



LAVA FLOW CHART BOOK

November 2024

TABLE OF CONTENTS

Chart Title

Page Number



- Bitcoin (BTC) Post-Halving Performance..... [1](#)
- Performance of a Standard 60/40 Portfolio with Varied Amounts of BTC Exposure..... [2](#)
- 1-Year Rolling Annualized Realized Volatility..... [3](#)
- Crypto Ownership by Continent in 2024..... [4](#)
- Net Inflows to Store of Value ETFs..... [5](#)
- Bitcoin Mining: Renewable Energy Mix and Network Efficiency..... [6](#)
- YTD Net Inflows to Bitcoin (BTC) ETFs..... [7](#)
- Bitcoin Puell Multiple..... [8](#)
- Three-Year Rolling Average: Bitcoin (BTC) & Stablecoin Transaction Volume vs. Other Payment Networks..... [9](#)
- Monthly Active Crypto Users..... [10](#)
- 1-Year Rolling Price Correlation of Crypto to Other Major Asset Classes..... [11](#)
- Composition of Bitcoin (BTC) Ownership in America..... [12](#)
- Decentralized Exchange Volume as % of Total Exchange Volume vs. Cloud Computing Spend as % of Total Computing Spend [13](#)
- Bitcoin Mayer Multiple..... [14](#)
- Cumulative Revenue of Ethereum (ETH) vs. Major Tech Companies..... [15](#)
- Estimated Cumulative Bitcoin (BTC) Network Capital Expenditure and Hash Rate..... [16](#)
- US and Global M2 vs. Bitcoin (BTC) Price..... [17](#)
- DePIN Network Categories by Fully-Diluted Market Value (\$bn)..... [18](#)
- Relative Change in Bitcoin (BTC) Price Across Major Currencies (Indexed to 1)..... [19](#)
- Relative Change in Bitcoin (BTC) Price Across Hyperinflationary Currencies (Indexed to 1)..... [20](#)
- Bitcoin (BTC) Price Versus Total Supply Overhang and Inverse of US Dollar Index..... [21](#)
- Top 20 Foreign Holders of US Government Debt..... [22](#)
- Top 20 Foreign Holders of Short-Term US Government Debt..... [23](#)
- Government Interest Expense as % of Total Revenue..... [24](#)
- Annual Implied Mark-to-Market Government Interest Expense as % of Total Revenue..... [25](#)
- Bitcoin (BTC) Hash Rate Multiple vs. BTC Price..... [26](#)
- US Government Interest Expense as % of Total Receipts..... [27](#)
- US Fed Funds Rate vs. Spread of 2-Year Treasury Yield Minus US Fed Funds Rate..... [29](#)
- Total Bitcoin (BTC) Trading Hours vs. Total US Stock Market Trading Hours Since Bitcoin (BTC) Inception..... [30](#)
- Year-to-Date Percentage of Positive Net Inflow Days for Bitcoin (BTC) and Gold ETFs..... [31](#)
- Bitcoin (BTC) Long-Term Holdings as Percentage of Global US Dollar FX Reserves..... [32](#)

TABLE OF CONTENTS CONTINUED...

Chart Title

Page Number



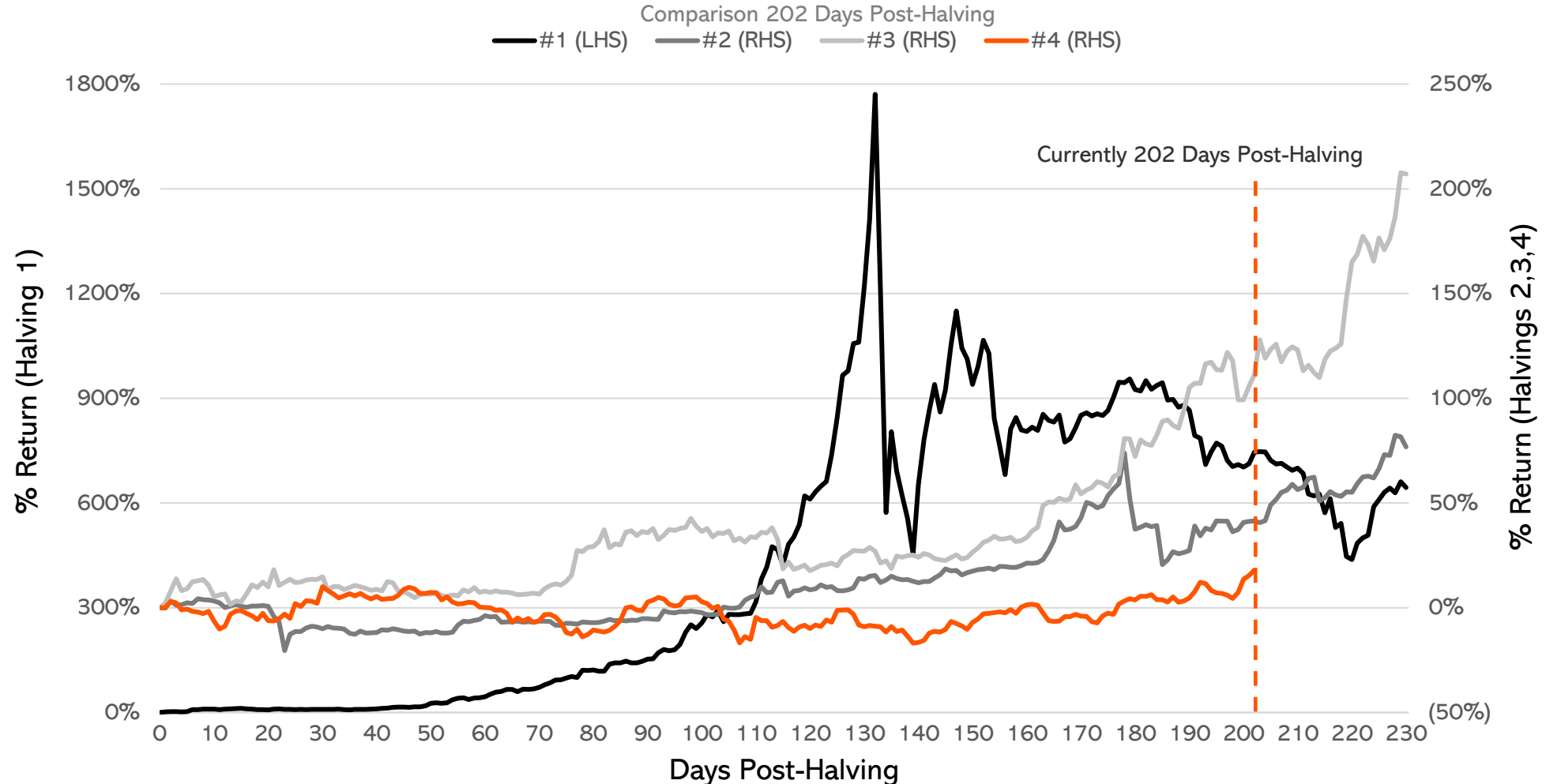
| | |
|--|--------------------|
| Total Value of Tokenized Blockchain Assets by Sector..... | 33 |
| Average Transaction Cost as Percentage of Volume: Blockchain vs. Major Payment Networks..... | 34 |
| Total User Adoption: Crypto vs. the Internet..... | 35 |
| S&P 500, Gold, Bond, and Bitcoin (BTC) Performance Through Major Geopolitical Events..... | 36 |
| Time-Shifted Bitcoin (BTC) vs Gold Performance..... | 37 |
| Trailing 12-Month Net Income per Employee..... | 38 |
| Bitcoin (BTC) Performance Relative to September 1st of Each US Election Year..... | 39 |
| Central Bank Rate Cuts vs. Year-over-Year Bitcoin (BTC) Performance and Global M2 Supply..... | 40 |
| Bitcoin (BTC), Global M2 and Gold Annual Supply Growth..... | 41 |
| Market-Weighted Crypto Staking Ratio Index..... | 42 |
| Bitcoin (BTC) and S&P 500 Returns Through Jewish Holidays and October..... | 43 |
| 1 BTC is Still 1 BTC: Implied Fiat Currency Devaluations Since 2000..... | 44 |
| Total Crypto Market Cap vs. Crypto VC Fundraising..... | 45 |
| Energy Consumption Mix: World vs. Bitcoin (BTC) Network..... | 46 |
| Bitcoin vs. Gold: Impact of Deficits on Flows and Performance..... | 47 |
| Bitcoin (BTC) vs. Gold: A Comparison of Cumulative Net ETF Flows and Year-to-Date Asset Performance..... | 48 |
| 5-Year CAGR of Major Payment Network Volume..... | 49 |
| US Debt Growth Appears to Be Exponential; US GDP Growth Appears to Be Linear..... | 50 |
| The US Growth-Deficit Gap and Debt Dependency..... | 51 |
| Analog vs. Digital: The Private Credit Market..... | 52 |
| Economic Value Generated per Gigawatt of Energy: Bitcoin (BTC) vs. Major Economies..... | 53 |
| Bitcoin (BTC) Performance: Before and After US Presidential Elections..... | 54 |
| Crypto Market Capitalization vs. "Tokenization" Searches..... | 56 |
| Bitcoin (BTC) Price vs. Hash Rate..... | 57 |

CHART #1

Bitcoin Has Rebounded After Each Halving Event



Bitcoin (BTC) Post-Halving Performance



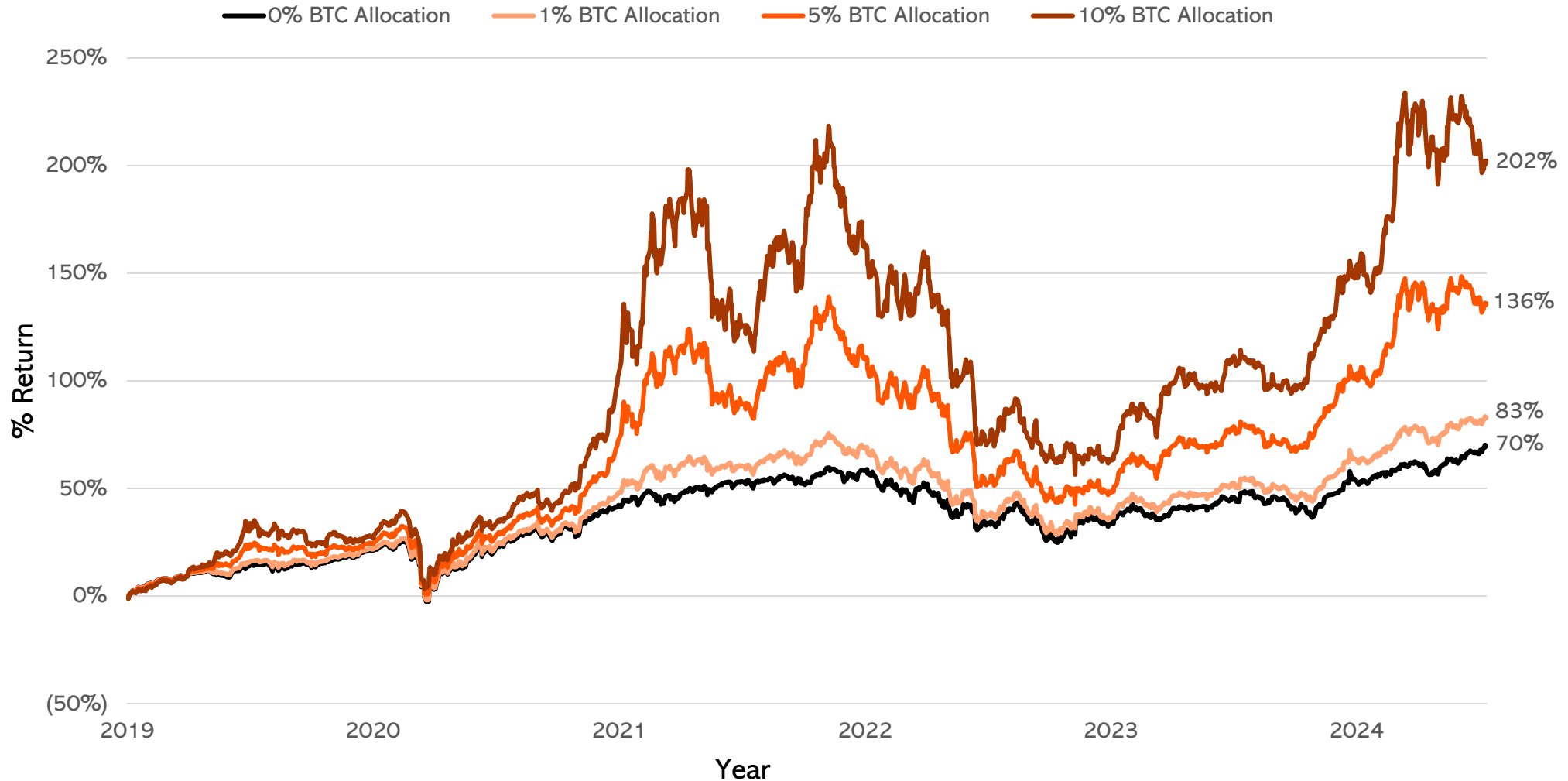
Note: Post-Halving Performance denotes the closing price of Bitcoin (BTC) for each day following its halving event, relative to its closing price on the day of the halving event. Data is as of 11/8/2024.
Source: Artemis.

CHART #2

Bitcoin (BTC) Exposure Can Drive Significant Overall Returns



Performance of a Standard 60/40 Portfolio with Varied Amounts of BTC Exposure

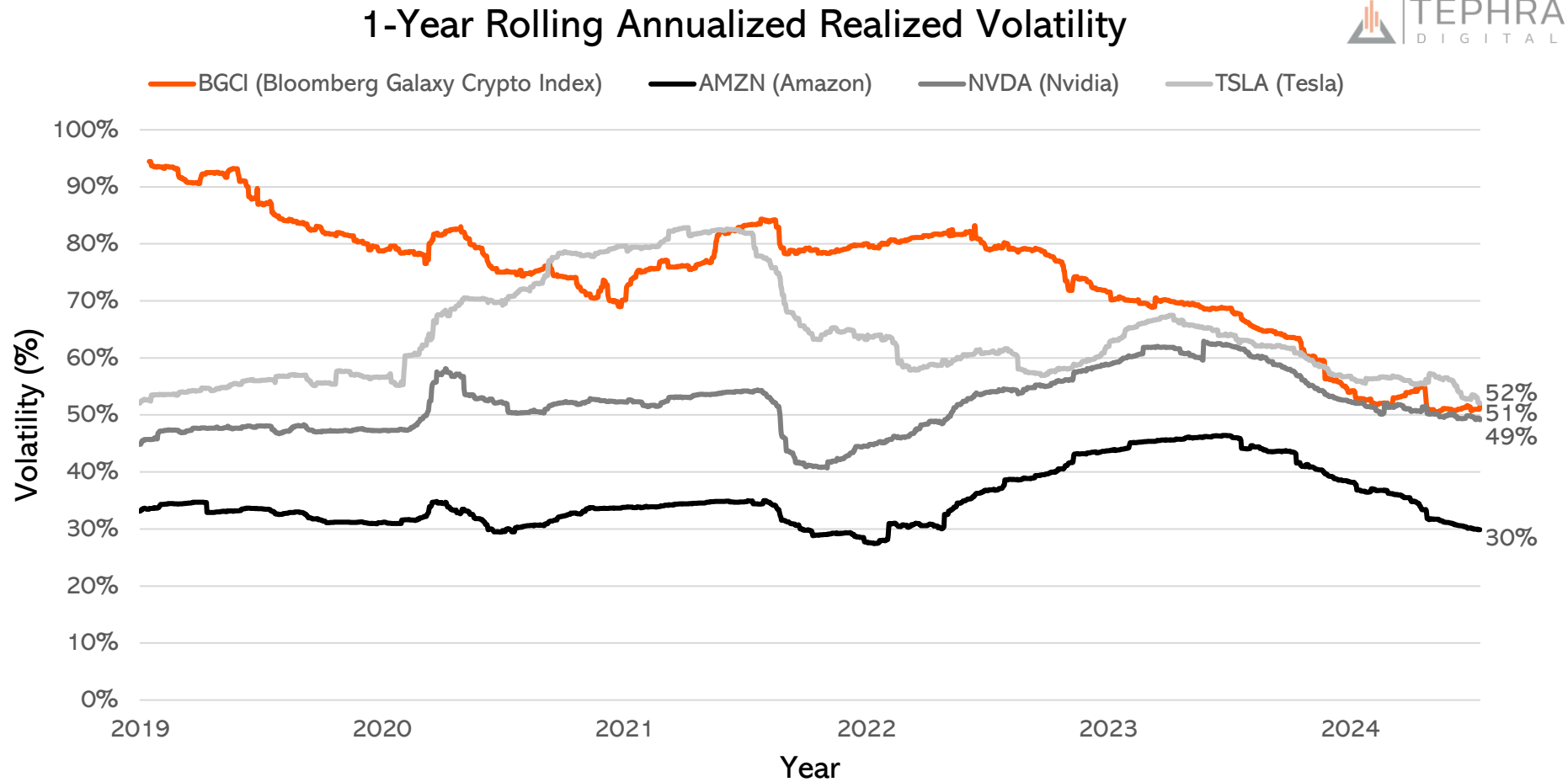


Note: Based on BlackRock 60/40 Target Allocation Fund (BIGPX) and spot BTC price. Data is as of 7/12/24.
Sources: Bloomberg and Artemis.

