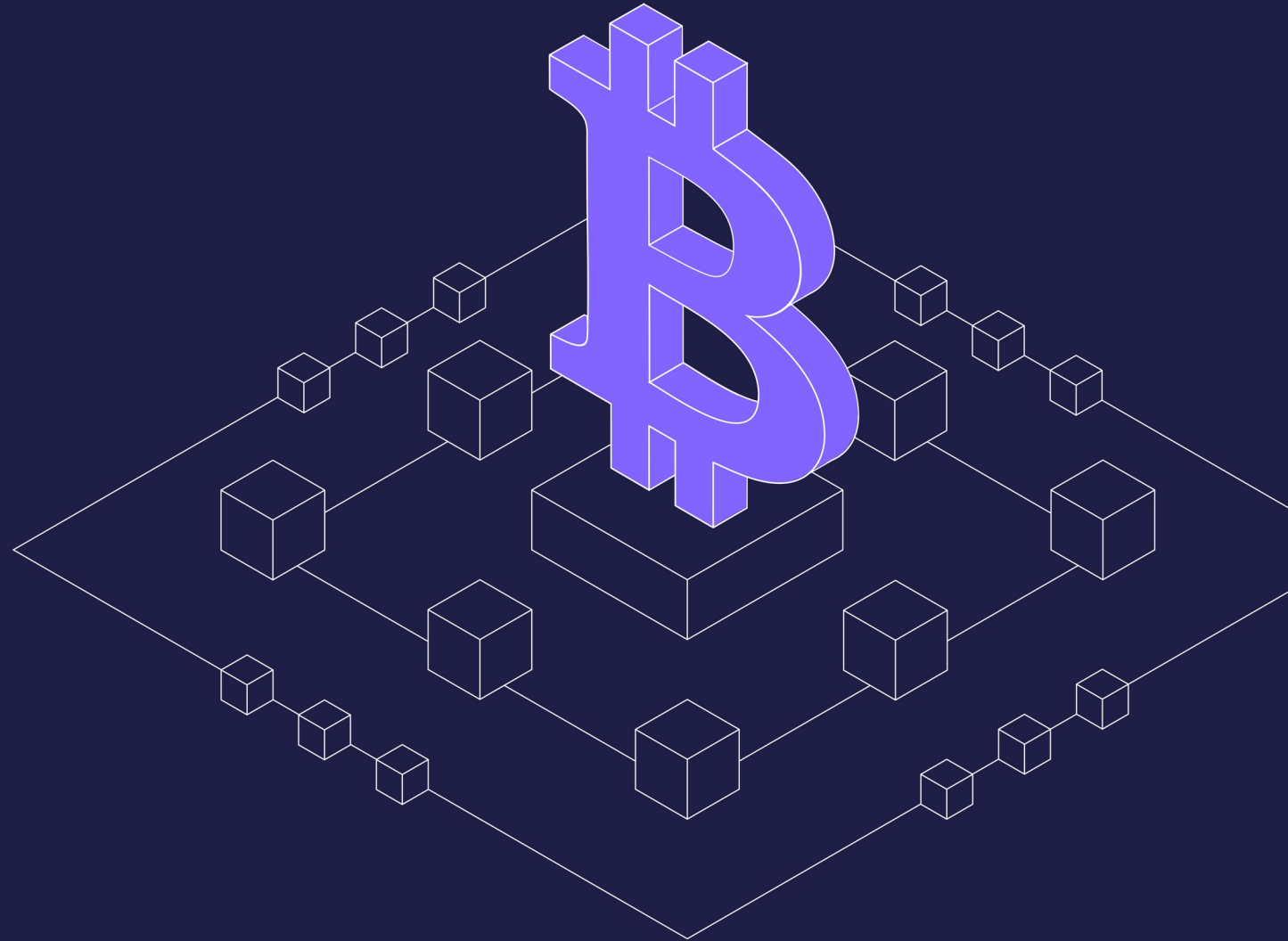




As of January 31, 2023

THE BITCOIN MONTHLY

NEW YEAR, NEW MARKET DYNAMICS



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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



Section 01

Market Summary





Bitcoin Begins 2023 With A Boom

New On-Chain Dynamics

- In the fourth quarter, bitcoin found strong support at its investor cost basis, then broke out above its total market cost basis and its 200-day moving average on January 13.
- After experiencing historical on-chain losses in November that were caused by the fall of FTX/Alameda, bitcoin rebounded, rewarding strong holder behavior in the latter half of last year.
- Bitcoin now faces a crucial inflection point: resistance at the 200-week moving average.

A Focus On Macro

- As contagion in the crypto markets dissipates, all eyes turn to the uncertain macro environment led by a drop in US money supply and an inverted yield curve. That said, the US Federal Reserve (Fed) is beginning to recognize that inflation metrics are improving.
- Many inflation measures, including the Producer Price Index (PPI), suggest that inflation has peaked and is decelerating rapidly.
- Now bitcoin's negative correlation to the US dollar has resurfaced, as BTC's price increased while the dollar declined in January.

ARK'S KEY TAKEAWAY

- Bitcoin increased 39.9% in January, closing the month at \$23,130, and traded above its market cost basis, which closed the month at \$19,800.
- Crypto lender Genesis filed for bankruptcy. Based on bitcoin's price action, the market already had discounted it. Although the fallout could impact Gemini and others, market contagion starting after the Terra/Luna collapse seems to have run its course.
- From an on-chain perspective, bitcoin is showing clear signs of recovery after posting historical losses.
- From a macro perspective, bitcoin and other risk-on assets still face the uncertainty of a drop in US money supply and an inverted yield curve.

Source: ARK Investment Management LLC, 2023. Data from [Glassnode](#) unless otherwise specified. Data valid as of January 31, 2023, and subject to change. For more information on certain terms, please read our Appendix: Glossary Of Terms on page 23 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>ARK Publishes Annual Crypto Big Ideas 2023 Report</u>	
<u>Crypto Lender Genesis Global Files For Bankruptcy</u>	
<u>Digital Currency Group To Shutter Wealth Management Unit</u>	
<u>Gemini Lays Off 10% Of Staff Amid Troubles At Genesis</u>	
<u>CoinDesk Explores Full Or Partial Sale To Attract Growth Capital, CEO Says</u>	
<u>Bankman-Fried Pleads Not Guilty To Criminal Charges</u>	
<u>Binance, Mastercard Issuing Prepaid Card In Brazil As Regional Crypto Interest Grows</u>	
<u>Binance CEO Outlines Ambitions To Grow Headcount By Up To 30% In 2023</u>	
<u>Uniswap On BNB Chain: Wormhole Wins Bridge Selection Vote</u>	
<u>Silvergate Shares Plunge As Company Cuts Workforce Amid "Transformational Shift"</u>	
<u>ConsenSys Confirms 11% Staff Cut</u>	
<u>Coinbase To Pay \$100 Million Over Failure To Scale AML As Business Boomed</u>	
<u>Bitcoin Developer Claims Loss Of \$3.3 Billion After PGP Exploit</u>	
<u>Indonesia Plans To Launch Its Own Crypto Exchange</u>	
<u>SEC Bats Down ARK's And 21Shares' Second Bitcoin ETF Proposal</u>	



With Rising Prices, Network Activity And Holder Behavior Saw A Boost

	Bitcoin Metrics ¹	Unit	January 2022	1M Change	1Y Change	ARK's View	Upgrade/Downgrade ³
Network Security	<u>Mining Difficulty</u>	Exahash/sec ¹ (Thousands)	169	+11.2%	+47.6%	Bullish	↑
	<u>Miner Revenue</u> (7-Day Moving Average)	USD (Millions)	\$22.2	+43.7%	-34.3%	Bullish	↑
Network Usage	<u>Active Owners</u> ² (Active Entities, 7-Day Moving Average)	Thousands	267.8	+16.2%	+2.7%	Bullish	↑ ↑
	<u>Transaction Volume</u> ² (7-Day Moving Average)	BTC (Thousands)	128.3	-2.5%	-20.8%	Neutral	No Change
Holder Behavior	<u>Long-Term-Holder Supply</u> ² (Coins Held for 155 Days+)	BTC (Millions)	14.06	+0.3%	+5.3%	Bullish	No Change
	<u>Locked Supply</u> ² (Illiquid Supply)	BTC (Millions)	15.11	+0.6%	+7.7%	Bullish	No Change
	<u>Time-Weighted Turnover</u> ² (Coindays Destroyed, 7-Day Median)	Coindays (Millions)	9.11	-21.6%	+7.3%	Bullish	↑ ↑

[1] For more information on these metrics and their units of account, please read the Appendix: Glossary of Terms on page 23 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 January 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.

