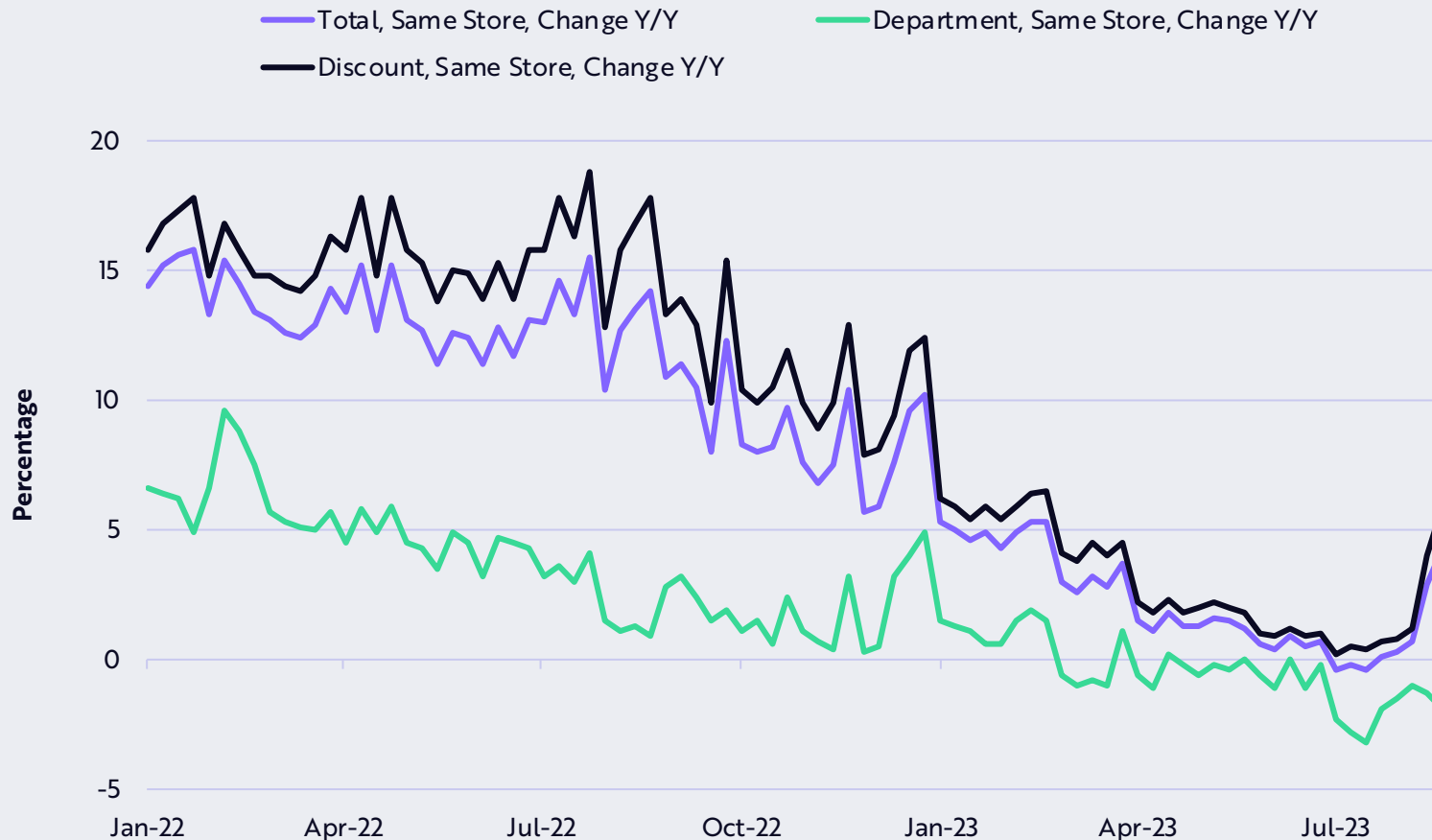
- A lagging indicator, employment has played an oversized role in the Federal Reserve's rate decisions.
- The COVID-19 pandemic led to significant labor disruptions which should be resolved by now.
- The government has revised nonfarm payroll statistics down for six consecutive months, pointing to a labor market weaker than initial reports suggested. The last time the revisions to nonfarm payrolls were down for six consecutive months in the absence of a recession was in 2007, months before the onset of the Great Financial Crisis.

Source: ARK Investment Management LLC, 2023. Chart data from Macrobond. Information as of August 31, 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 Consumer Is Responding To Price Discounts—Deflation

**Johnson Redbook Retail Sales Index**



**ARK'S VIEW: NEUTRAL**

- After a year-long slowdown in growth, total consumer spending reversed course.
- Discount store sales powered the spending increase, while department store sales continue to drop.
- The Johnson Redbook Index measures same-store sales growth on a year-over-year basis, based on a sales-weighted sample from ~9,000 large U.S. general merchandise retailers.
- By dollar value, the Johnson Redbook Index represents more than 80% of the equivalent "official" retail sales series collected and published by the U.S. Department of Commerce.

Source: ARK Investment Management LLC, 2023. Chart data from Macrobond. Information as of August 31, 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

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# 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.

**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.

**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 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.

**Gross Domestic Product (GDP):** This is the 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.

**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.

**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.”



# Glossary Of Terms

**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.

**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](http://www.ark-invest.com)**

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**This report is the result of a collaboration between ARK and Will Clemente of Reflexivity Research. Reflexivity is a research firm dedicated to the world of bitcoin and cryptocurrencies, and is unaffiliated with ARK.**