CHART #3



The Perception? Digital Assets Volatility Is Too High for Many Investors.
The Reality? Digital Assets Volatility Has Been Comparable to Some Large, Widely-Held and Well-Known Technology Stocks.



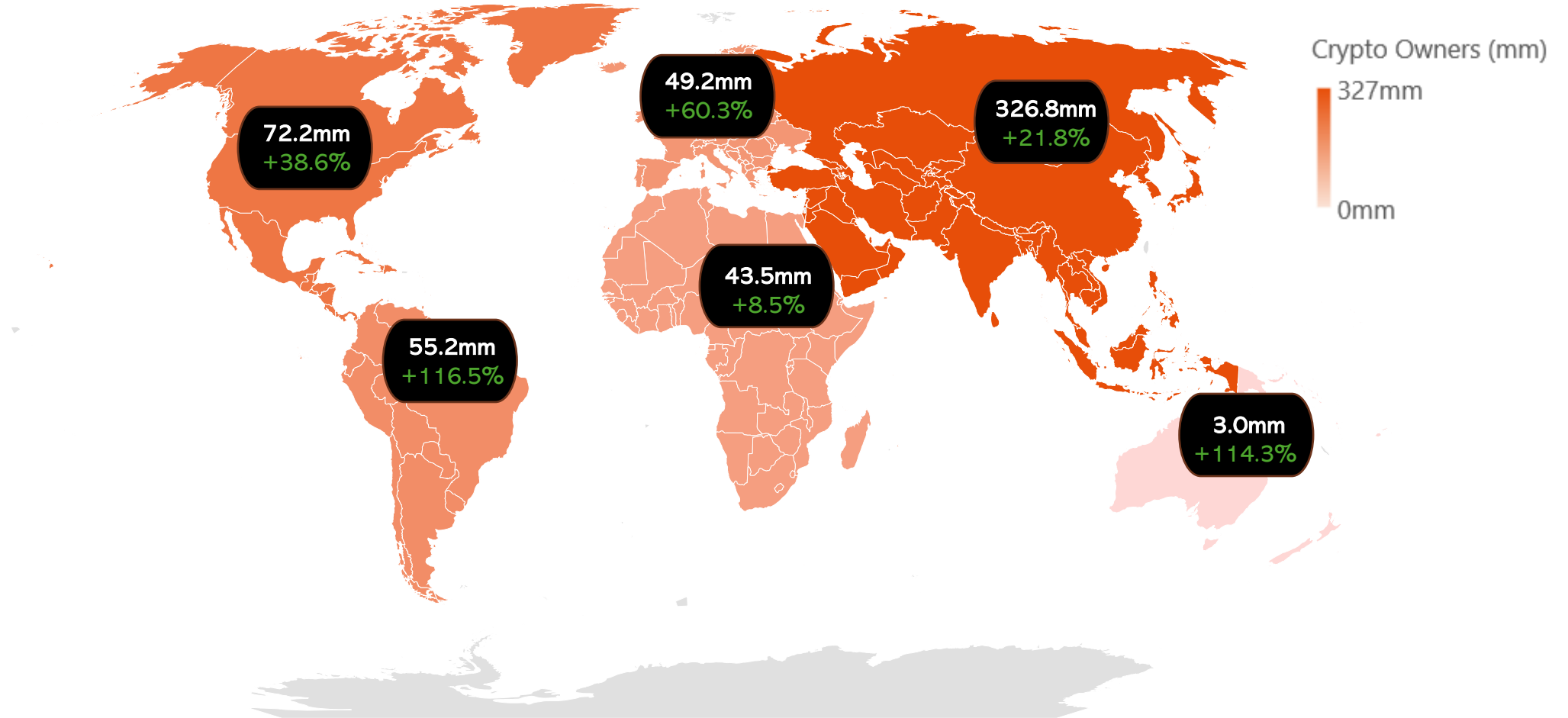
Note: Based on Bloomberg Galaxy Crypto Index (BGCI). Data is as of 7/15/24.
Source: Bloomberg.

CHART #4

Crypto Ownership Is a Global Phenomenon with Total Estimated Growth of 32% to 550 Million



Crypto Ownership by Continent in 2024 Year Over Year Percent Change

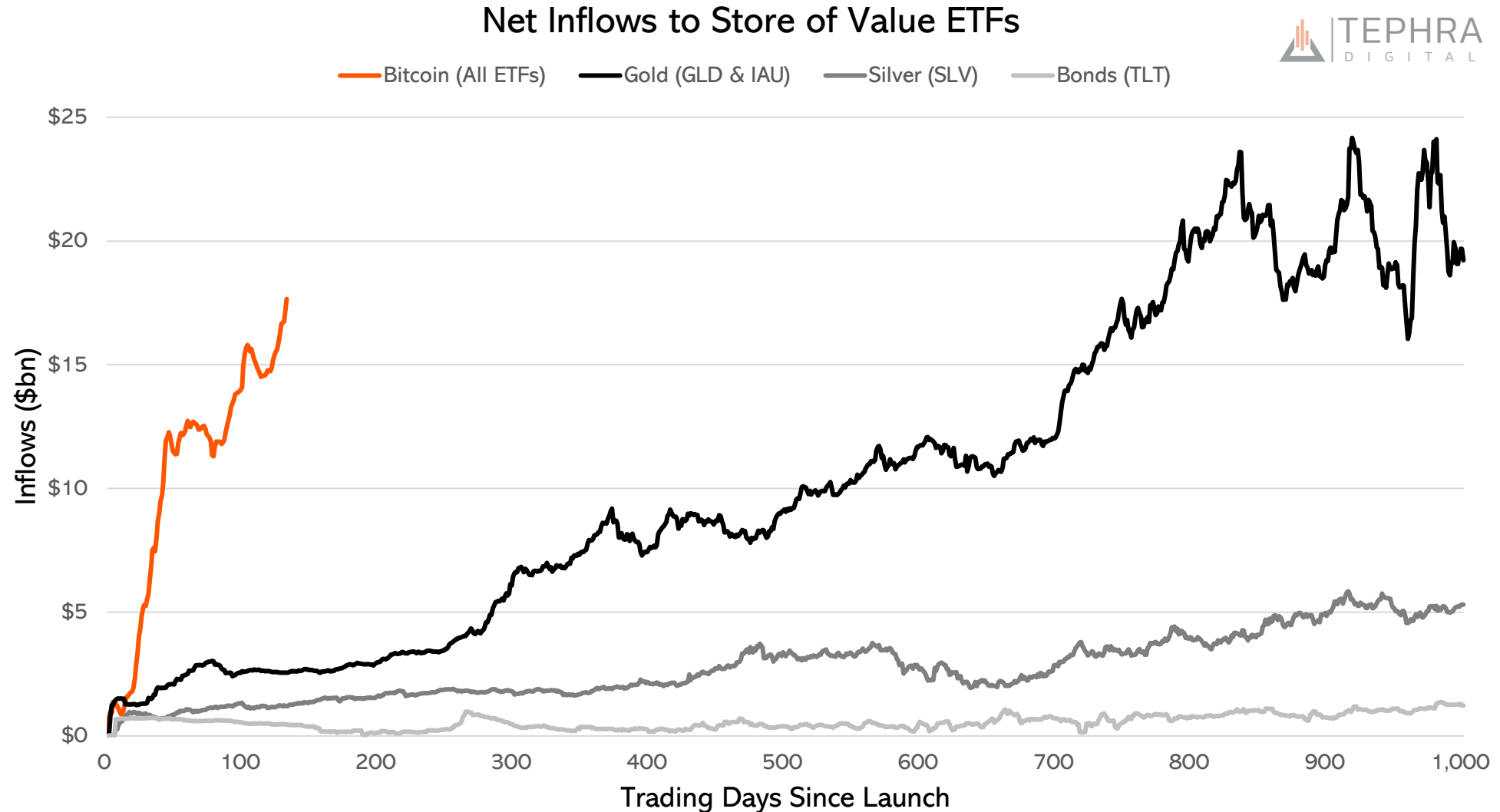


Note: Data is as of May 2024.

Source: Triple-A, "The State of Global Cryptocurrency Ownership in 2024."

CHART #5

Bitcoin ETF Net Inflows Have Already Eclipsed ETFs of Some Other Major Asset Classes



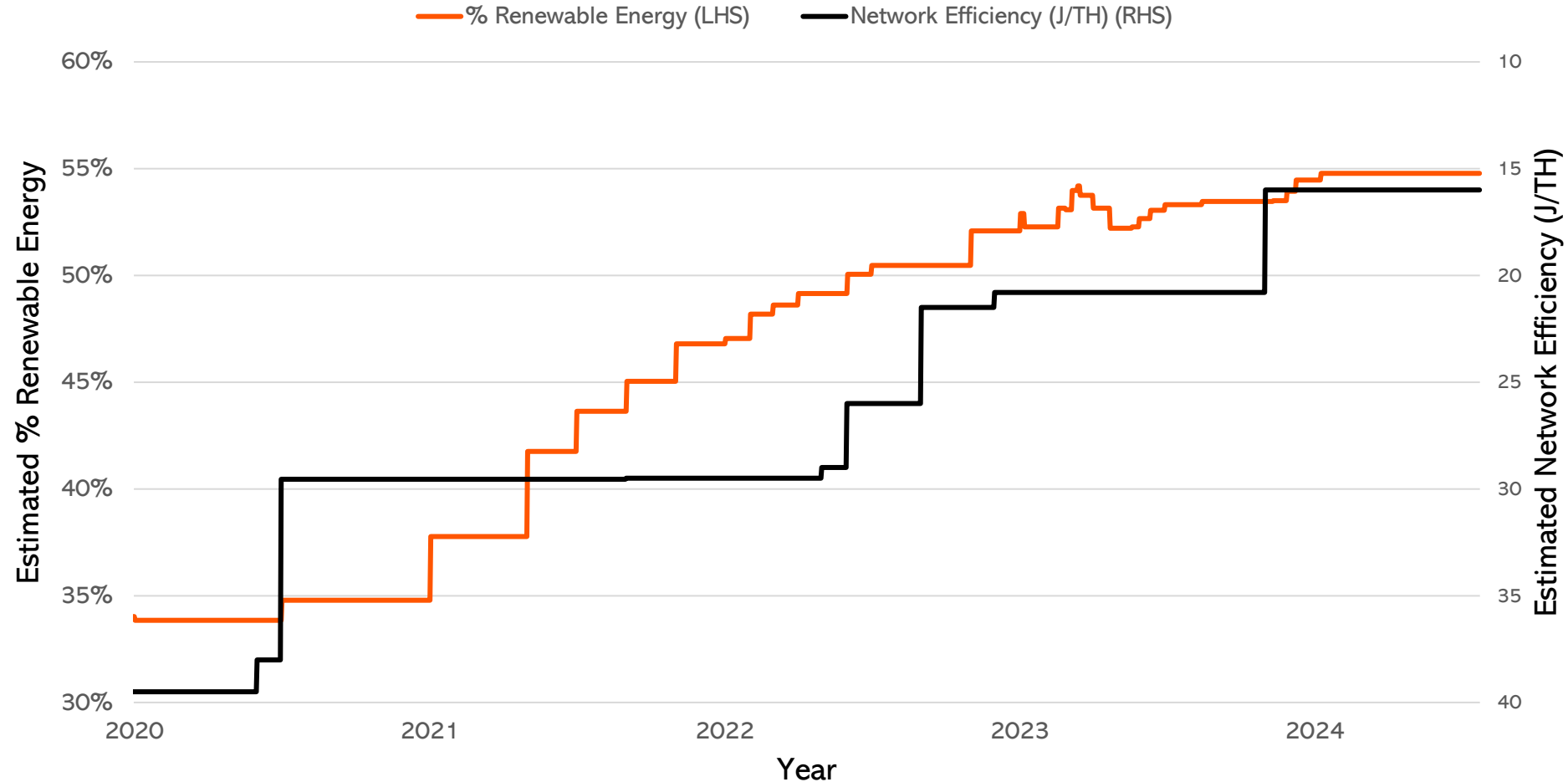
Note: Bitcoin ETFs include: IBIT, GBTC, FBTC, ARKB, BITB, BTCO, HODL, BRRR, EZBC and BTCW. Data is as of 7/22/2024.
Sources: iShares and State Street Global Advisors.

CHART #6

Bitcoin Mining Predominantly Uses Renewable Energy, and the Bitcoin Network Has Become Increasingly Energy Efficient Over Time



Bitcoin Mining: Renewable Energy Mix and Network Efficiency



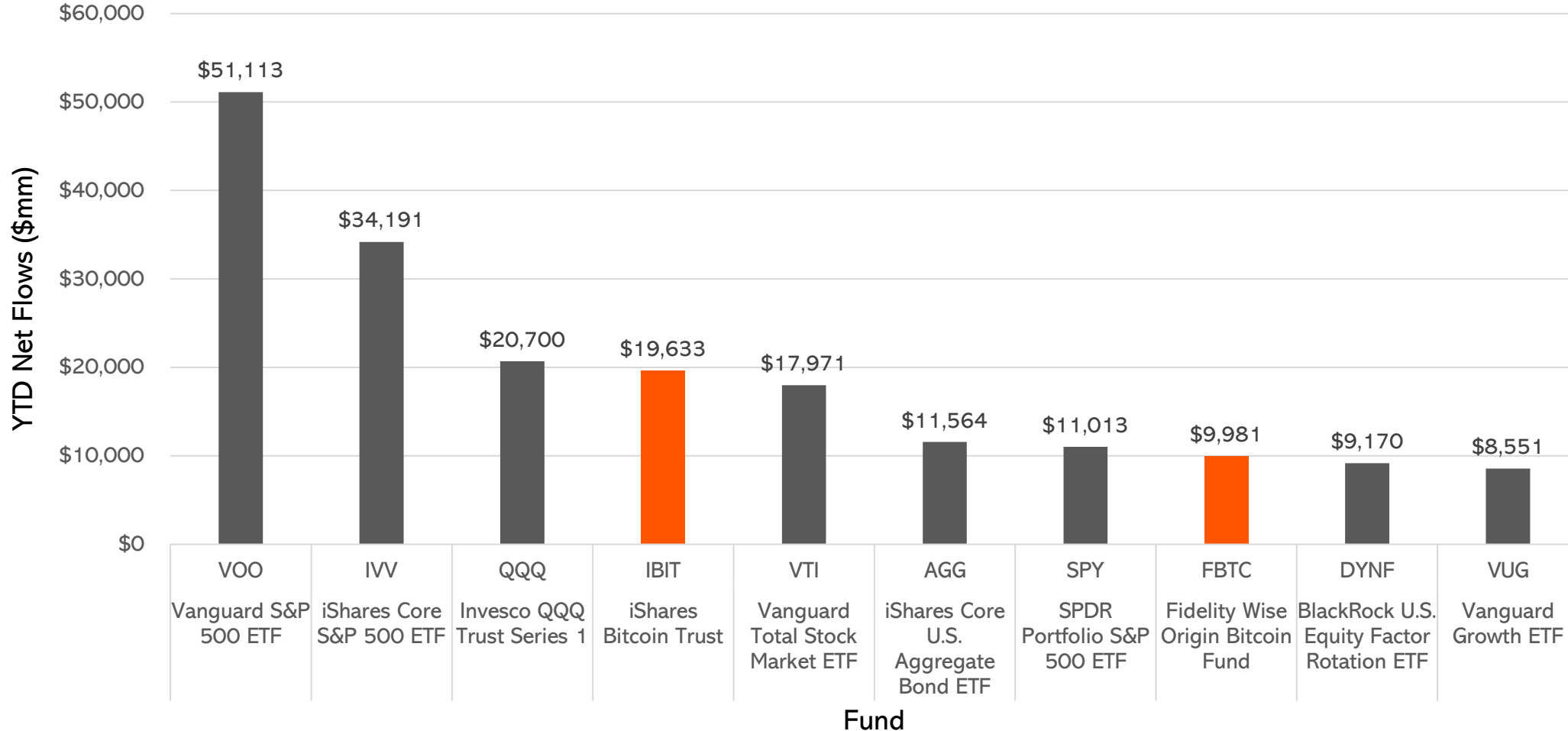
Note: Figures are estimates. J/TH represents Joules per Terahash. Data is as of 7/23/2024.
Sources: Digital Assets Research Institute and University of Cambridge.

CHART #7

The Perception? Bitcoin Is a Niche Asset. The Reality? YTD Bitcoin ETF Net Flows Have Exceeded Many Broad Market ETFs.