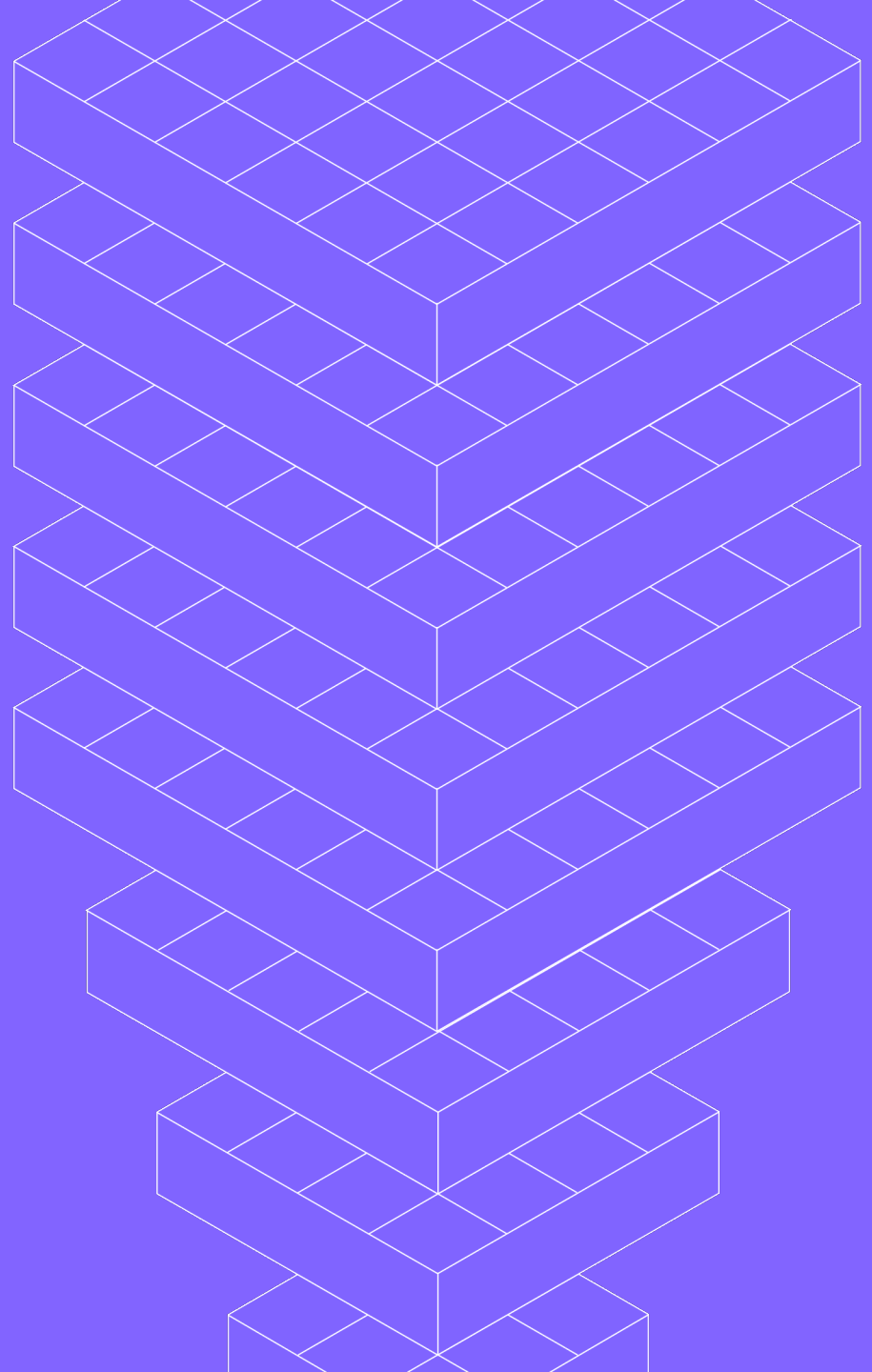


Bitcoin Now Stands Above Its Market Cost Basis

	Bitcoin Metrics ¹	Unit	January 2022	1M Change	1Y Change	ARK's View	Upgrade/Downgrade ³
Long-Term Valuation	<u>Market Cost Basis</u> (Realized Price)	USD	\$19,794	+0.3%	+5.3%	Bullish	No Change
	<u>Percent Supply In Profit</u>	pp	71%	+22.8 pp	+1.5 pp	Bullish	No Change
Short-Term Valuation	<u>Short-Term-Holder Cost Basis²</u> (STH Realized Price)	USD	\$18,993	+5.7%	-61.1%	Bullish	No Change
	<u>Realized Market Returns²</u> (SOPR-1, 7-day moving average)	pp	2.1%	+13.1 pp	+7.4 pp	Bullish	↑
Market Sentiment	<u>Perpetual Futures Basis</u> (Binance, Estimated, 7-Day Exponential Moving Average)	pp	-0.02%	+0.02 pp	+0.03 pp	Bullish	No Change
	<u>Expirational Futures Basis</u> (Quarterly, All Exchanges, Annualized)	pp	3.4%	+4 pp	-1.8 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 23 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 January 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.

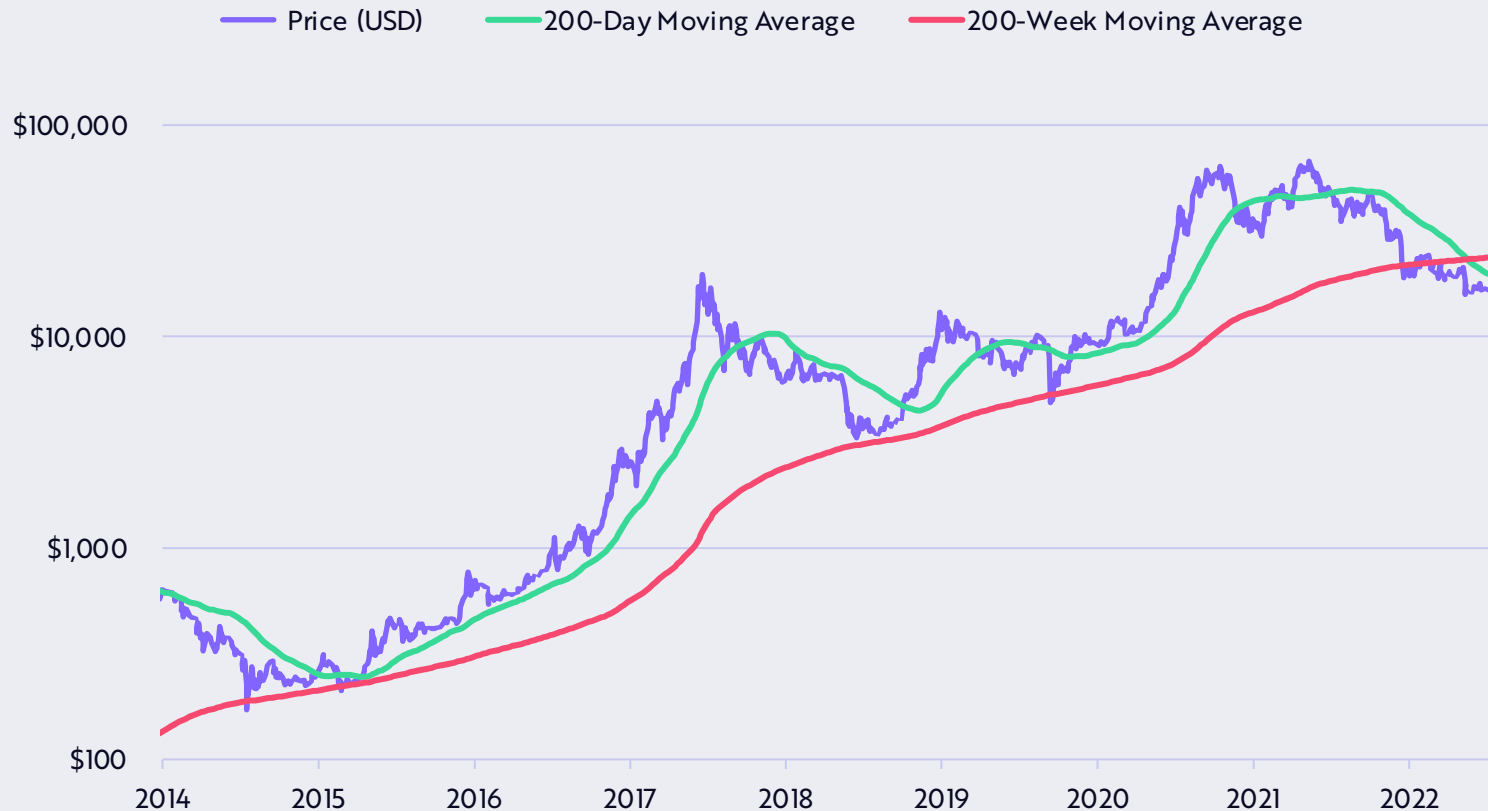
New On-Chain Dynamics





After Regaining Its 200-Day Moving Average, Bitcoin May Find Resistance At Its 200-Week Moving Average

Bitcoin Price Versus Its 200 WMA And 200DMA



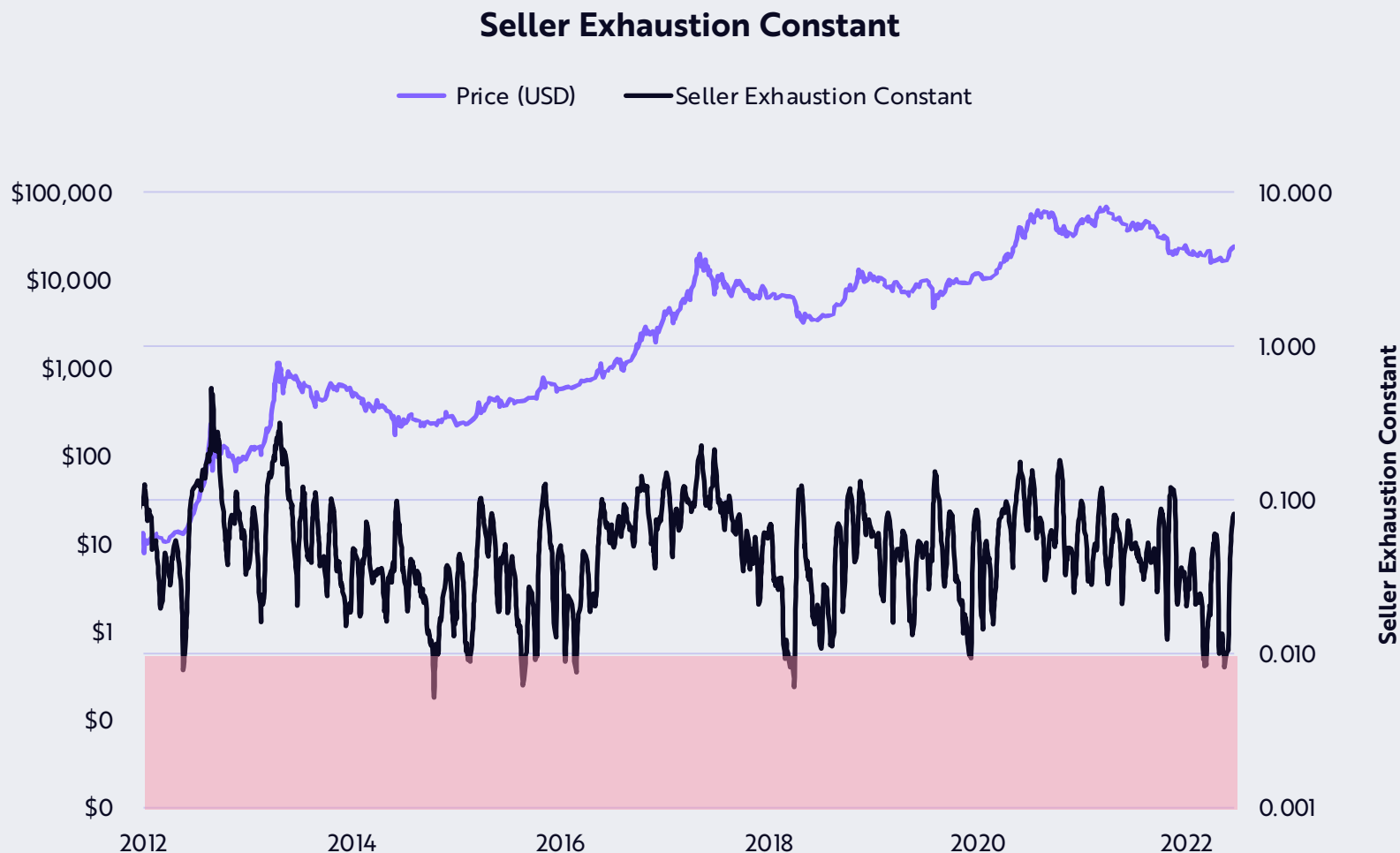
ARK'S VIEW: NEUTRAL

- In the aftermath of extensive contagion during 2022, bitcoin is trading above its 200-day moving average for the first time since December 2021.
- On a 30-day basis, bitcoin closed up 39%, the highest percent change since October 2021.
- Bitcoin now stands near critical resistance: the 200-week moving average. At \$23,930, the 200-week moving average has been above the daily price for 30 weeks, the longest such period in history.

Source: ARK Investment Management LLC, 2023. Data from [Glassnode](#). Information as of January 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 Overcame Seller Exhaustion In January