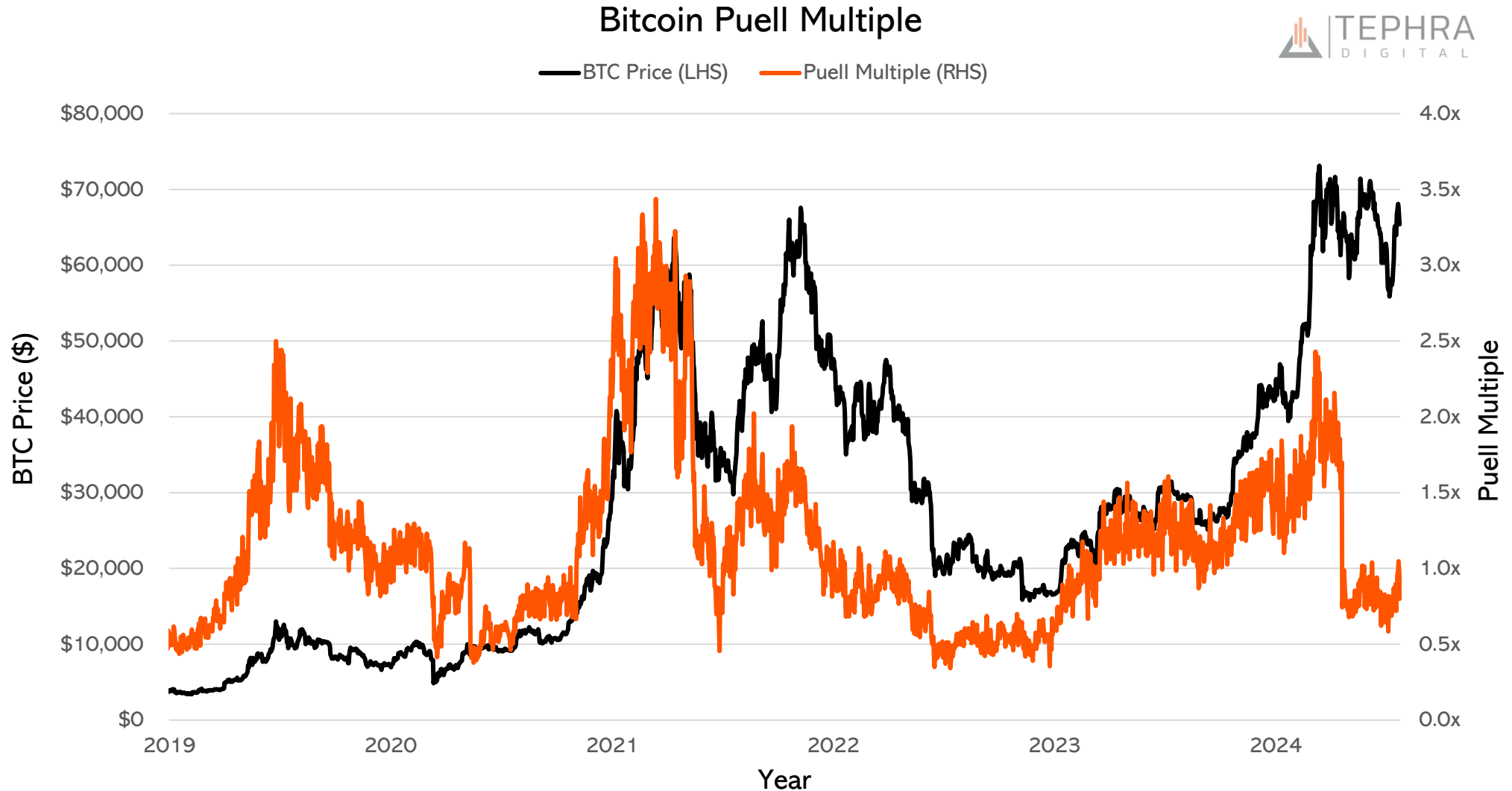
YTD Net Inflows to Bitcoin (BTC) ETFs



Note: Data is as of 7/24/2024.
Source: Bloomberg.

CHART #8

Historically, a Low Puell Multiple Has Preceded Significantly Higher Bitcoin (BTC) Prices



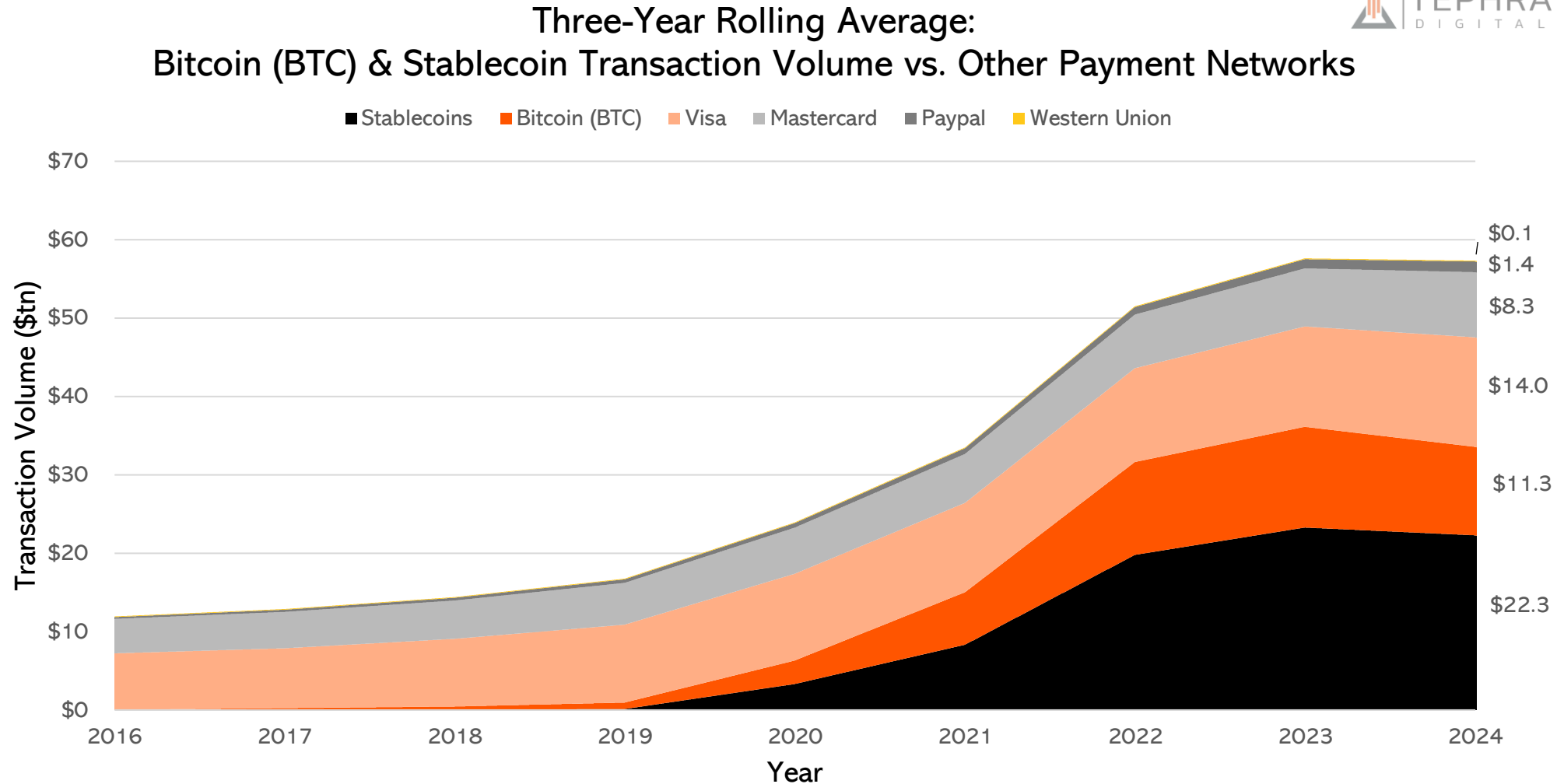
Puell Multiple Calculation: Daily issuance value of Bitcoin (in USD) divided by the 365-day moving average of the daily issuance value.

Note: Data is as of 7/24/2024.

Source: Glassnode.

CHART #9

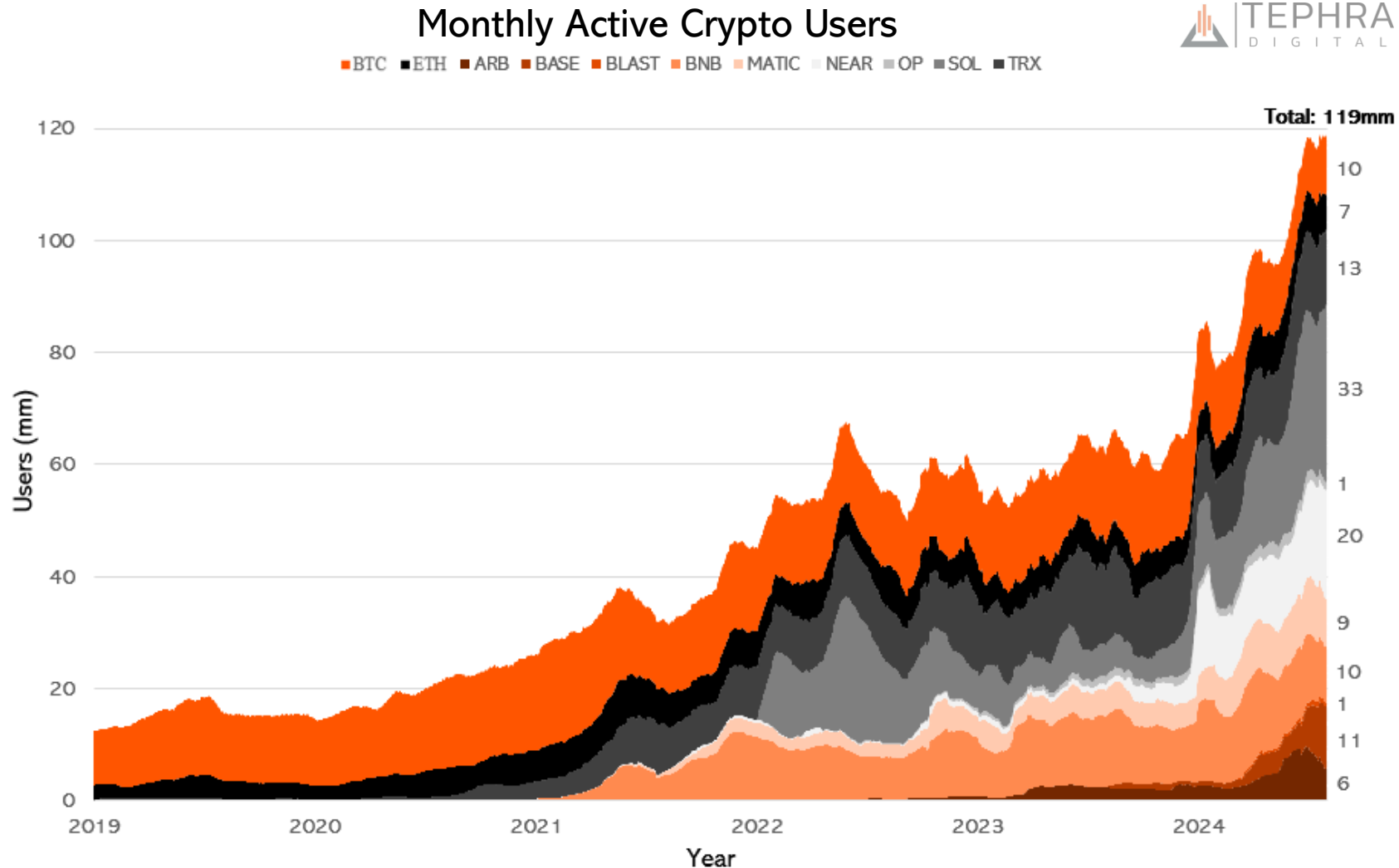
Digital Asset Transaction Volumes Persisted Through the Bear Market and Already Rival Those of Major Payment Networks



Note: Stablecoins include USDT, USDC and DAI. Data is as of 7/28/2024.
Sources: Visa, Mastercard, PayPal and Western Union.

CHART #10

Crypto User Activity Levels — Not Just Ownership — Have Meaningfully Risen Despite Market Fluctuations



Note: Monthly Active Users defined as monthly unique transaction signers. Data includes Bitcoin (BTC), Ethereum (ETH), Arbitrum (ARB), Base (BASE), Blast (BLAST), Binance (BNB), Polygon (MATIC), Near (NEAR), Optimism (OP), Solana (SOL) and Tron (TRX). Data is as of 7/31/2024.

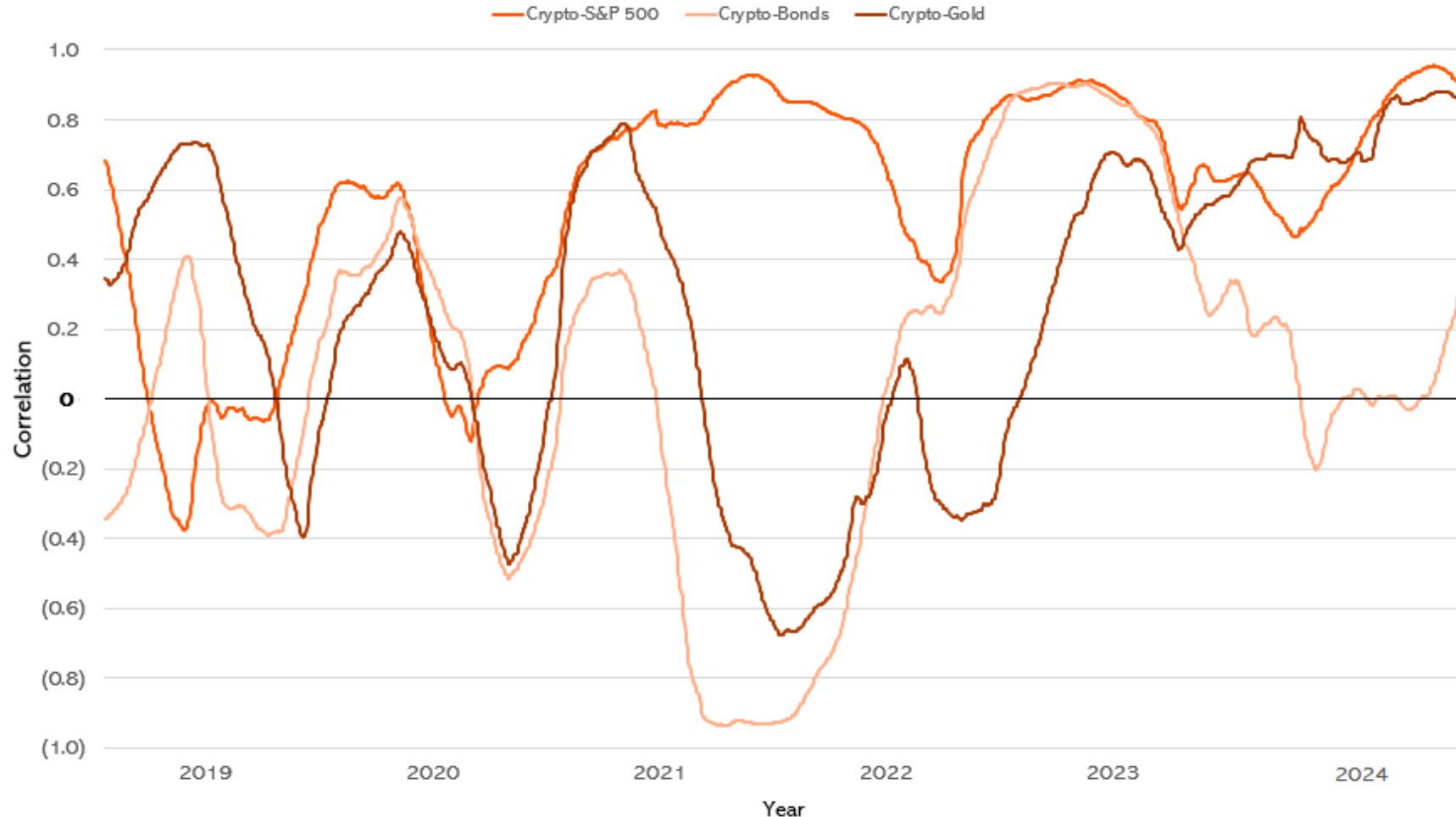
Source: Artemis.

CHART #11

The Correlation of Crypto to Major Asset Classes Has Actually Varied Significantly Over Time, Given its Unique Attributes



1-Year Rolling Price Correlation of Crypto to Other Major Asset Classes



Note: Crypto refers to the Bloomberg-Galaxy Crypto Index (BGCI). S&P 500 refers to the SPDR S&P 500 ETF Trust (SPY), Bonds refer to the iShares 20+ Year Treasury Bond ETF (TLT) and Gold refers to the SPDR Gold Trust (GLD). Price correlations are calculated on a rolling basis that assumes 252 trading days per year. Data is as of 8/1/2024.

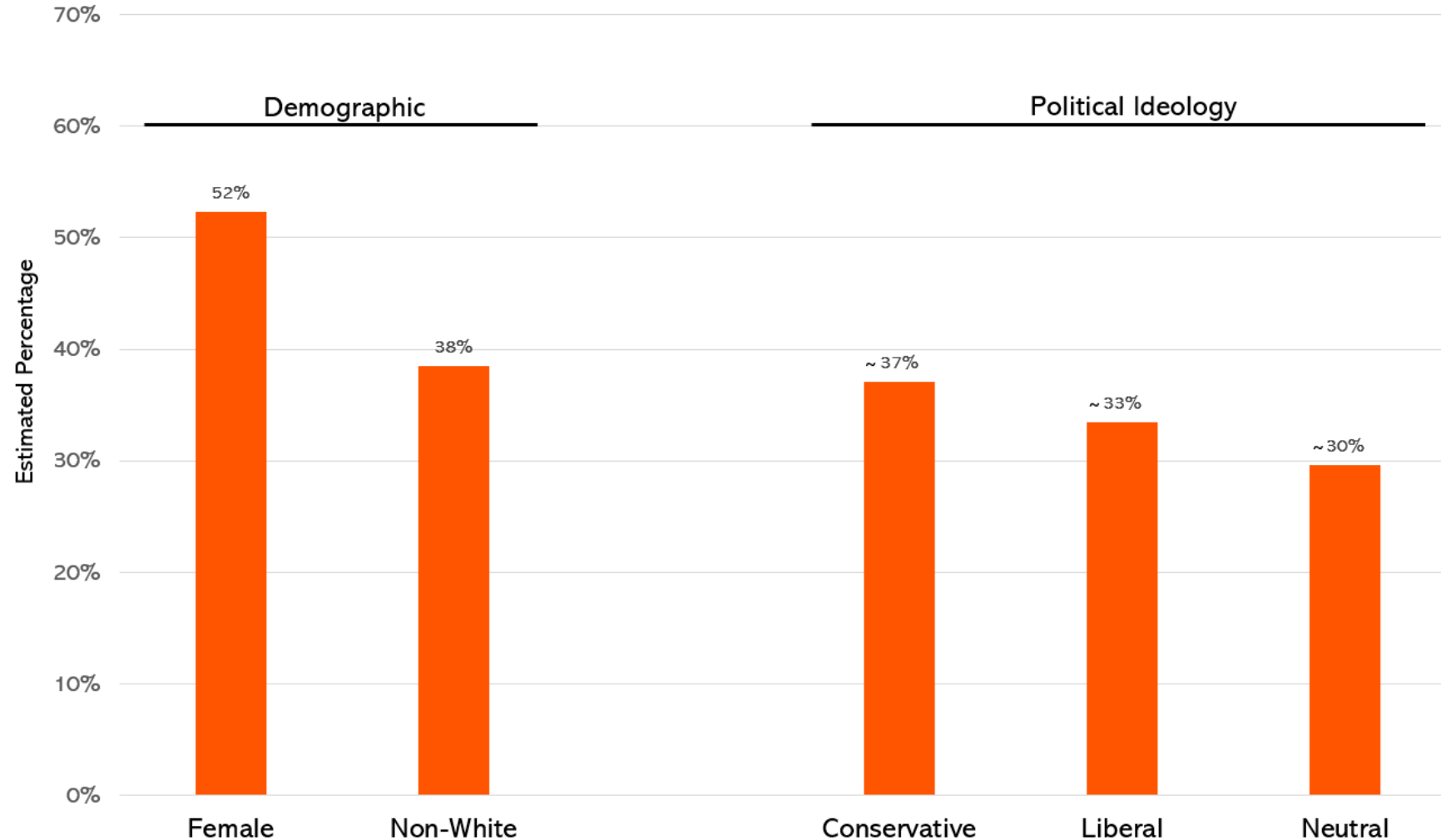
Source: Bloomberg.

CHART #12

Bitcoin (BTC) Has a Broader and More Diverse Ownership Base than You May Think



Composition of Bitcoin (BTC) Ownership in America



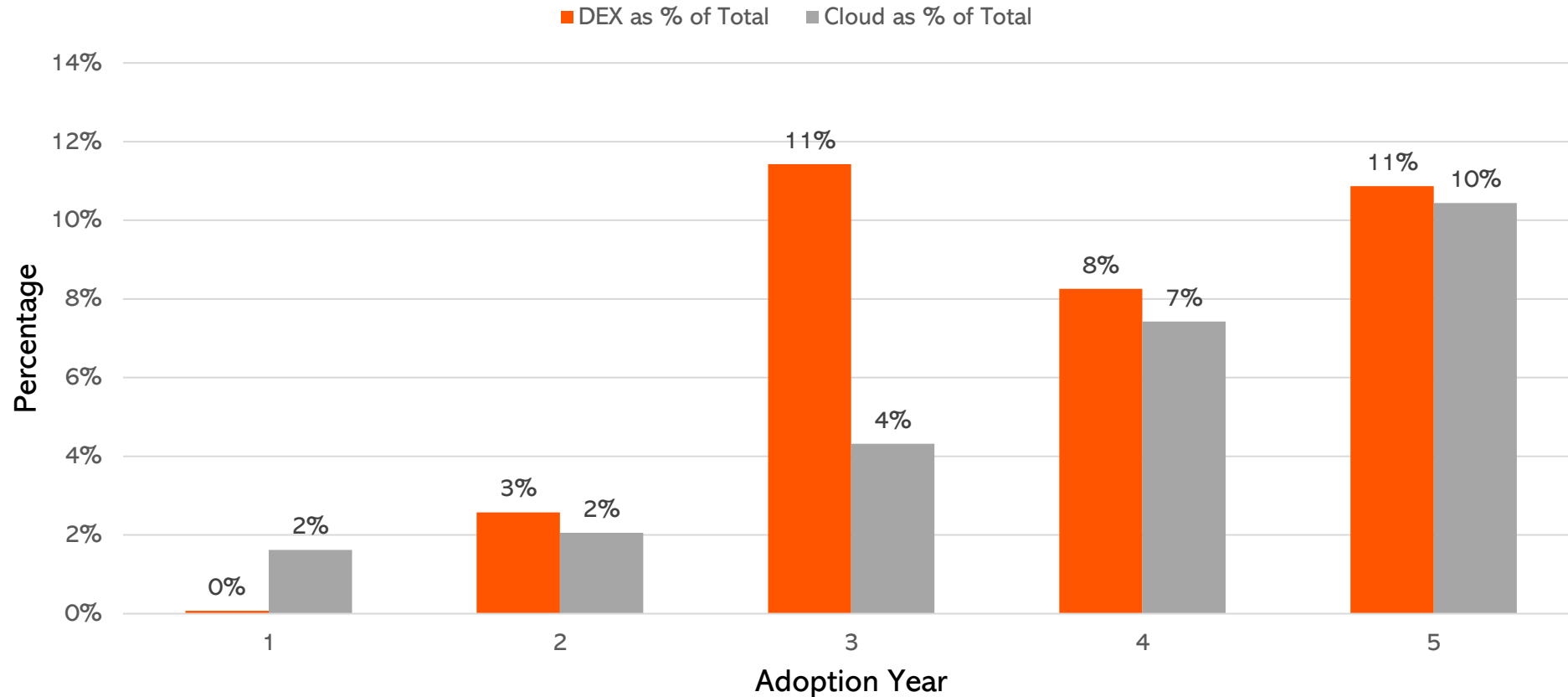
Note: "Liberal" includes "Very Liberal," "Liberal," and "Slightly Liberal" respondents. "Conservative" includes "Very Conservative," "Conservative," and "Slightly Conservative" respondents. The estimated percentages for Liberal, Neutral and Conservative are approximations from The Nakamoto Project. Data is as of 7/22/2024. Source: The Nakamoto Project (Troy Cross and Andrew Perkins), "Understanding Bitcoin Adoption in the United States: Politics, Demographics, & Sentiment."

CHART #13

The Rise of Decentralized Exchange Trading Shows Similarities to the Early Adoption Trends of Cloud Computing



Decentralized Exchange Volume as % of Total Exchange Volume vs. Cloud Computing Spend as % of Total Computing Spend

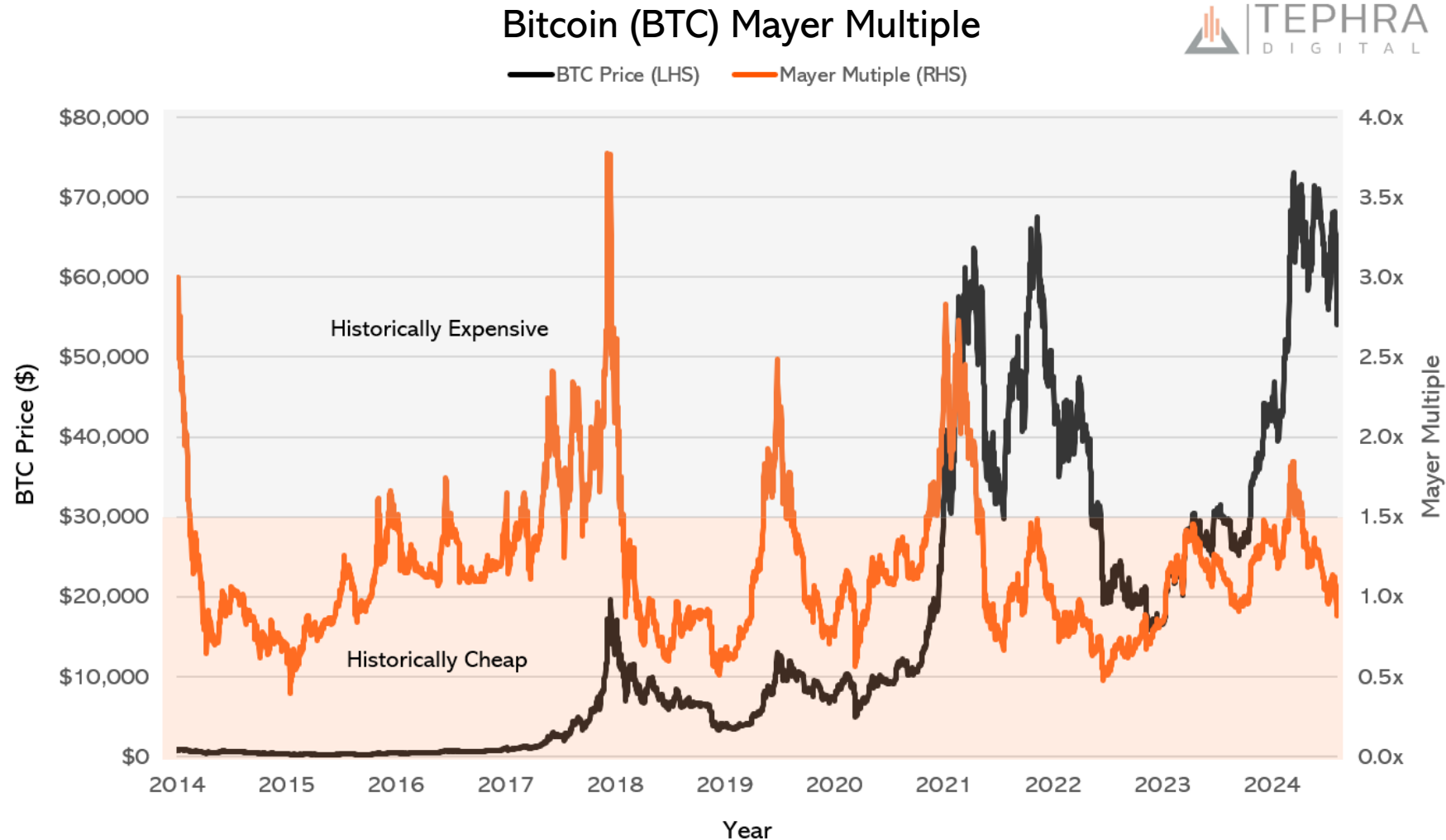


Note: Total Exchange Volume refers to digital assets volume on decentralized and centralized exchanges. Total Computing Spend includes enterprise cloud and on-premise spending. Adoption Year corresponds to 2019 to 2023 for exchange volumes and 2009 to 2013 for computing spend. Exchange volume is a point-in-time metric and represents the volume ratio for December of each year. Exchange data is as of August 2024. Computing data is as of February 2024.

Sources: The Block, DeFi Llama and Synergy Research Group.

CHART #14

Historically, a Mayer Multiple Below 1.5x Has Provided Potentially Attractive Entry Points in Bitcoin (BTC)



Mayer Multiple Calculation: Ratio between the daily price of Bitcoin and the 200-day moving average price.

Note: Data is as of 8/7/2024.

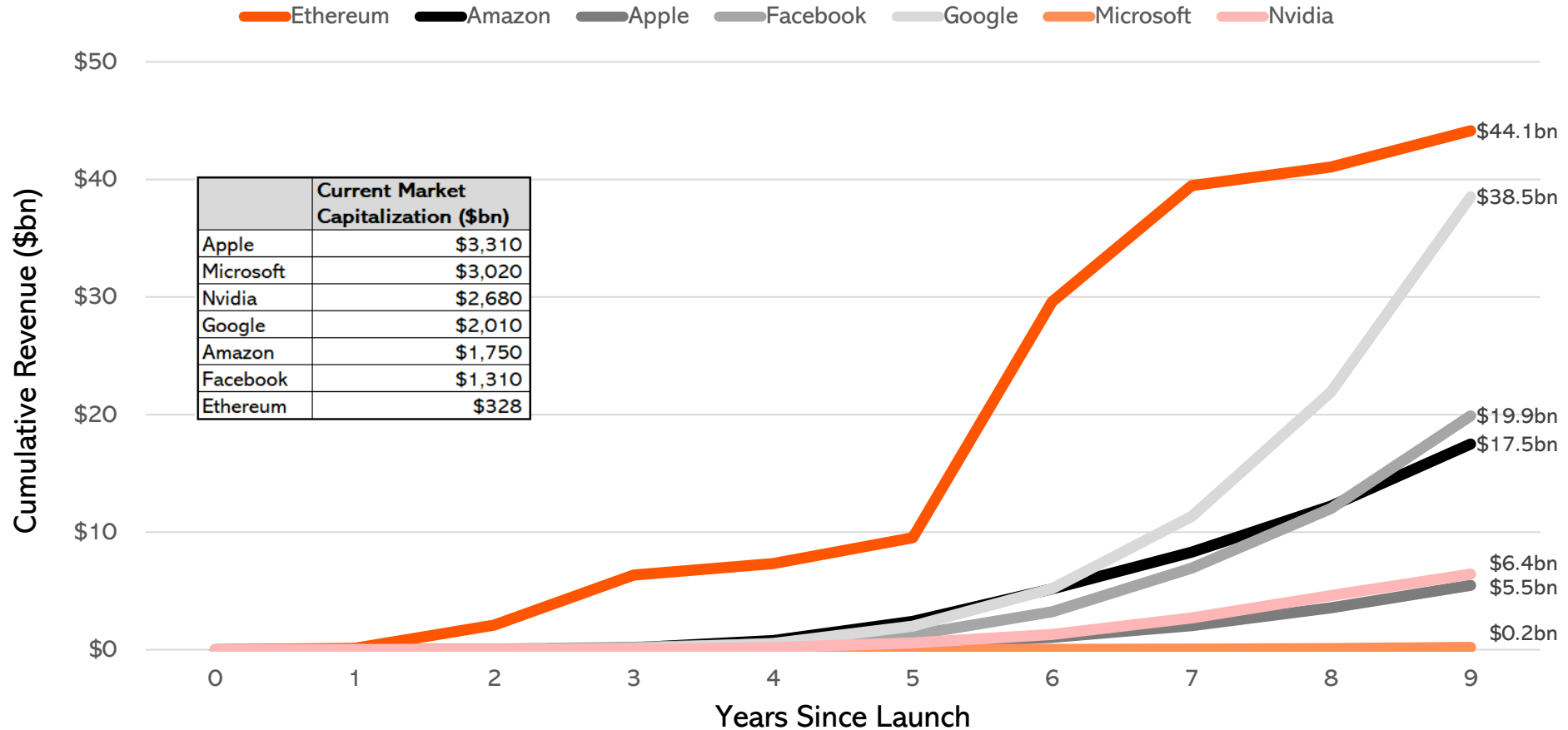
Source: Glassnode.

CHART #15

The Growth and Scale of Ethereum May Attract Institutions that Invest in Leading Technology Franchises Over the Long-Term



Cumulative Revenue of Ethereum (ETH) vs. Major Tech Companies



Note: "Years Since Launch" correspond to 2015 through 2024 for Ethereum, 1994 through 2003 for Amazon, 1976 through 1985 for Apple, 2004 through 2013 for Facebook, 1998 through 2007 for Google, 1975 through 1984 for Microsoft and 1994 through 2003 for Nvidia. Ethereum 2024 revenue is annualized based on year-to-date data through 8/11/2024. All data is as of 8/11/2024.