ARK'S VIEW: BULLISH

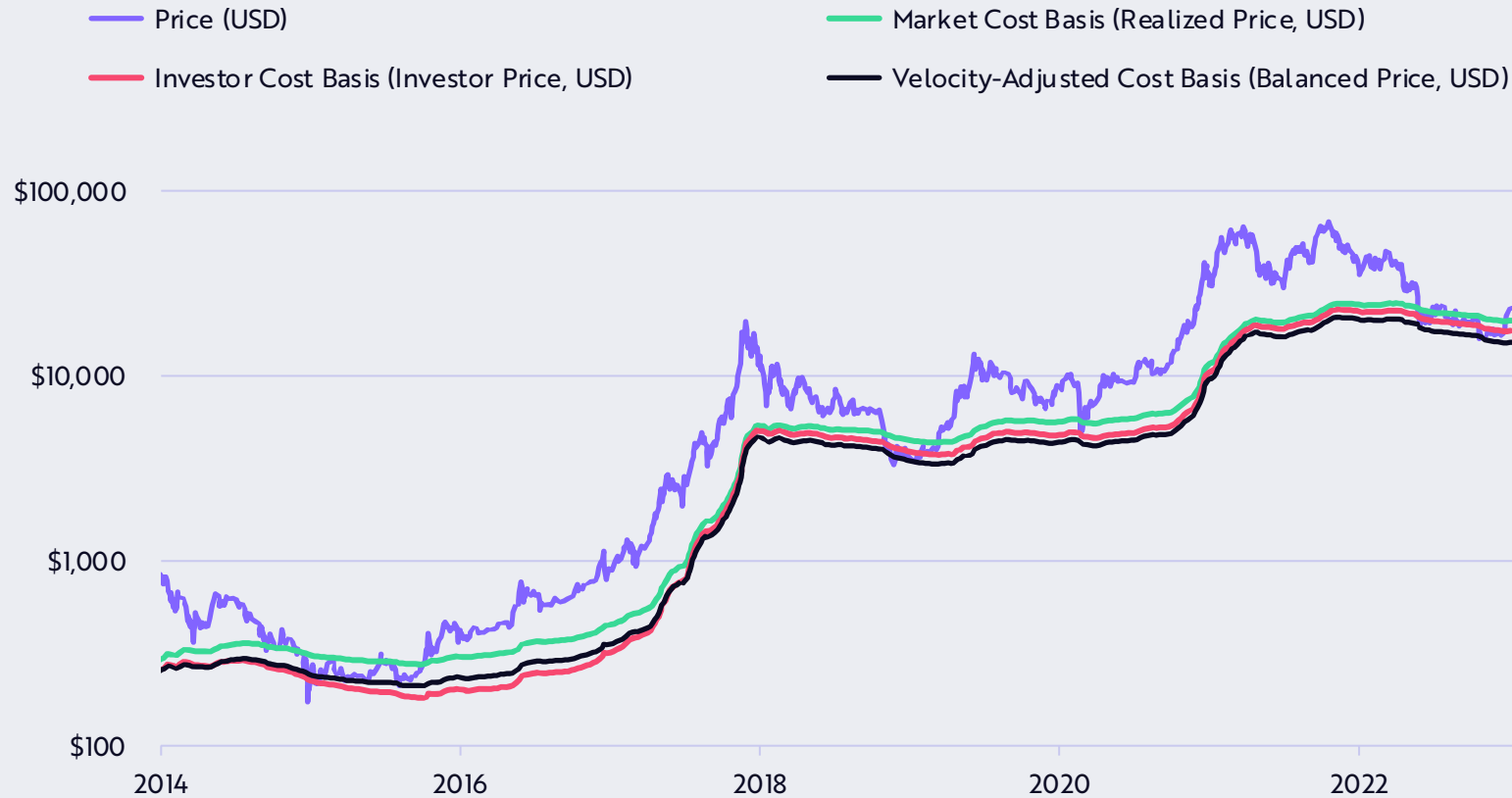
- An ARK original metric, the “seller exhaustion constant” measures the convergence of two market factors: high losses denoting capitulation and low volatility denoting market exhaustion.
- The metric is calculated by multiplying the percentage of bitcoin supply in profit by the 30-day price volatility. Values at or below 0.01 tend to be bullish markers.
- The [seller exhaustion constant](#) produced two of these signals in the fourth quarter, one in October and another in December after the fall of FTX. These stand as the first instances below 0.01 since July 2020, after which the price appreciated 441% within the next nine months.
- In January, this metric rebounded from 0.01, as the percentage of supply in profit increased from 48% to 71%.

Source: ARK Investment Management LLC, 2023. Data from [Glassnode](#). Information as of January 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.



Bitcoin Surpassed Multiple Cost Bases In January

Bitcoin's Price Now Trades Above Each Of Its Cost Bases



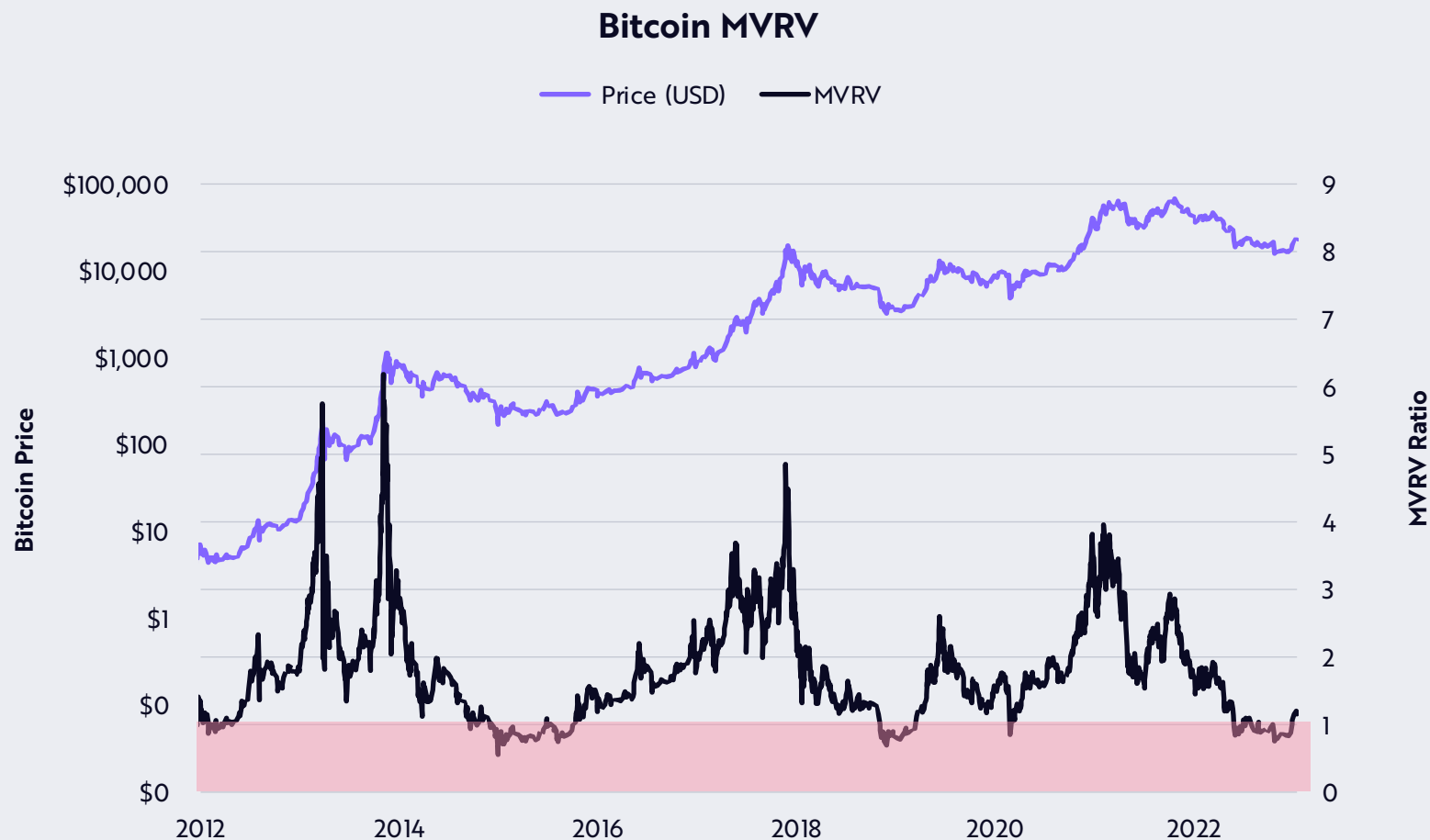
ARK'S VIEW: BULLISH

- For the first time since dropping below its market cost basis (realized price) last June, bitcoin is now back above it convincingly in January, marking the second longest period below its general cost basis in history.
- Bitcoin also seems to have found two other floors—at its investor costs basis (investor price) and its velocity-adjusted costs basis (balanced price).
- Based on our research, these adjusted cost bases indicate that market exuberance has dissipated, suggesting fair market value.