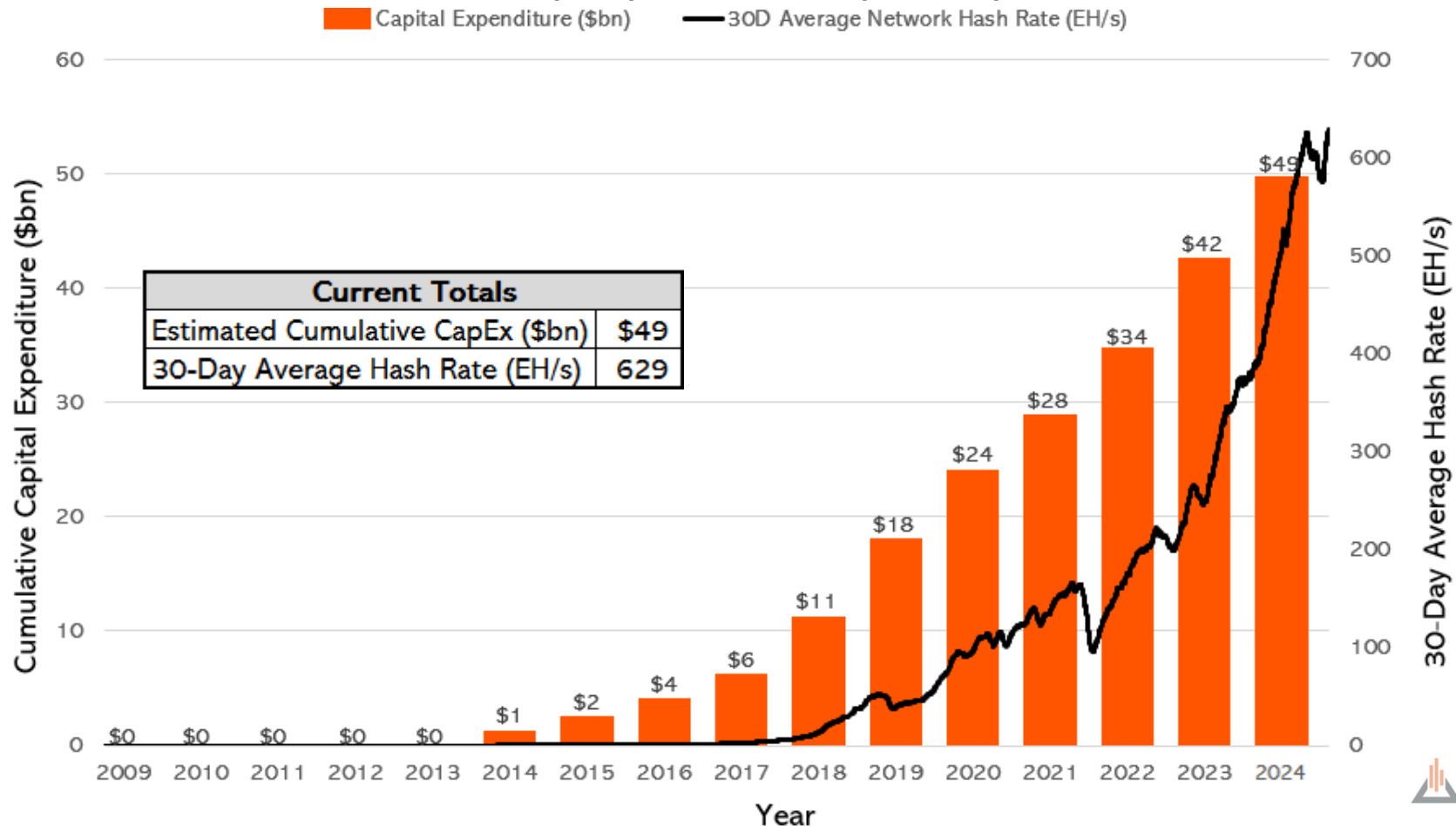
Sources: Glassnode, The Block, Amazon, Apple, Facebook, Google, Microsoft and Nvidia.

CHART #16



Bitcoin (BTC) Is Backed by Significant and Growing Capital Expenditure, Which Appears to Be Driving Higher Network Activity and Security

Estimated Cumulative Bitcoin (BTC) Network Capital Expenditure and Hash Rate

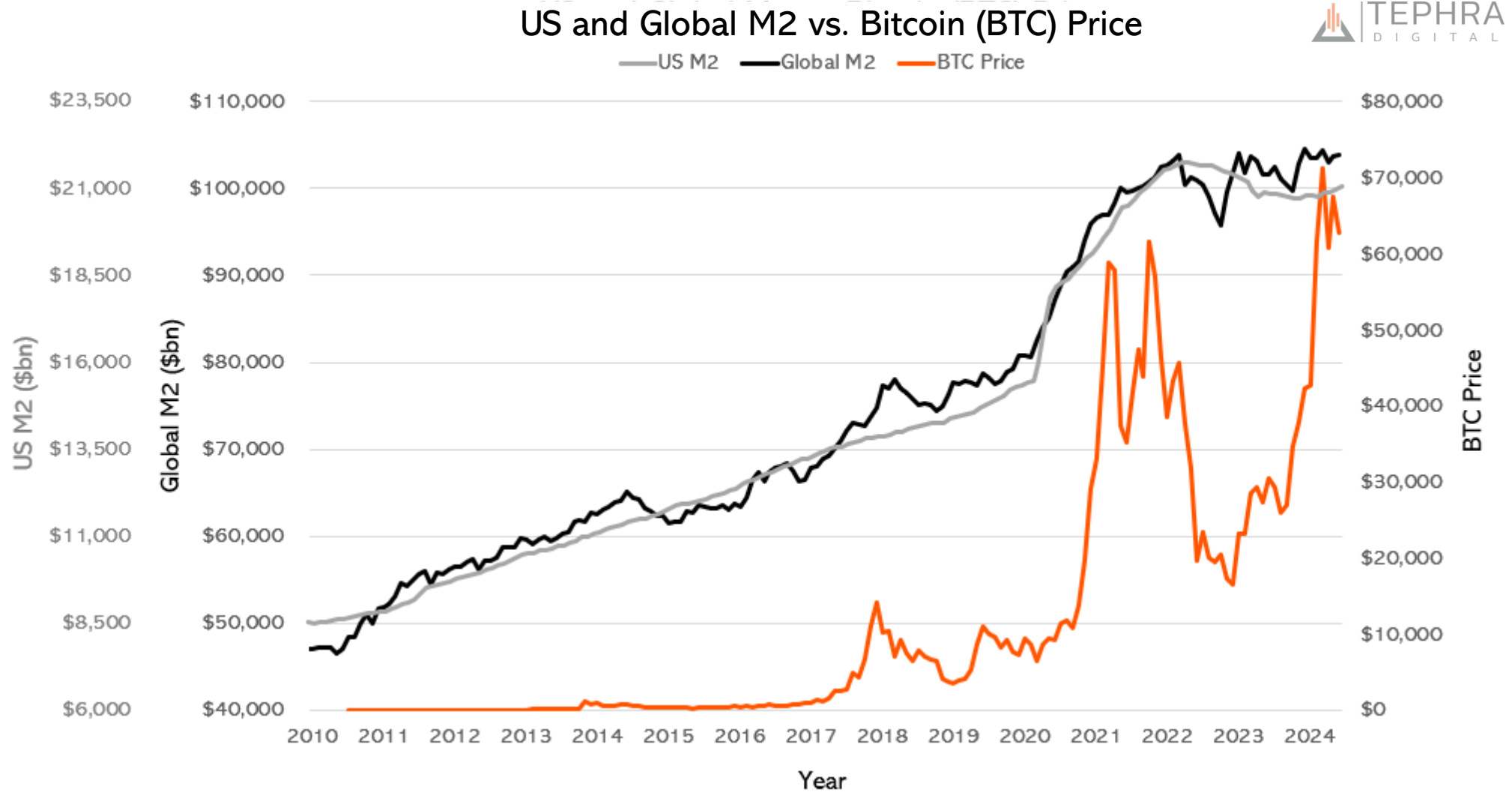


Note: Figures are estimates from Glassnode, "Estimating the Cost of Bitcoin Production," and include ASICs, necessary hardware and total energy consumption. Estimated Bitcoin capital expenditure calculation: $CapEx = Difficulty\ Price\ Regression * Total\ BTC\ Issuance$, where Difficulty Price Regression is a regression between Market Capitalization and Difficulty yielding an R^2 value above 0.95. Capital Expenditure for 2024 is annualized based on year-to-date figures through 8/12/2024. All data is as of 8/12/2024. Sources: Glassnode and Coin Metrics.

CHART #17



A Reacceleration in US and Global Money Supply (M2) Will Likely Drive Bitcoin (BTC) and Digital Asset Prices Over the Long-Term

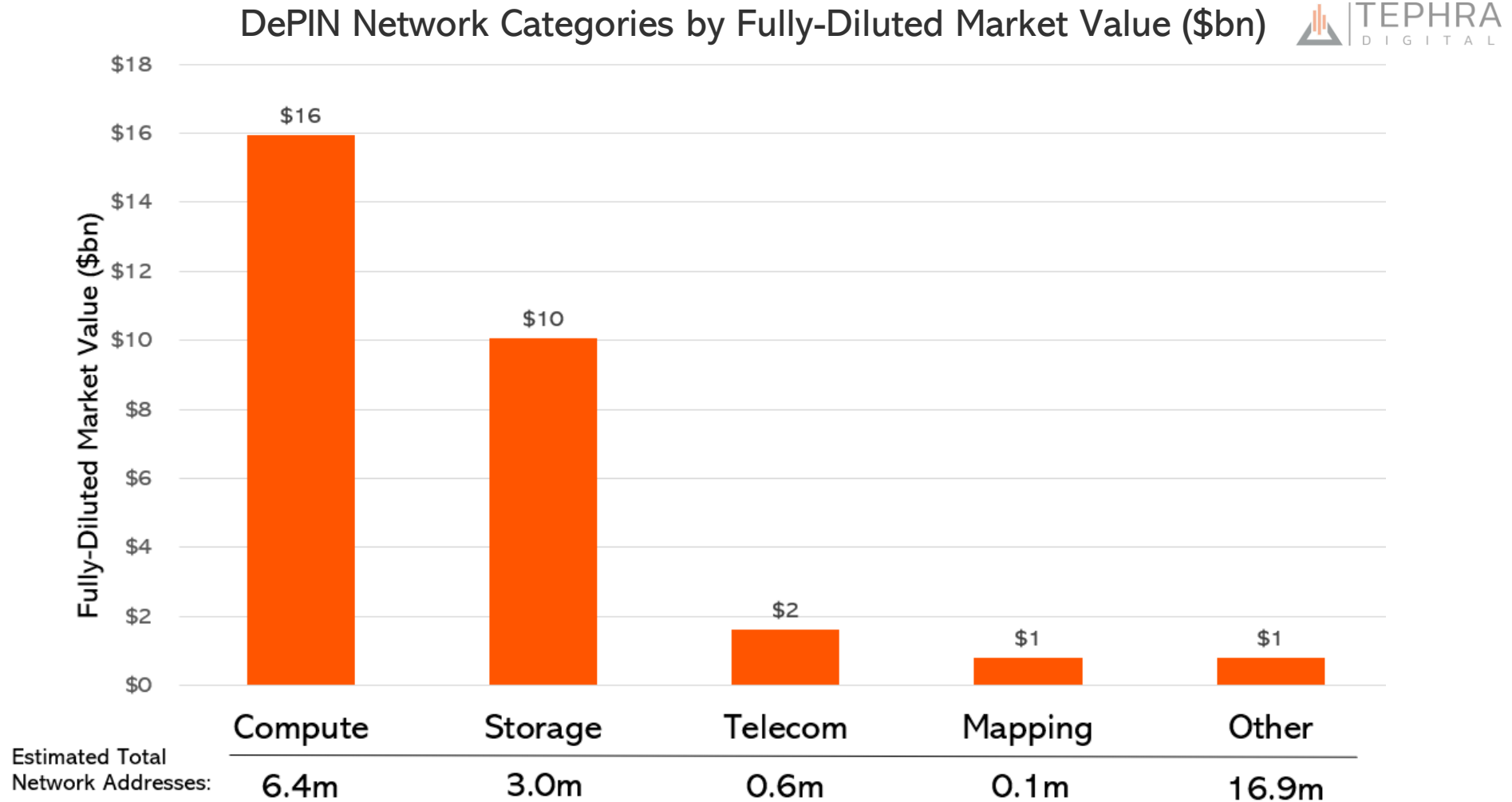


Note: Global M2 includes Australia, Brazil, Canada, China, Europe, Japan, Mexico, Russia, South Korea, Switzerland, Taiwan, UK and US. Data as of 6/30/2024.
Sources: Bloomberg and Artemis.

CHART #18



Blockchain-Based Decentralized Physical Infrastructure Networks (DePIN) May Be Reaching Significant Scale and Automation in Some Areas



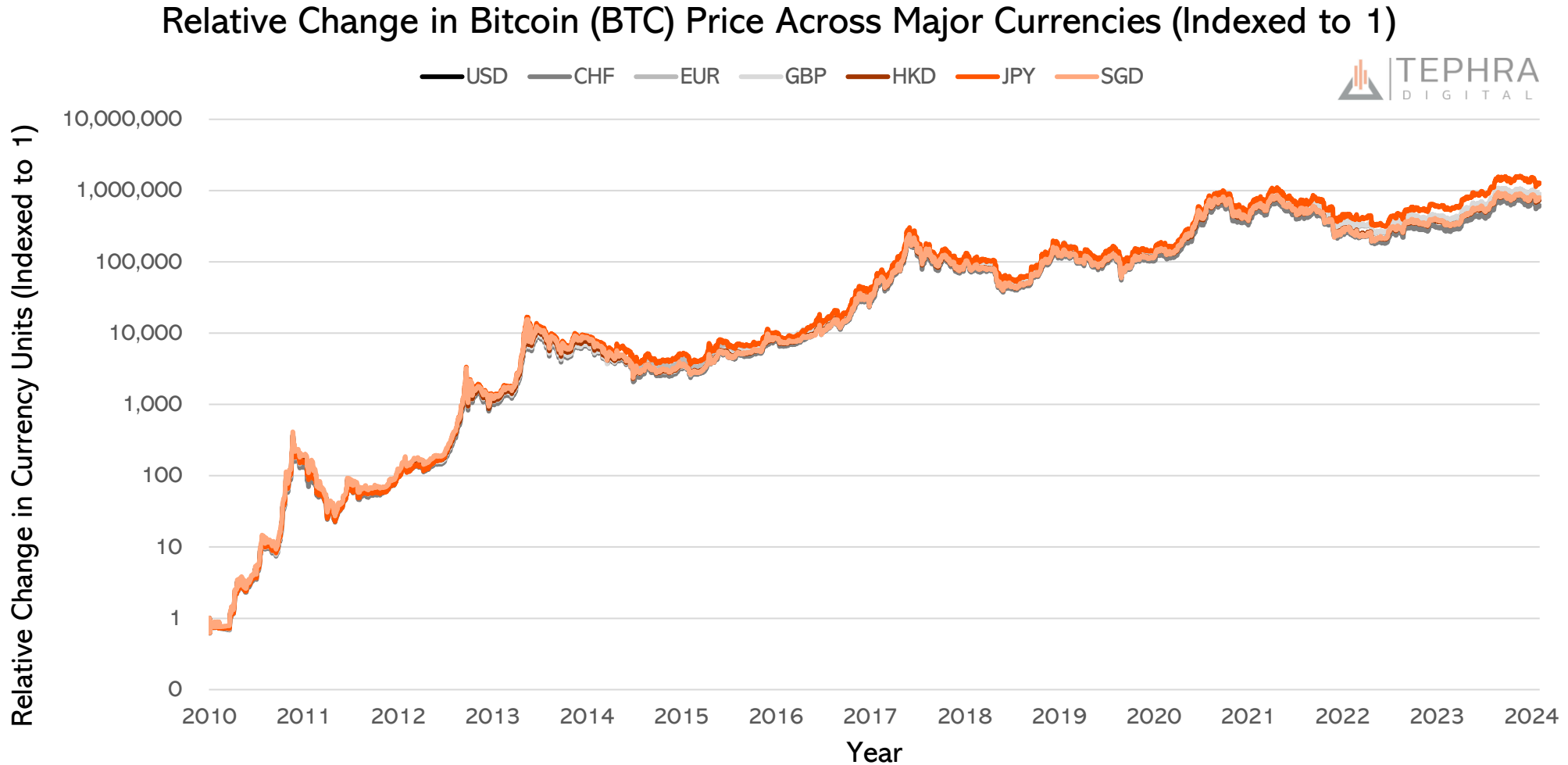
Note: "Storage" includes Arweave, Bittorent, Crust Network, Filecoin, Keep Network, Siacoin, Storj and StorX. "Compute" includes Aethir, AIOZ Network, Akash Network, Bittensor, Cudos, Flux, Golem, Io.Net, Livepeer, Nosana, Render Network and Theta Network. "Mapping" includes DIMO, Geodnet, Hivemapper and Natix. "Telecom" includes Helium and Wifi Map. "Other" includes Braintrust, Stepn and Sweat Economy. Data is as of 8/15/2024.

Source: Artemis.

CHART #19



Major Currencies in Developed Markets Appear to Reflect Ongoing Monetary Debasement, While Bitcoin (BTC) Has Appreciated Exponentially Against Each of Them



Note: Currencies include the US Dollar (USD), Swiss Franc (CHF), Euro (EUR), British Pound Sterling (GBP), Hong Kong Dollar (HKD), Japanese Yen (JPY) and Singapore Dollar (SGD). The relative change is indexed to 1, calculated by dividing the daily Bitcoin (BTC) price in each currency by Bitcoin (BTC) price on 7/19/2010. Data is as of 8/20/2024.

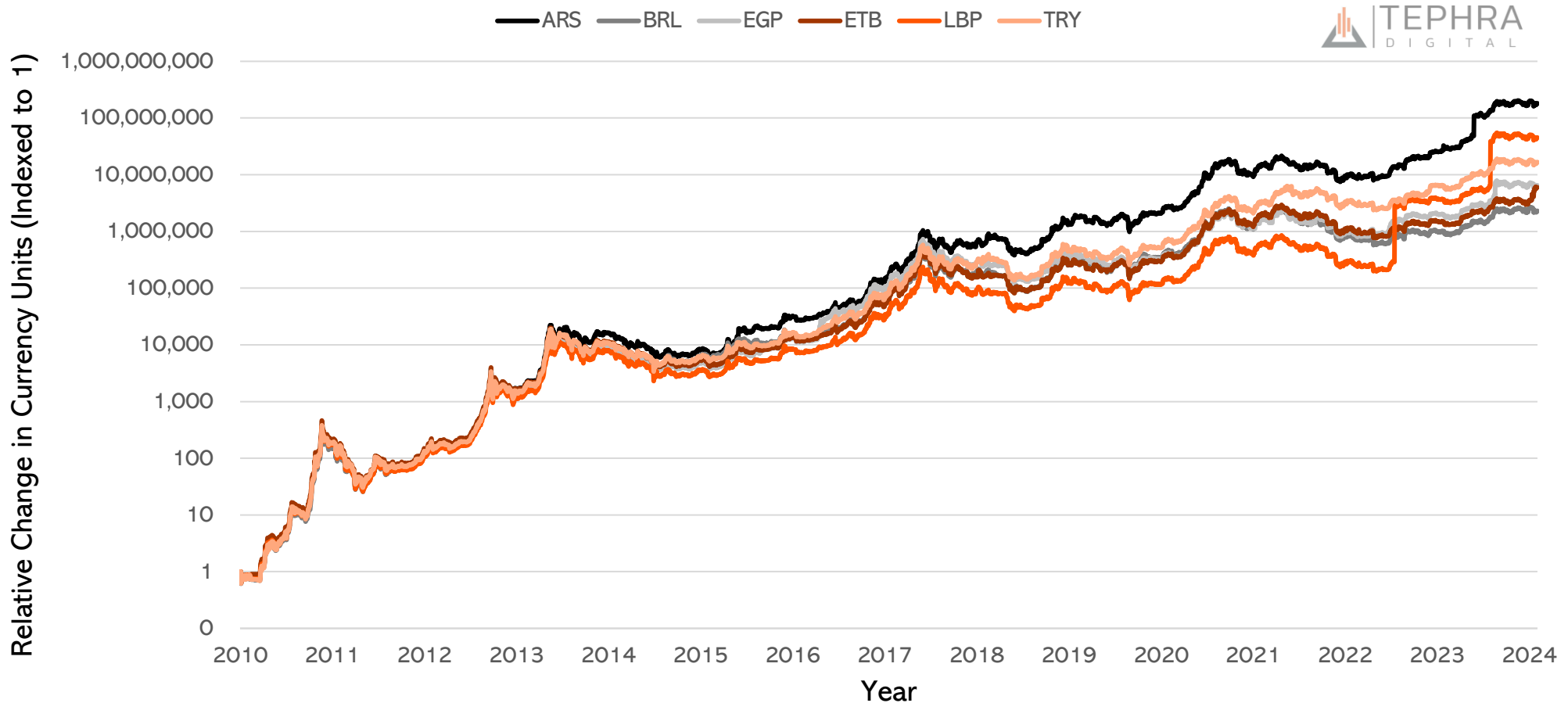
Source: Bloomberg.

CHART #20



Hyperinflationary Currencies in Some Emerging Markets Have Continued to Collapse, While Bitcoin (BTC) Has Served as a Potential Viable Alternative and a Life Raft

Relative Change in Bitcoin (BTC) Price Across Hyperinflationary Currencies (Indexed to 1)



Note: Currencies include the Argentine Peso (ARS), Brazilian Real (BRL), Egyptian Pound (EGP), Ethiopian Birr (ETB), Lebanese Pound (LBP) and Turkish Lira (TRY). The relative change is indexed to 1, calculated by dividing the daily Bitcoin (BTC) price in each currency by Bitcoin (BTC) price on 7/19/2010. Data is as of 8/20/2024.

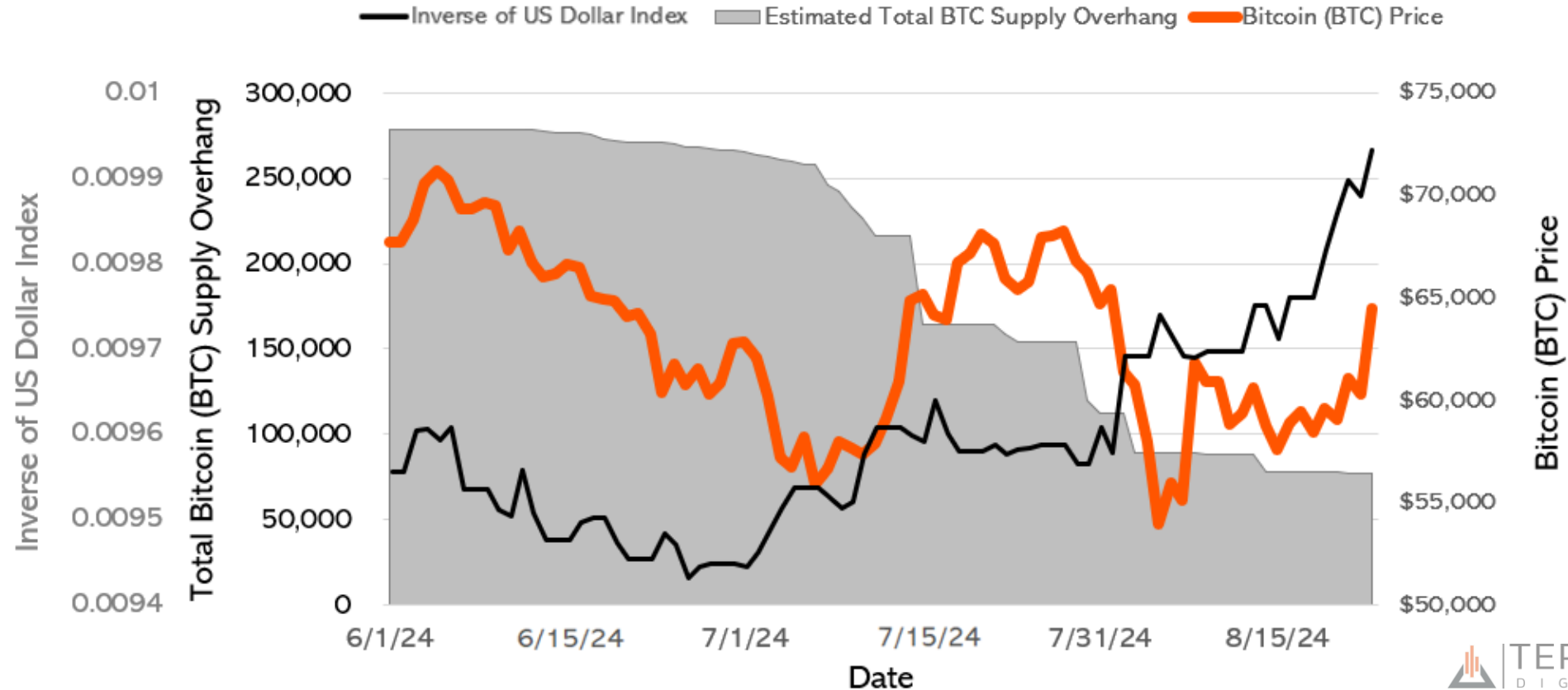
Source: Bloomberg.

CHART #21



Bitcoin (BTC) Appears to Be Demonstrating Resilience While Absorbing a Massive but Temporary Supply Overhang

Bitcoin (BTC) Price Versus Total Supply Overhang and Inverse of US Dollar Index



278,587 BTC (Total Supply Overhang) Represents 46% of Daily Average Trading Volume and 4% of the Total Active Supply

Note: Total Supply Overhang refers to Mt. Gox creditor distributions, Genesis creditor distributions, German Government sales and United States Marshal Service sales from the Ross Ulbricht forfeiture. Daily Average Trading Volume refers to the year-to-date average Bitcoin (BTC) daily volume. Total Active Supply refers to Bitcoin (BTC) tokens moved in the last one year. Data is as of 8/23/2024.

Sources: Bloomberg, Arkham Intelligence, Artemis and Glassnode.

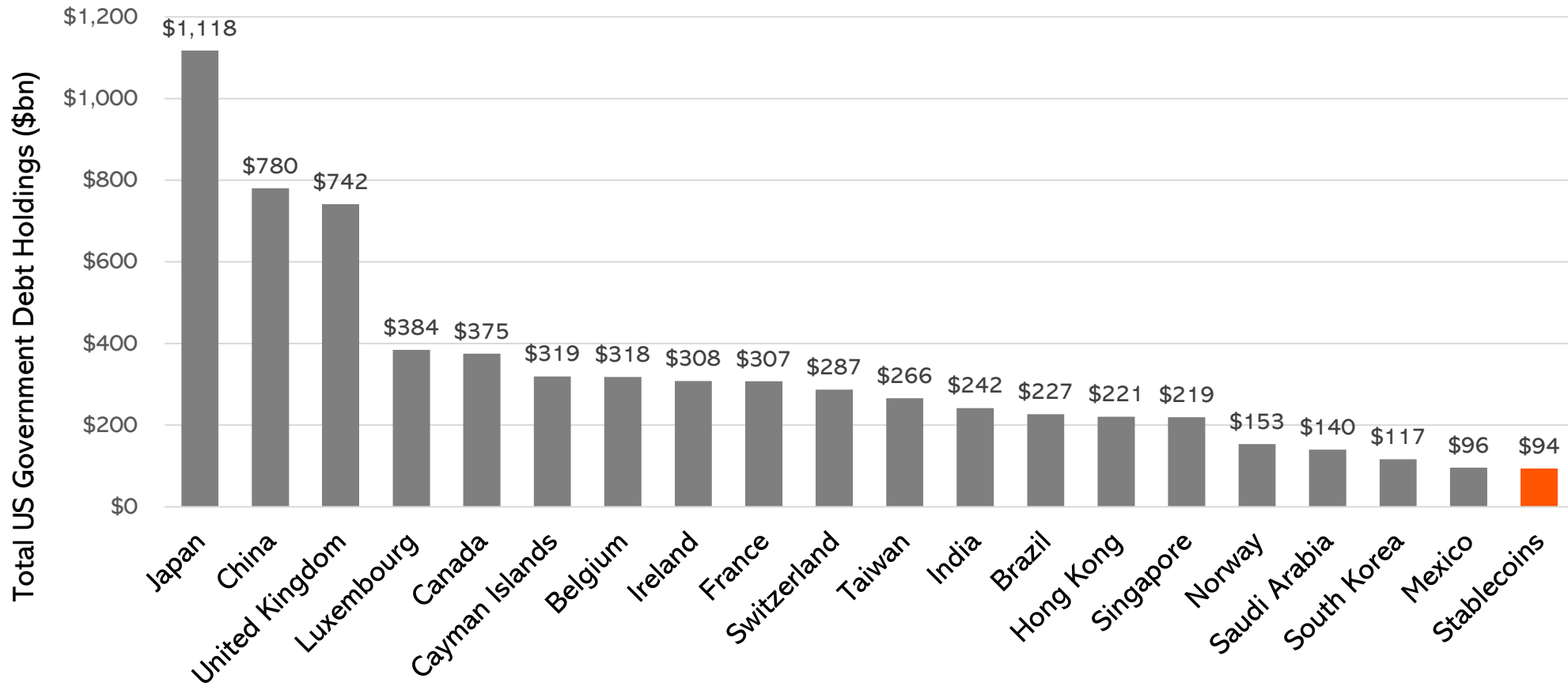
CHART #22



The Perception? Digital Assets Are Too Small to Matter Within the Global Financial System. The Reality? Stablecoins Now Rank Among the Top 20 Foreign Holders of US Government Debt



Top 20 Foreign Holders of US Government Debt



Note: Stablecoins includes Tether (USDT), Circle (USDC), First Digital USD (FDUSD), PayPal USD (PYUSD), Ondo US Dollar Yield Token (USDY), Paxos Dollar (USDP) and Gemini Dollar (USDG). Data is as of 6/30/2024.

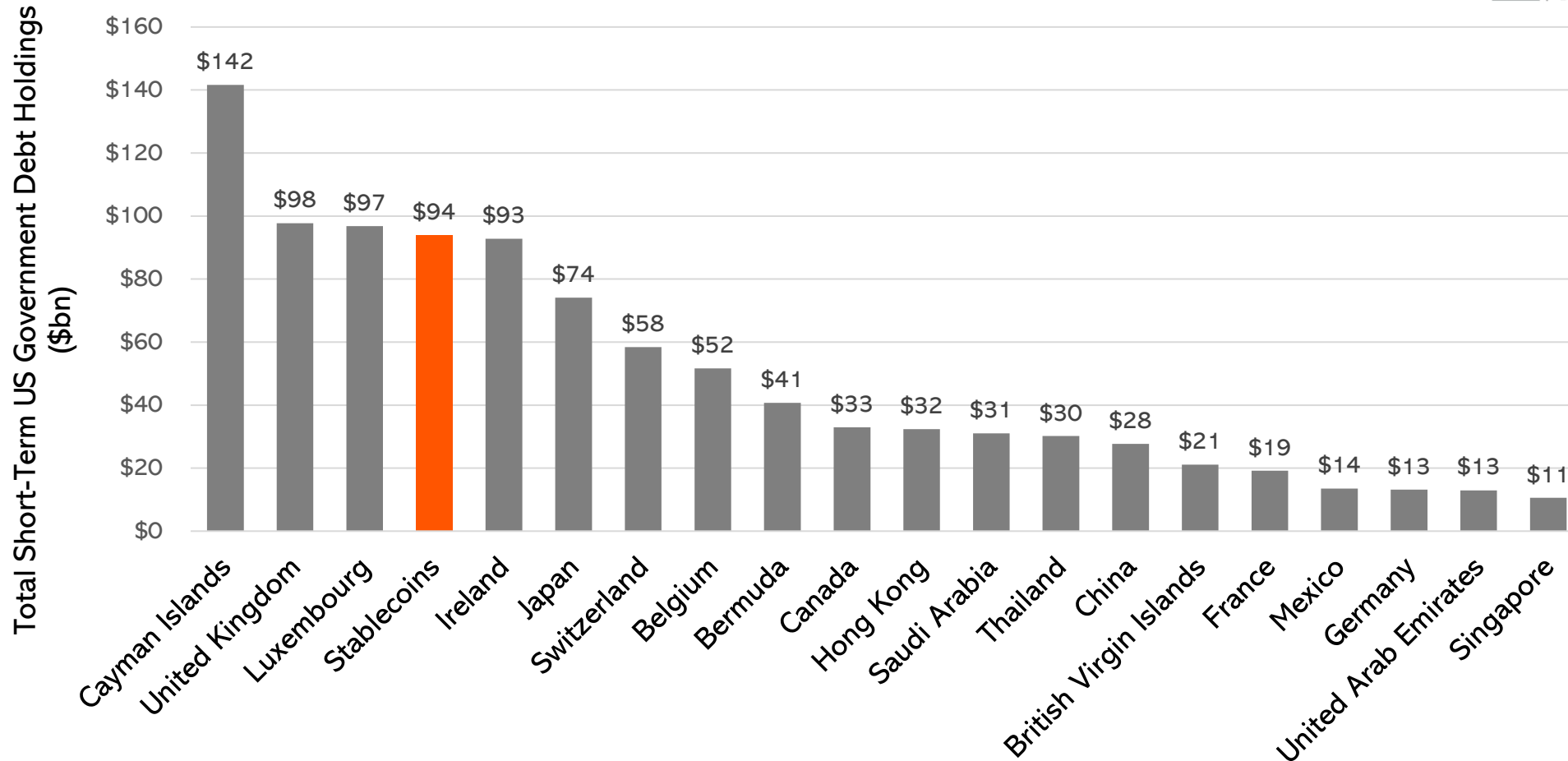
Sources: The United States Treasury, Tether Holdings Limited, Circle Internet Financial, FD121 Limited, Paxos Trust Company, Ondo USDY and Gemini Trust Company.