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Bitcoin's MVRV Crossed Above 1 For The First Time Since August 2022



ARK'S VIEW: BULLISH

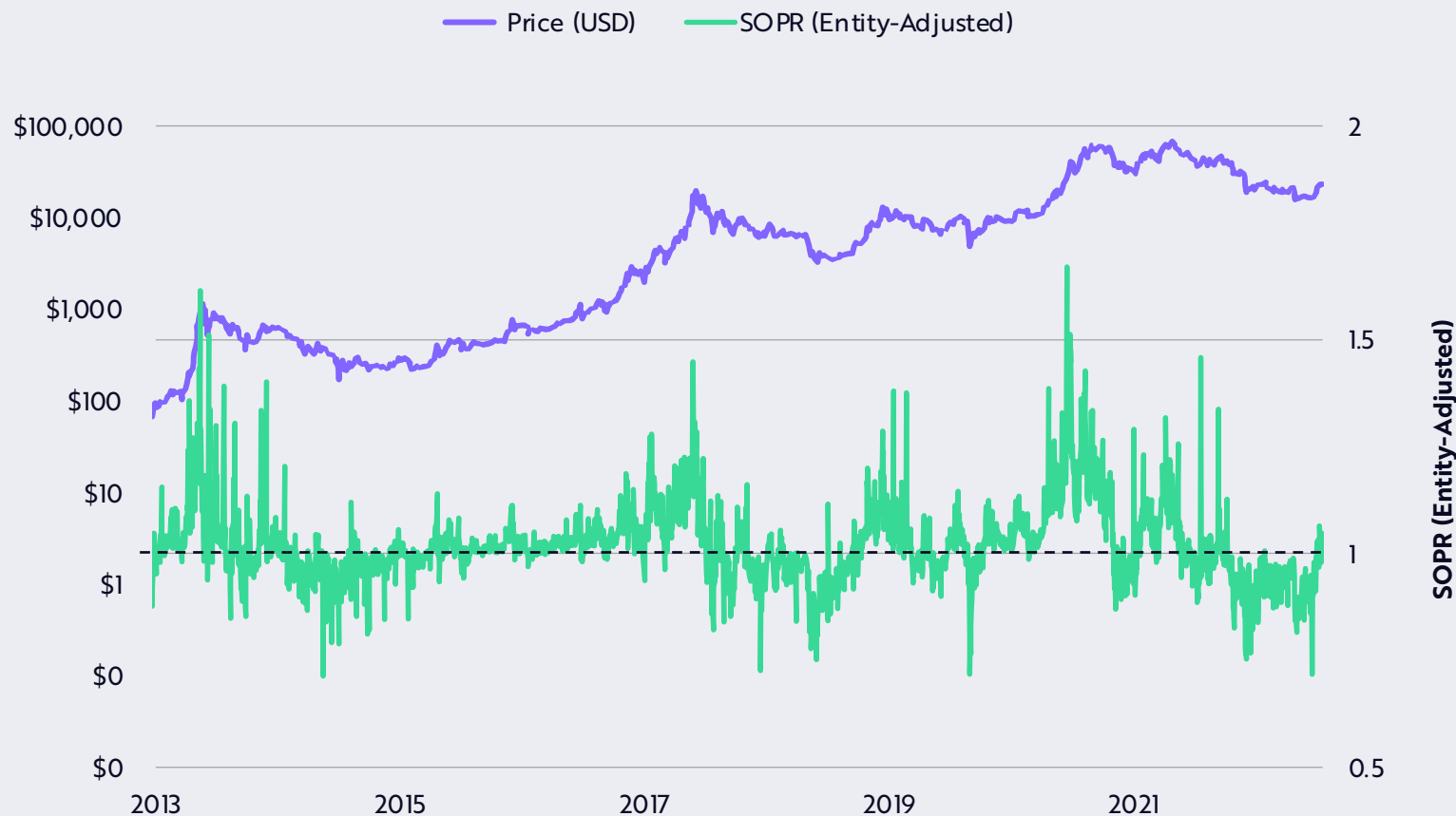
- Another illustration of bitcoin relative to its market cost basis, the market-value-to-realized-value (MVRV) ratio showcases historical zones of under- or over-valuation. Whenever MVRV is below 1, the market in aggregate is at a loss, suggesting periods of deep value.
- An MVRV consistently above 1 this quarter (Q1) and into Q2 2023 would suggest that the capitulation is complete.
- The last half of 2022 and January of 2023 mark the fifth time in history when bitcoin has been "oversold" (MVRV below 1) from this on-chain perspective.

Source: ARK Investment Management LLC, 2023. Data from [Glassnode](#). Information as of January 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.



SOPR Shows Net Profits In The Market For The First Time Since April 2022

SOPR Has Crossed Above 1, A Strong Sign Of Recovery



ARK'S VIEW: BULLISH

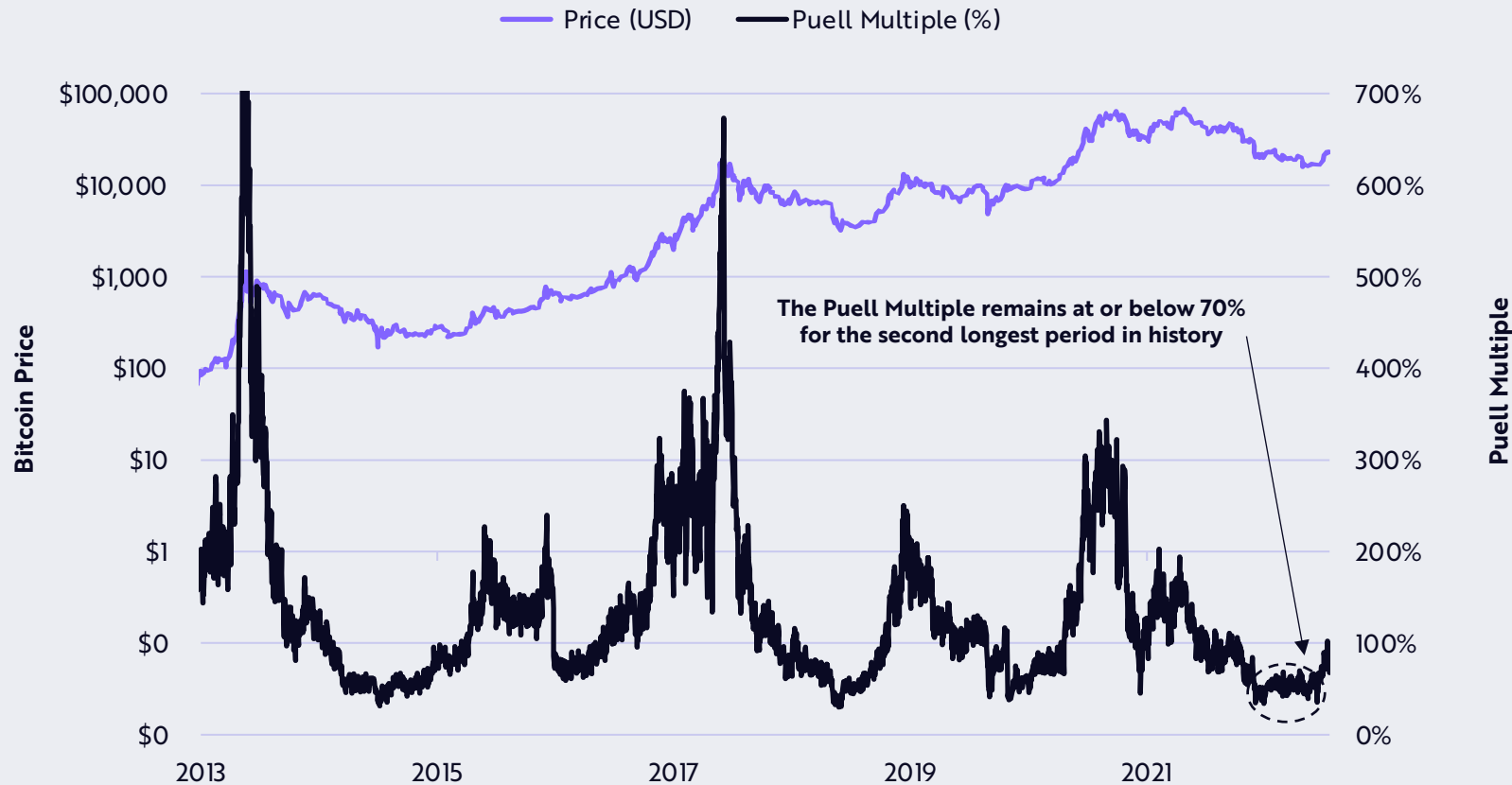
- The “spent output profit ratio” (SOPR) has risen above 1 for the first time since April 2021.
- Also, known as “realized returns,” this metric calculates the ratio between the average purchase price and sale price of a coin, measuring the realized profits of coins transacted on any given day. According to our research, a SOPR at 1 suggests a market at breakeven, providing tops during bear markets and bottoms during bull markets.
- If SOPR tests and holds above 1, the bull market will be confirmed in our view.