CHART #23

Stablecoins Are Already the Fourth Largest Foreign Holder of Short-Term US Government Debt



Top 20 Foreign Holders of Short-Term US Government Debt



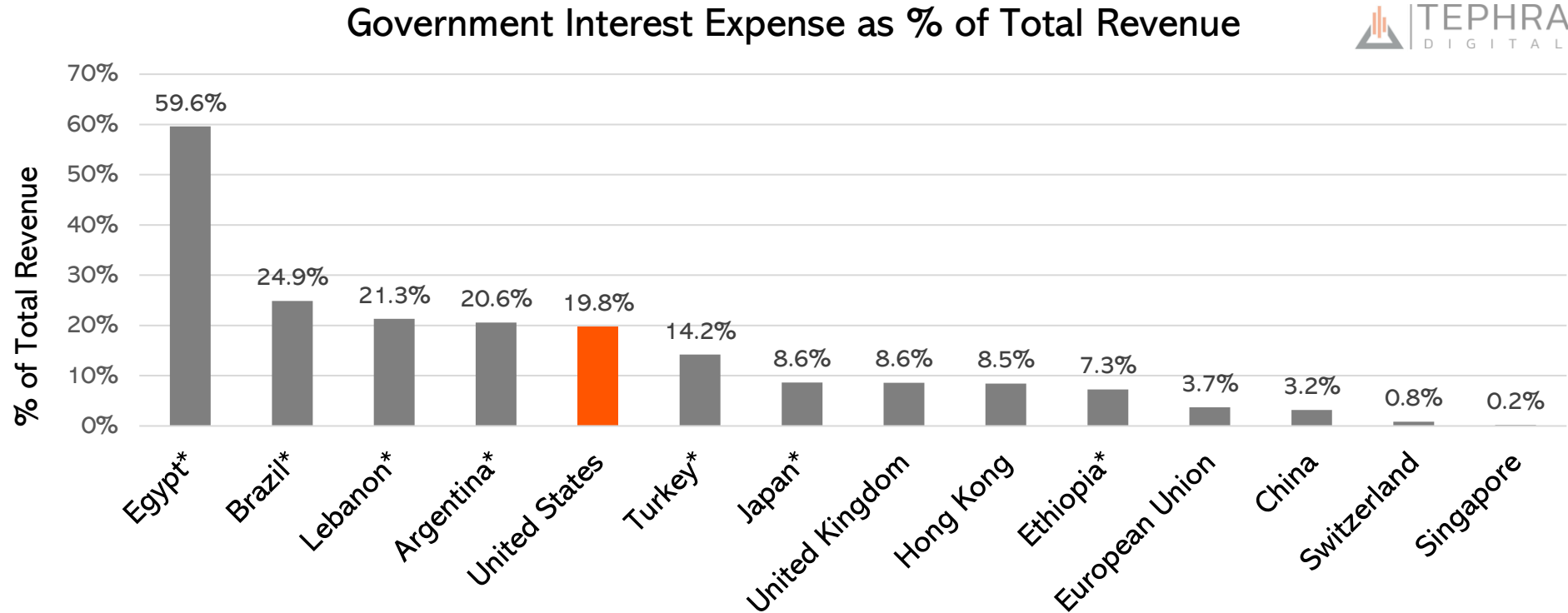
Note: Stablecoins includes Tether (USDT), Circle (USDC), First Digital USD (FDUSD), PayPal USD (PYUSD), Ondo US Dollar Yield Token (USDY), Paxos Dollar (USDP) and Gemini Dollar (USDG). Data is as of 6/30/2024.

Sources: The United States Treasury, Tether Holdings Limited, Circle Internet Financial, FD121 Limited, Paxos Trust Company, Ondo USDY and Gemini Trust Company.

CHART #24



US Interest Expense as a Percentage of Total Revenue Now Rivals Countries that Recently Experienced Significant Currency Devaluation



* Indicates Currency has Depreciated by Over 30% Versus the US Dollar Since 2020

Note: Total Revenue includes gross tax receipts, social and retirement insurance, customs duties, government-owned-enterprise revenue and certain other items. Egypt figures refer to totals from July 2023 to May 2024. Brazil figures refer to totals from January to June 2023. Lebanon figures refer to totals from October to December 2023. Argentina and Turkey figures refer to annualized interest expense from July 2024 divided by annualized year-to-date total revenue through July 2024. United States figures refer to annualized interest expense from July 2024 divided by annualized total revenue from October 2023 to July 2024. Japan figures refer to the 2024 general account budget estimate. United Kingdom figures refer to annualized interest expense from July 2024 divided by annualized total revenue from April to July 2024. Hong Kong figures refer to totals from April 2022 to March 2023. Ethiopia figures refer to totals from January to March 2023. European Union, China, Switzerland, and Singapore figures refer to totals from 2023.

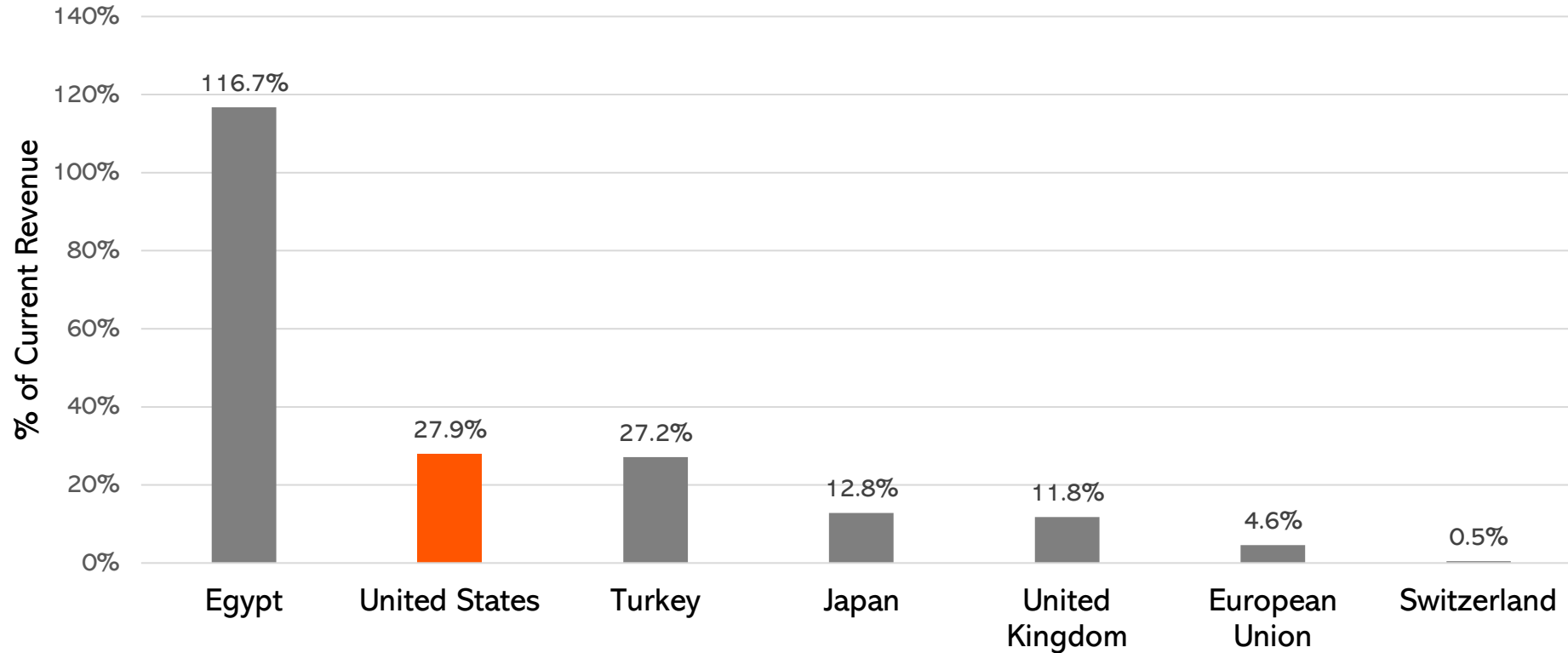
Sources: Bloomberg, the United States Treasury, the National Treasury of Brazil, Banque Du Liban, the Ministry of Economy of Argentina, the Ministry of Finance of Egypt, the Ministry of Treasury and Finance of Turkey, the Japanese Ministry of Finance, the Treasury of the Government of the HKSAR, the UK Statistics Authority, the National Bank of Ethiopia, the European Commission, the Ministry of Finance of the People's Republic of China, the Swiss Federal Finance Administration and the Singapore Department of Statistics.

CHART #25



The US Appears to Be Facing a Concerning Currency and Credit Outlook, Which Highlights the Importance of Digital Asset Allocation

Annual Implied Mark-to-Market Government Interest Expense as % of Total Revenue



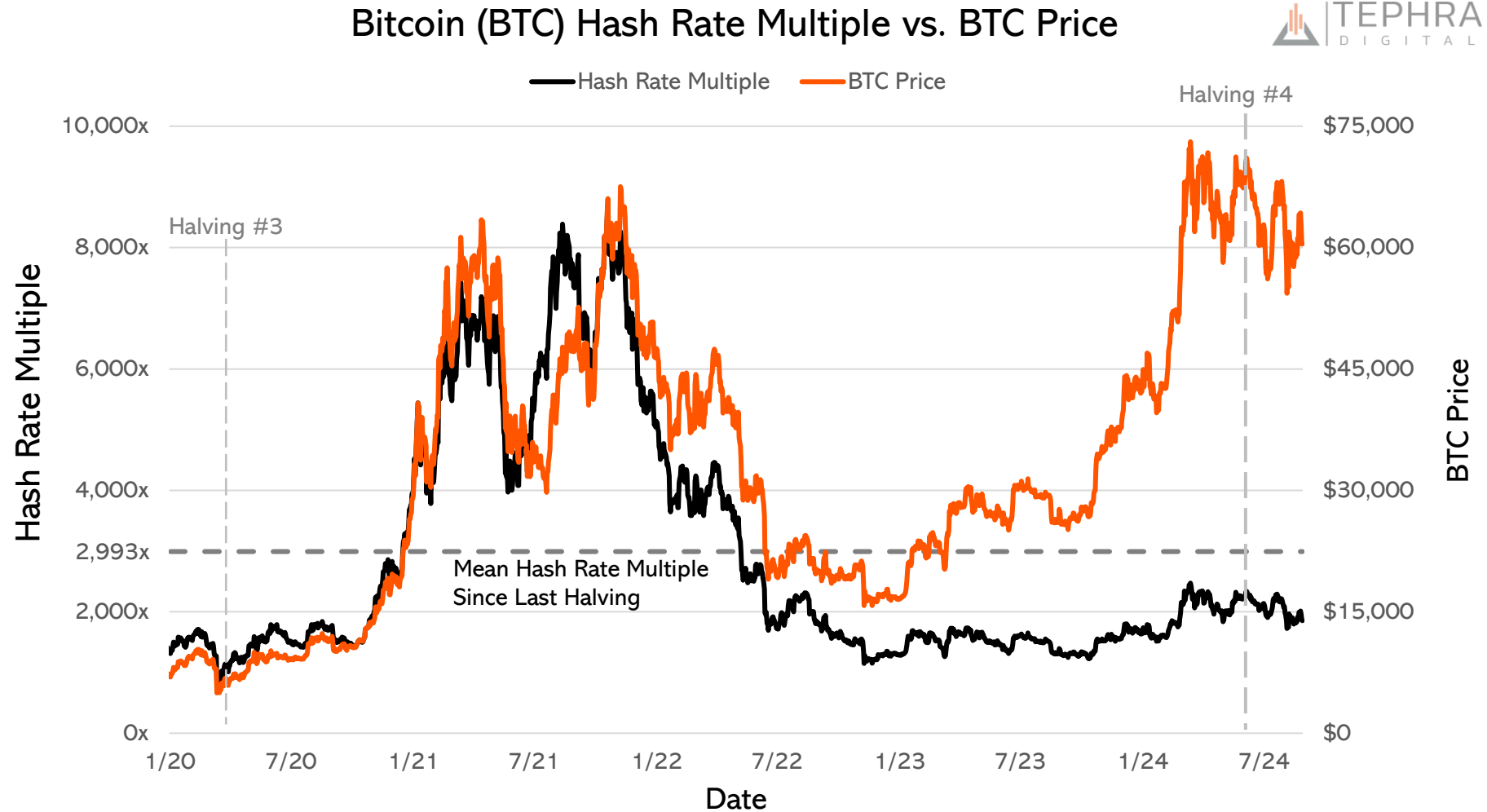
Note: Annual Implied Mark-to-Market Government Interest Expense is calculated by multiplying the latest total government debt by the coupon rate of 10-year government treasury bonds. Egypt figures refer to government debt calculated by multiplying the June 2024 debt-to-GDP by 2023 GDP, and total revenue from July 2023 to May 2024. United States figures refer to government debt from August 2024 and annualized total revenue from October 2023 to July 2024. Turkey figures refer to government debt from July 2024 and annualized total revenue from January 2024 to July 2024. Japan figures refer to government debt from June 2024 and total revenue from the 2024 general account budget estimate. United Kingdom figures refer to government debt from December 2023 and annualized total revenue from April 2024 to July 2024. European Union and Switzerland figures refer to government debt from December 2023 and total revenue from 2023.

Sources: Bloomberg, the Federal Reserve Bank of St. Louis, the United States Treasury, the Ministry of Finance of Egypt, the Ministry of Treasury and Finance of Turkey, the Japanese Ministry of Finance, the UK Statistics Authority, His Majesty's Treasury, the European Commission, the Swiss Federal Department of Finance and the Swiss Federal Finance Administration.

CHART #26



Bitcoin (BTC) Price Has Rebounded Strongly Since 2022, But it Appears to be Just as Cheap on a Hash Rate Multiple Basis



Note: Bitcoin (BTC) Hash Rate Multiple is calculated by dividing the USD-denominated market capitalization of Bitcoin (BTC) by the 30-day moving-average network hash rate. Data is as of 8/28/2024.

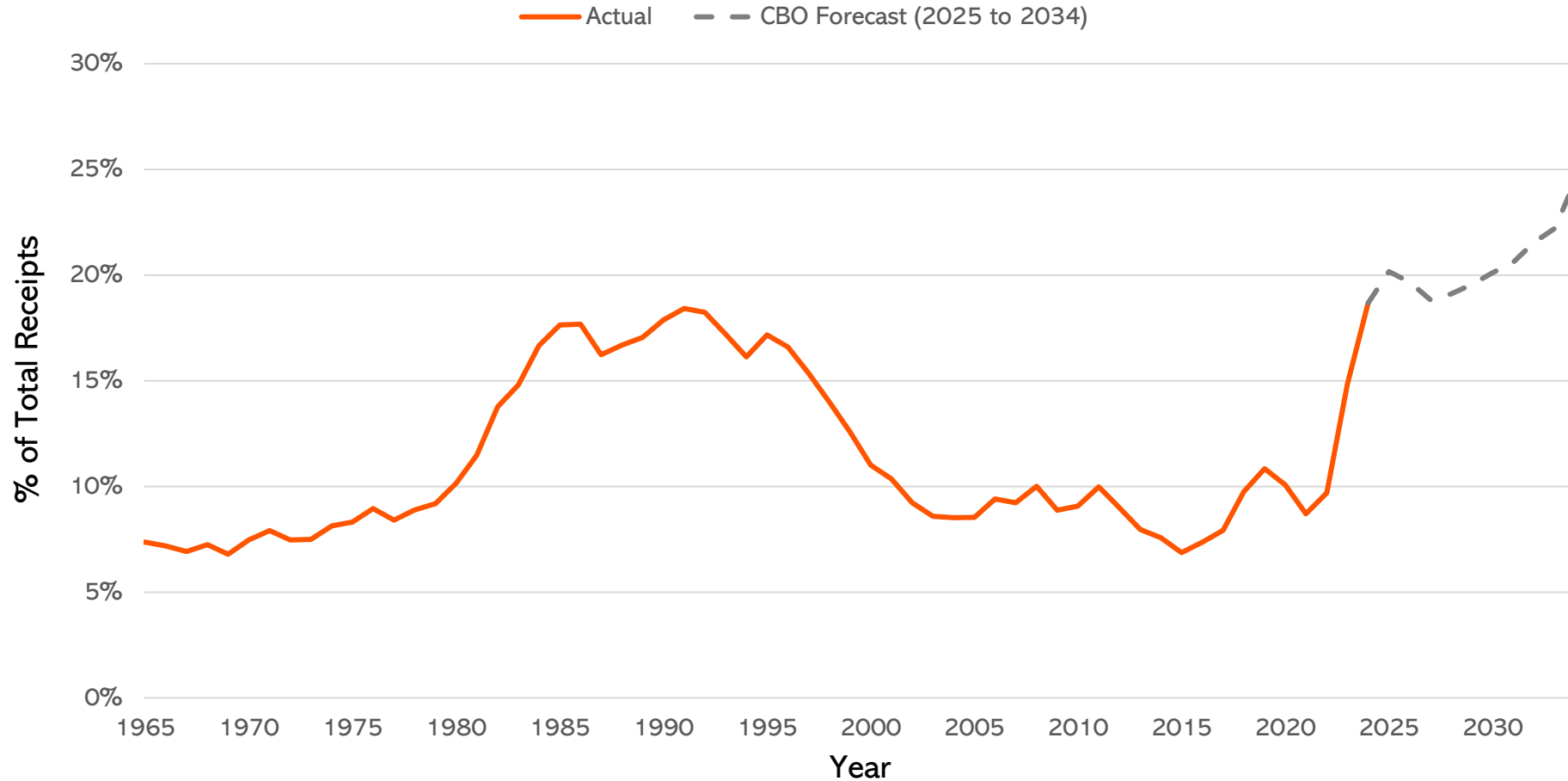
Source: Artemis and Coin Metrics.