Source: ARK Investment Management LLC, 2023. Data from [Glassnode](#). Information as of January 31, 2023. Data may be subject to change over time since it is entity-adjusted in real time via a machine-learning algorithm. 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.



Relative Yearly Miner Profitability Improved From 62% To A Peak of 101% During January

Relative Yearly Miner Profitability (Puell Multiple)



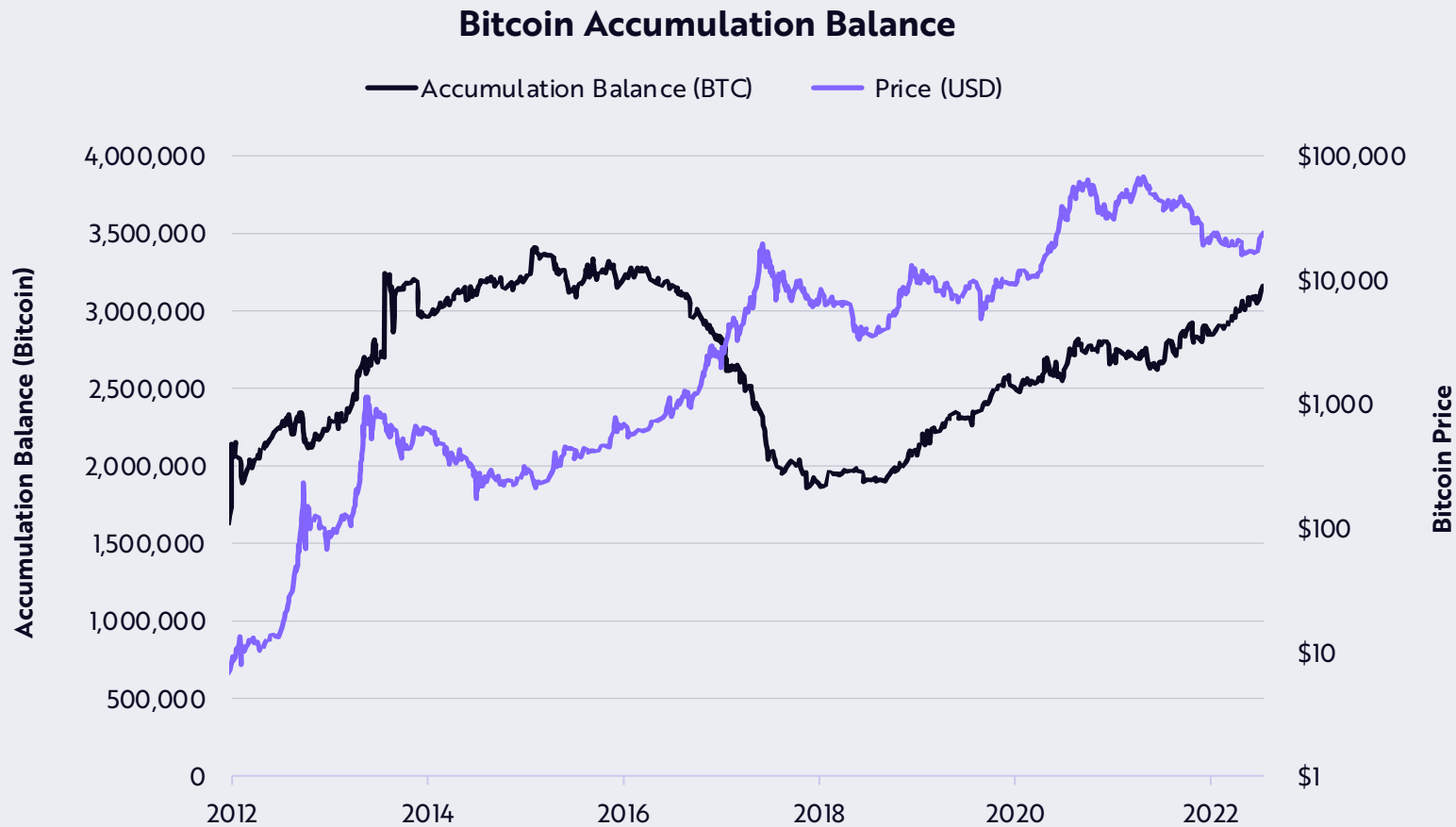
ARK'S VIEW: BULLISH

- The Puell Multiple measures the daily miner revenue in USD against its trailing 365-day average.
- This metric saw miners at $\leq 70\%$ of their yearly average income for the second most prolonged period in history—from June to December 2022—suggesting a sustained hostile environment for bitcoin producers.
- After a trying period starting in June 2022, January gave miners some relief, as daily revenue hit 101% of its trailing 365-day average.
- Further, sustained miner profitability is another major sign that would confirm that there is less stress on the ecosystem and, therefore, a lower probability of increased selling pressure.

Source: ARK Investment Management LLC, 2023. Data from [Glassnode](#). Information as of January 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.



The Number Of Bitcoin In Accumulation Addresses Is Approaching Its 2015 All-Time High



ARK'S VIEW: BULLISH

- Nearly eight years since its all-time high in 2015, the number of bitcoin in accumulation addresses is just 7.5% away from reaching that high again.
- Accumulation addresses are defined as addresses that have received at least two deposits and have never spent the funds.
- In our view, the consistent rise of this metric since June of 2018 suggests that the focus of bitcoin holders has been long-term despite extreme market volatility and contagion.

Source: ARK Investment Management LLC, 2023. Data from [Glassnode](#). Information as of January 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.



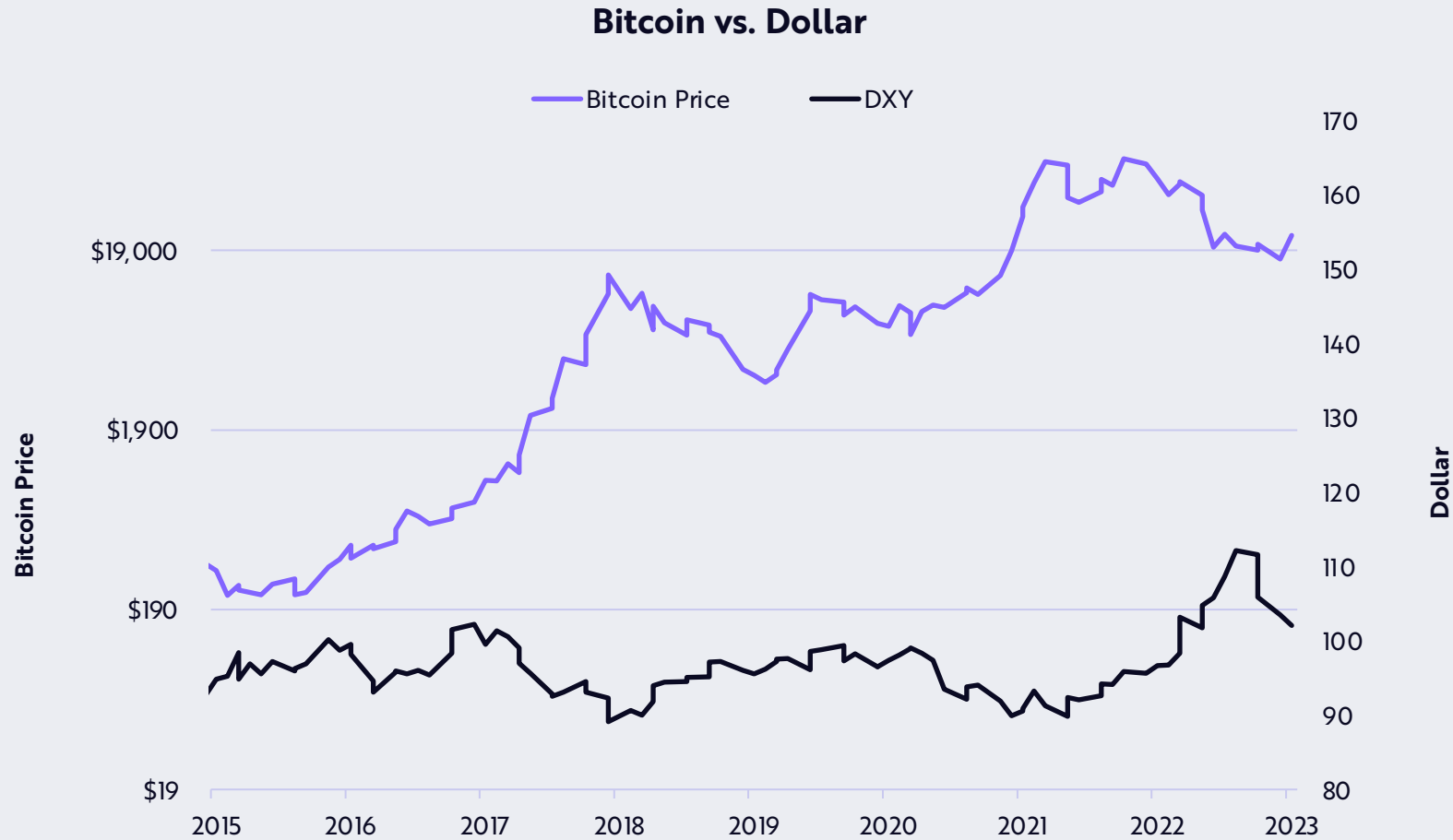
Section 03

A Focus On Macro





The Negative Correlation Between Bitcoin And The Dollar Resumed In January



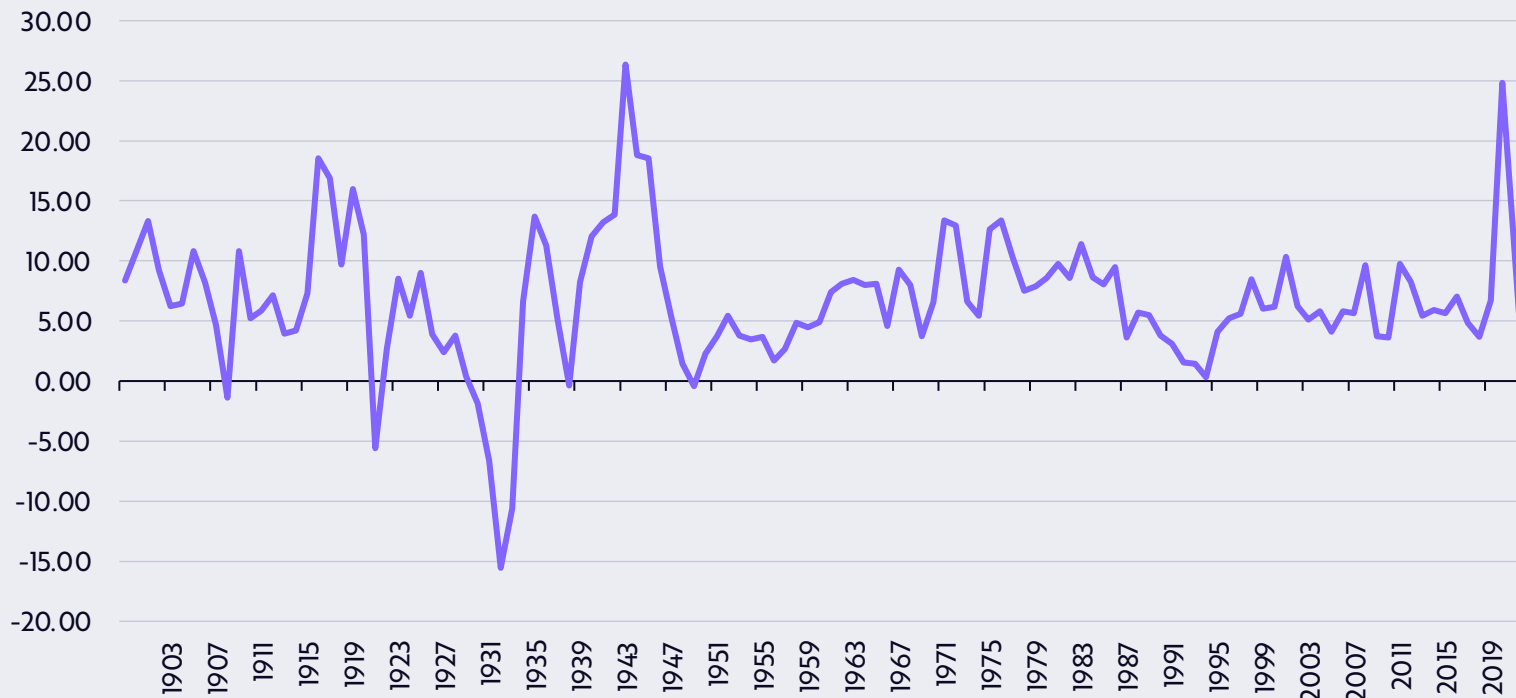
ARK'S VIEW: NEUTRAL

- After a sustained negative correlation during 2021 and most of 2022, bitcoin and the US dollar decoupled during the FTX implosion.
- After the trade-weighted dollar (DXY) peaked in September, bitcoin did not trough until November.
- As the bitcoin price rose nearly 40% during January, the negative correlation between bitcoin and the dollar resumed.



M2¹ Is Dropping On A Year-Over-Year Basis For The First Time Since The Great Depression Era And The Post-WWII Period

US M2 YoY Percent Change (%)



ARK'S VIEW: BEARISH

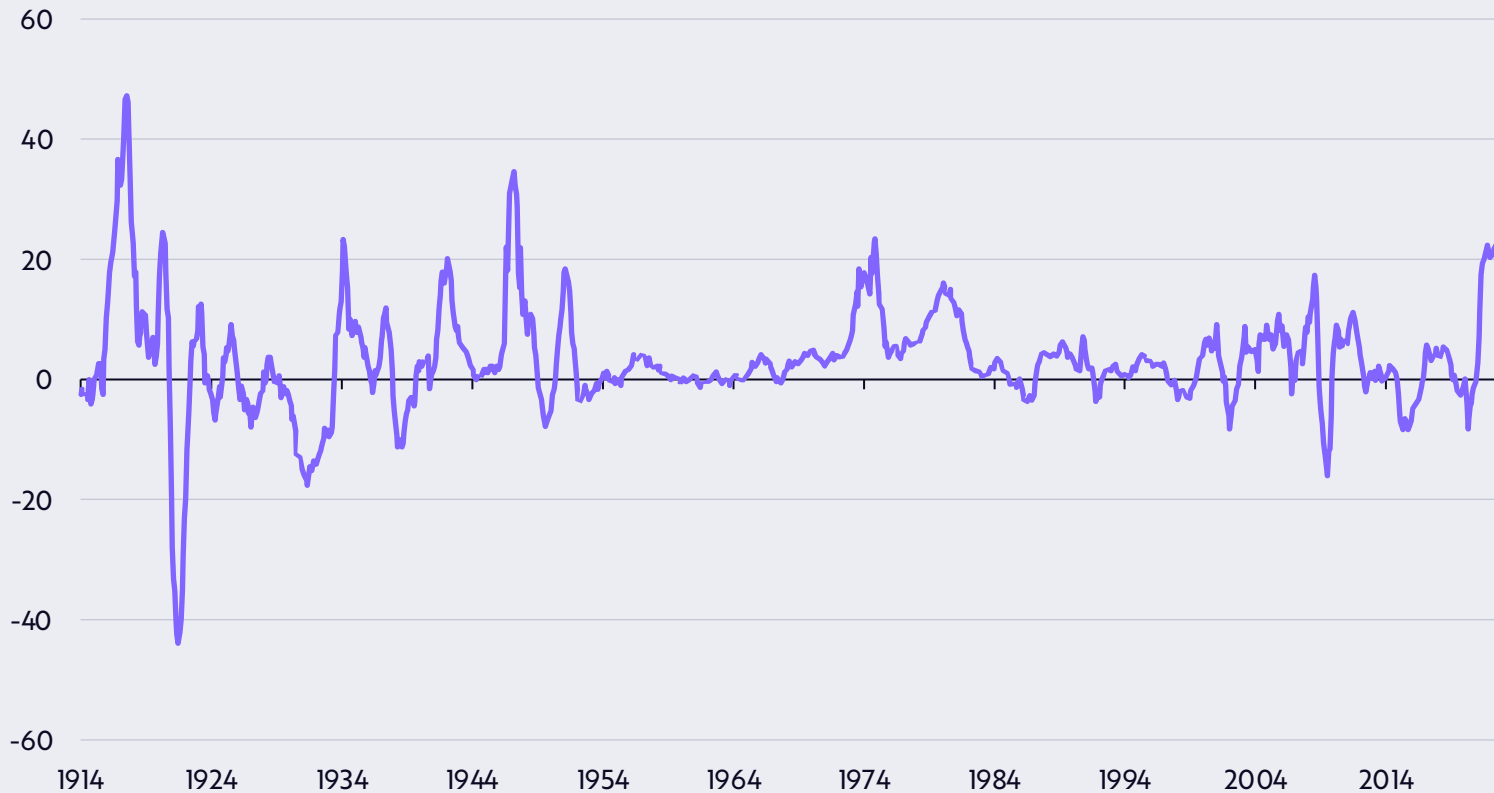
- If money supply as measured by M2 were to continue falling, risk-on assets in capital markets could be constrained during 2023.

[1] M2 is a measure of the US money stock that includes currency and coins held by the non-bank public, checkable deposits, and travelers' checks (M1) plus savings deposits (including money market deposit accounts), small time deposits under \$100,000, and shares in retail money market mutual funds. Source: ARK Investment Management LLC, 2023. Data from US Census Bureau (https://www.census.gov/library/publications/1975/compendia/hist_stats_colonial-1970.html) and FRED (<https://fred.stlouisfed.org/series/M2SL#0>). Information as of January 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.



The Producer Price Index¹ Is Pointing To A Rapid Decline In Inflation

Producer Price Index (PPI) YoY Percent Change (%)



ARK'S VIEW: NEUTRAL

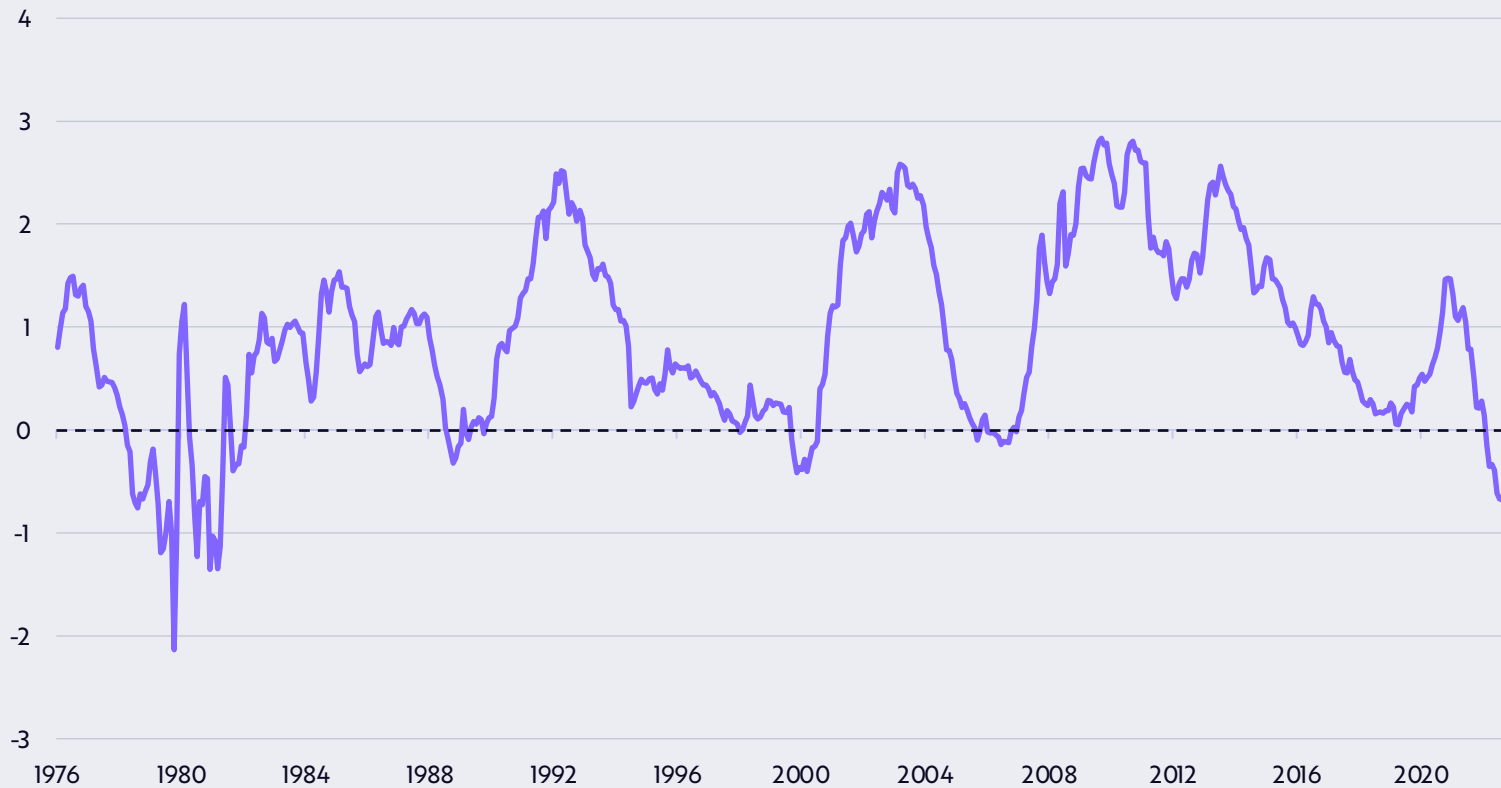
- As measured by the Producer Price Index (PPI), inflation has dropped from 22.6% on a year-over-year basis in November 2021, a 47-year high, to 6.9%.
- Measuring wholesale inflation, the PPI is a leading indicator of broad-based inflation.
- In our view, a further decrease in PPI would increase the likelihood of a Fed pivot and renewed monetary expansion.

[1] The Producer Price Index (PPI) measures the average change over time in the prices US domestic producers receive for their output. It is a measure of inflation at the wholesale level. Source: ARK Investment Management LLC, 2023. Data from FRED (<https://fred.stlouisfed.org/series/PPIACO#0>). Information as of January 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.



The Yield Curve¹ Has Not Been This Inverted In 42 Years

US Yield Curve (10-Year Minus 2-Year, %)



ARK'S VIEW: BEARISH

- The US yield curve still suggests uncertainty at the start of 2023.
- After inverting last July, the curve is pointing to recession, which would be consistent with a pivot to monetary expansion.

[1] The US Yield Curve shows the interest rate associated with different contract lengths for a particular debt instrument, in this case the US 10-year and the 2-year Treasury Bills. Source: ARK Investment Management LLC, 2023. Data from TradingView. Information as of January 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.



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. Coins held in these addresses is named accumulation balance.

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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