CHART #27



US Government Interest Expense Appears to Be on an Unsustainable Path, Highlighting Digital Assets as a Monetary System Alternative with Growing Potential

US Government Interest Expense as % of Total Receipts



Note: Total Receipts defined as receipts from individual and corporate income taxes, social and retirement insurance, excise taxes, customs duties, estate and gift taxes and certain other items. 2024 figures refer to fiscal year-to-date totals through July 2024. All data is as of August 2024. Source: The United States Treasury and Congressional Budget Office.

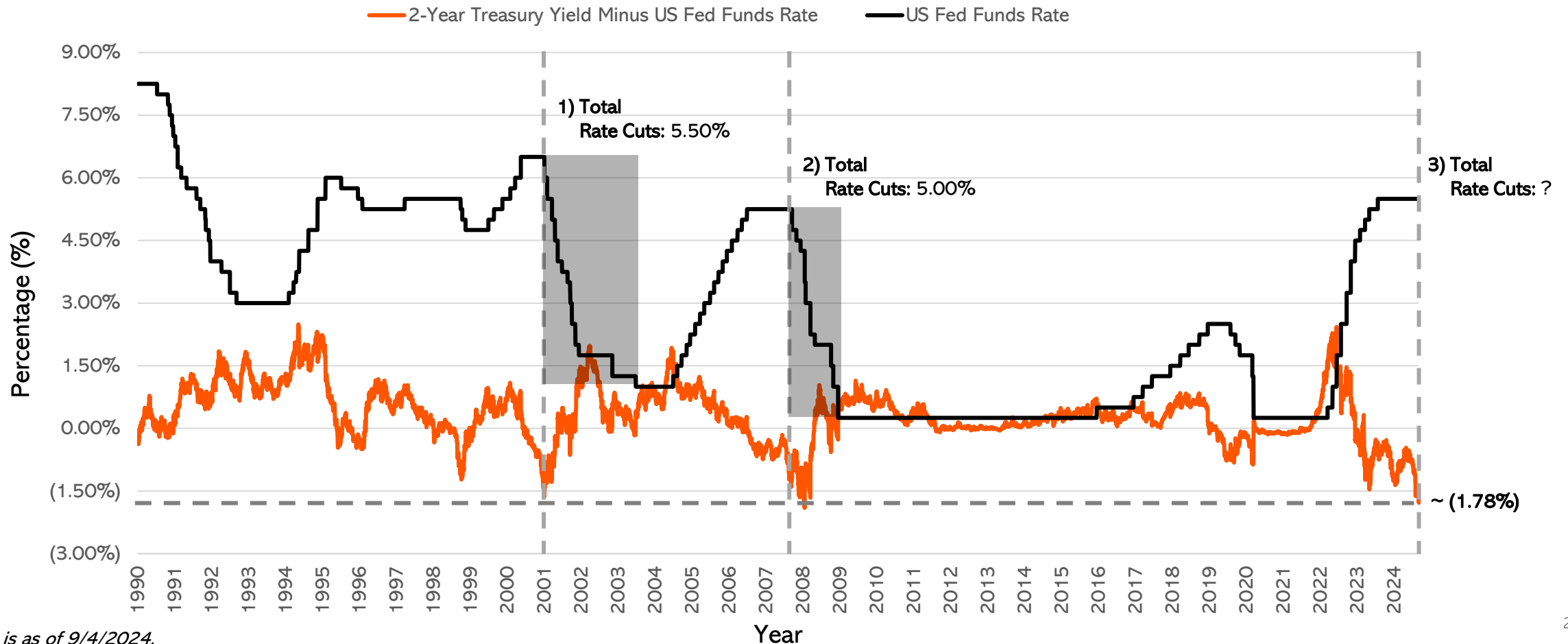
CHART #29



The 2-Year Treasury Yield Is Indicating the Fed is Again Behind the Curve. In the Two Cases Since 1990 Where the Difference Between the 2-Year Yield and Federal Funds Rate Reached Current Levels, Over 500 Basis Points of Cuts Followed



US Fed Funds Rate vs. Spread of 2-Year Treasury Yield Minus US Fed Funds Rate



Note: Data is as of 9/4/2024.
Source: Bloomberg.

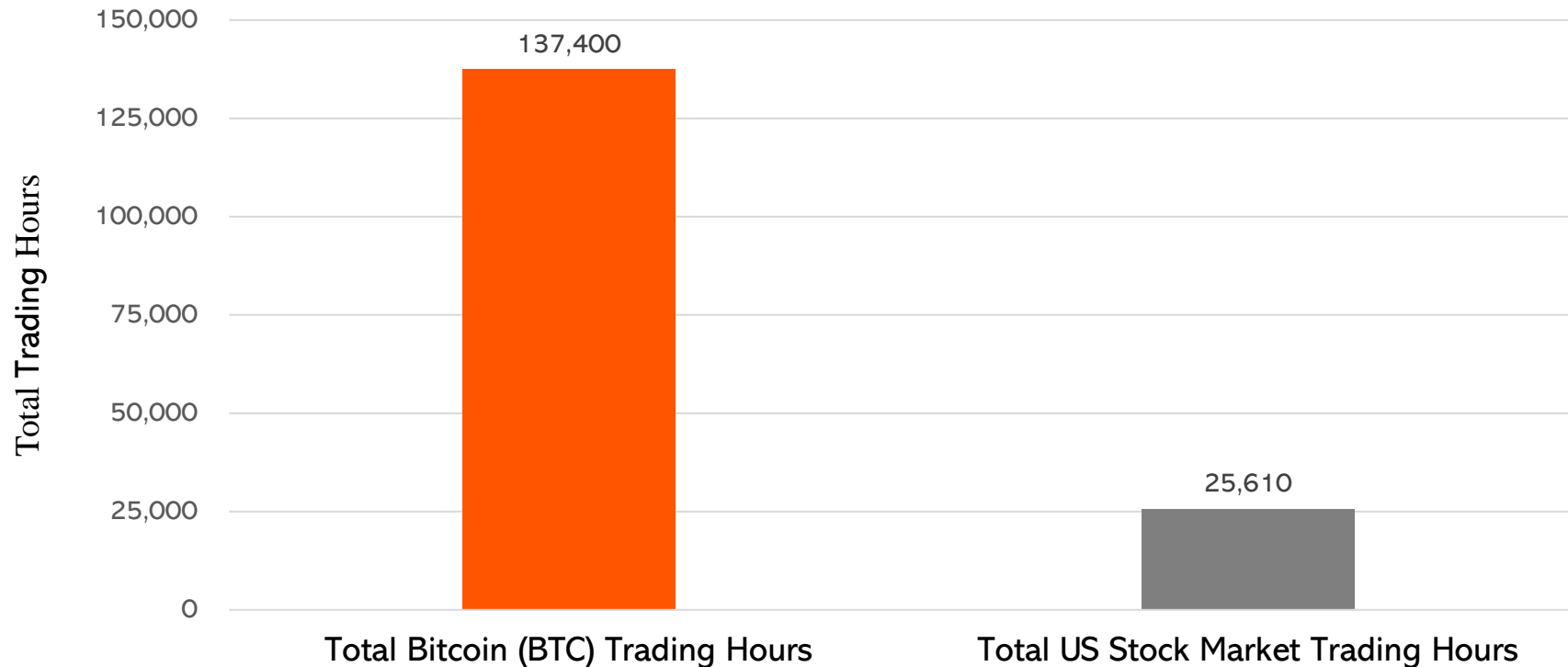
CHART #30



The Perception? Bitcoin (BTC) Is New, Unproven and has a Limited History. The Reality? Since Its Inception, Bitcoin (BTC) Has Already Traded More Estimated Total Hours than the US Stock Market Has Since 1940



Total Bitcoin (BTC) Trading Hours vs. Total US Stock Market Trading Hours Since Bitcoin (BTC) Inception

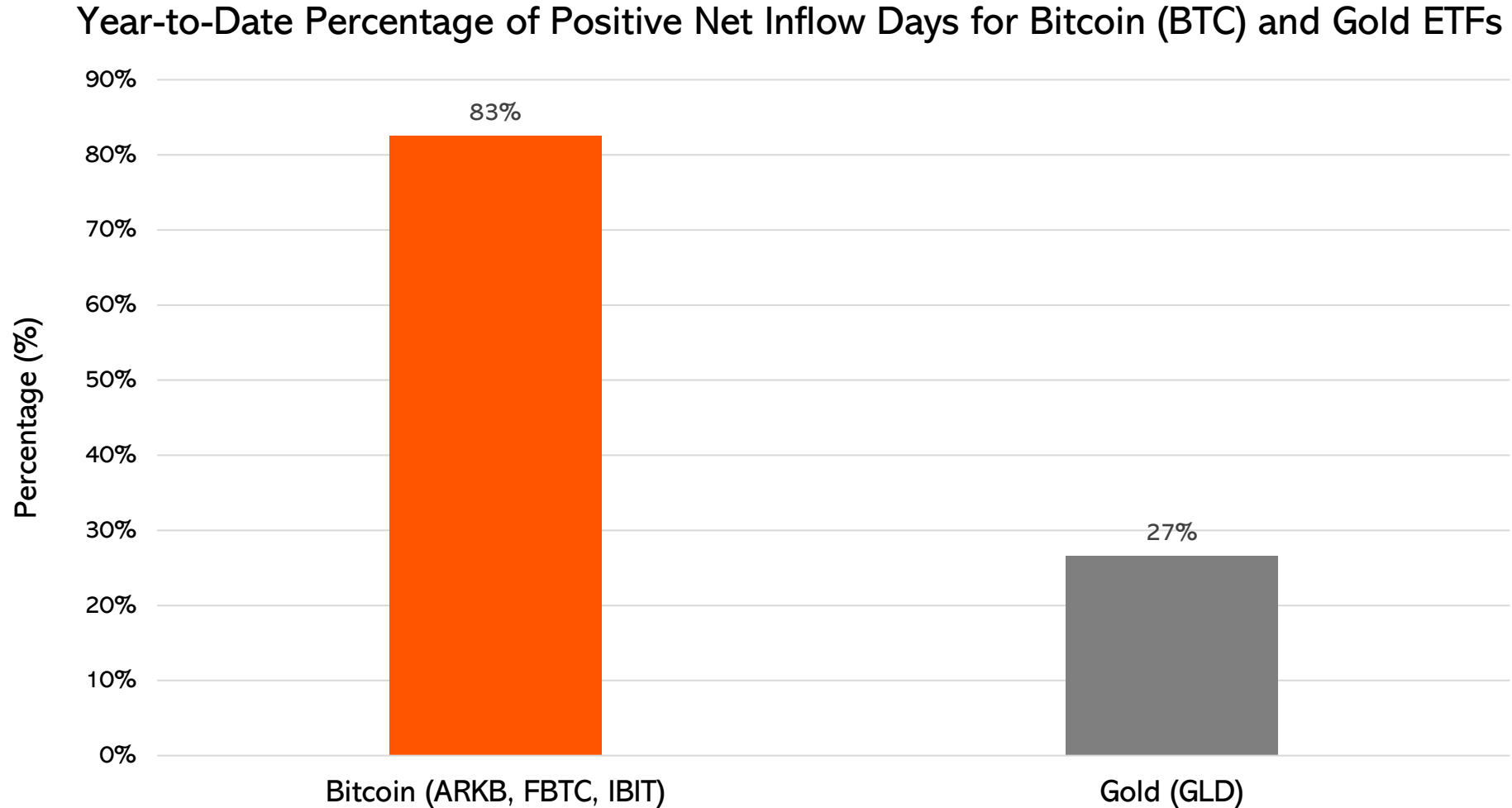


Note: Calculations include total trading hours from Bitcoin (BTC) inception on 1/3/2009 through 9/6/2024. Total Bitcoin (BTC) Trading Hours assumes 24 hours per day and 5,725 days since 1/3/2009. Total US Stock Market Trading Hours assumes 6.5 hours per trading day and 3,940 trading days since 1/3/2009. To determine the date when the US stock market would have operated for the same total hours as Bitcoin (BTC) trading to date, we assume the US stock market operates 252 trading days per year with 6.5 hours per day. The total Bitcoin trading hours are divided by the product of 252 trading days and 6.5 hours. This result is then subtracted from 9/6/2024 to find the equivalent date, which falls in late 1940.

Source: New York Stock Exchange.

CHART #31

ETF Net Inflow Data Appears to Support the Role of Bitcoin (BTC) as Digital Gold, with Significant Potential Runway Ahead



Note: Bitcoin ETF flows include the combined daily net flows of the ARK 21Shares Bitcoin ETF (ARKB), Fidelity Wise Origin Bitcoin Fund (FBTC), and iShares Bitcoin Trust ETF (IBIT). Gold ETF inflows are based on daily net flows of the SPDR Gold Shares ETF (GLD). A positive net inflow day refers to a day where ETF holdings increased relative to the previous day. Sources: ARK Invest, Fidelity, iShares, State Street Global Advisors.

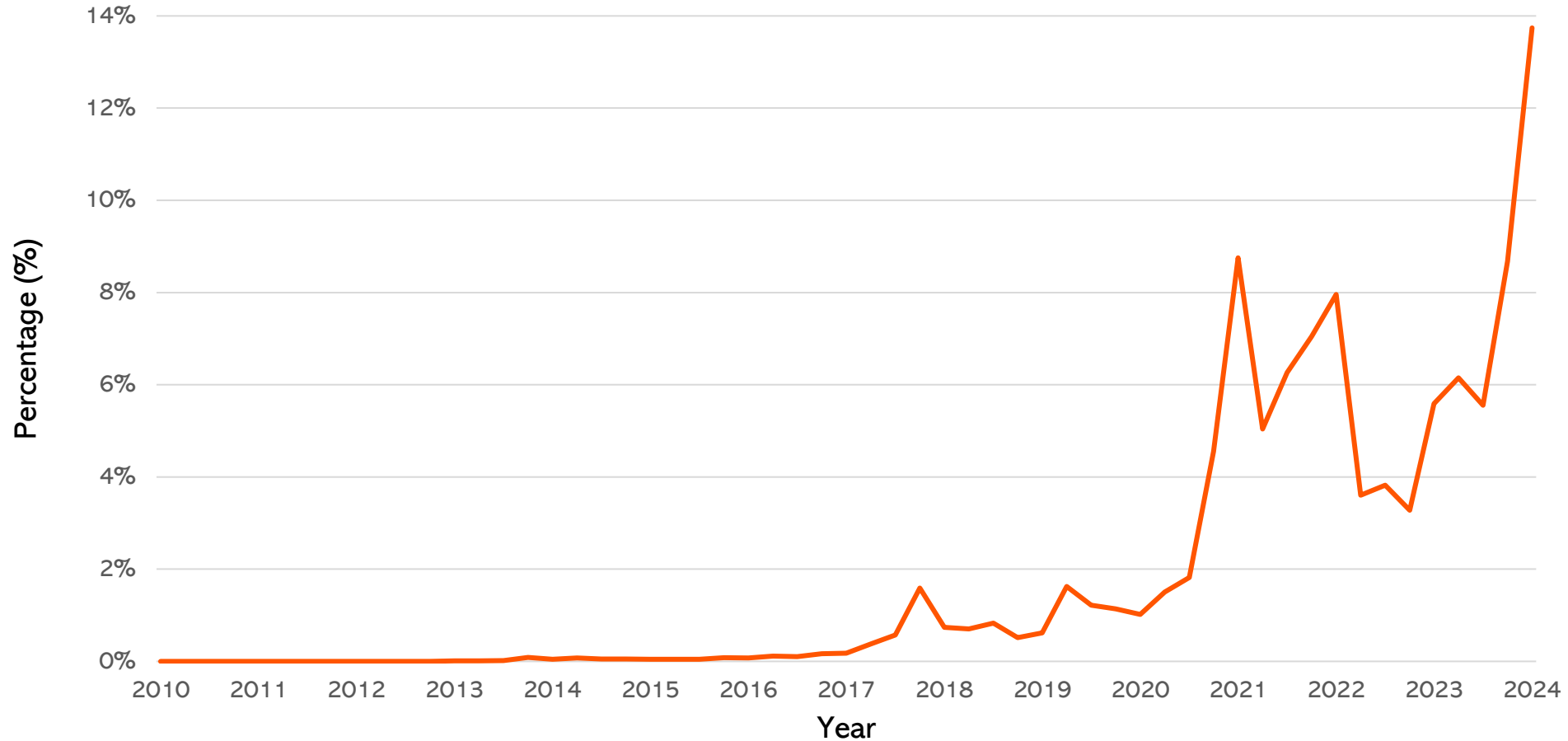
Sources: ARK Invest, Fidelity, iShares, State Street Global Advisors.

CHART #32

Bitcoin (BTC) Appears to Be Gaining Meaningful Traction as a Global Store of Value in US Dollar Terms



Bitcoin (BTC) Long-Term Holdings as Percentage of Global US Dollar FX Reserves



Note: Bitcoin (BTC) Long-Term Holdings refers to the point-in-time US Dollar value of Bitcoin (BTC) that has not been transferred in over one year. Global US Dollar FX Reserves includes quarterly data from 149 reporting countries according to IMF COFER methodology. Data is as of 3/31/2024.

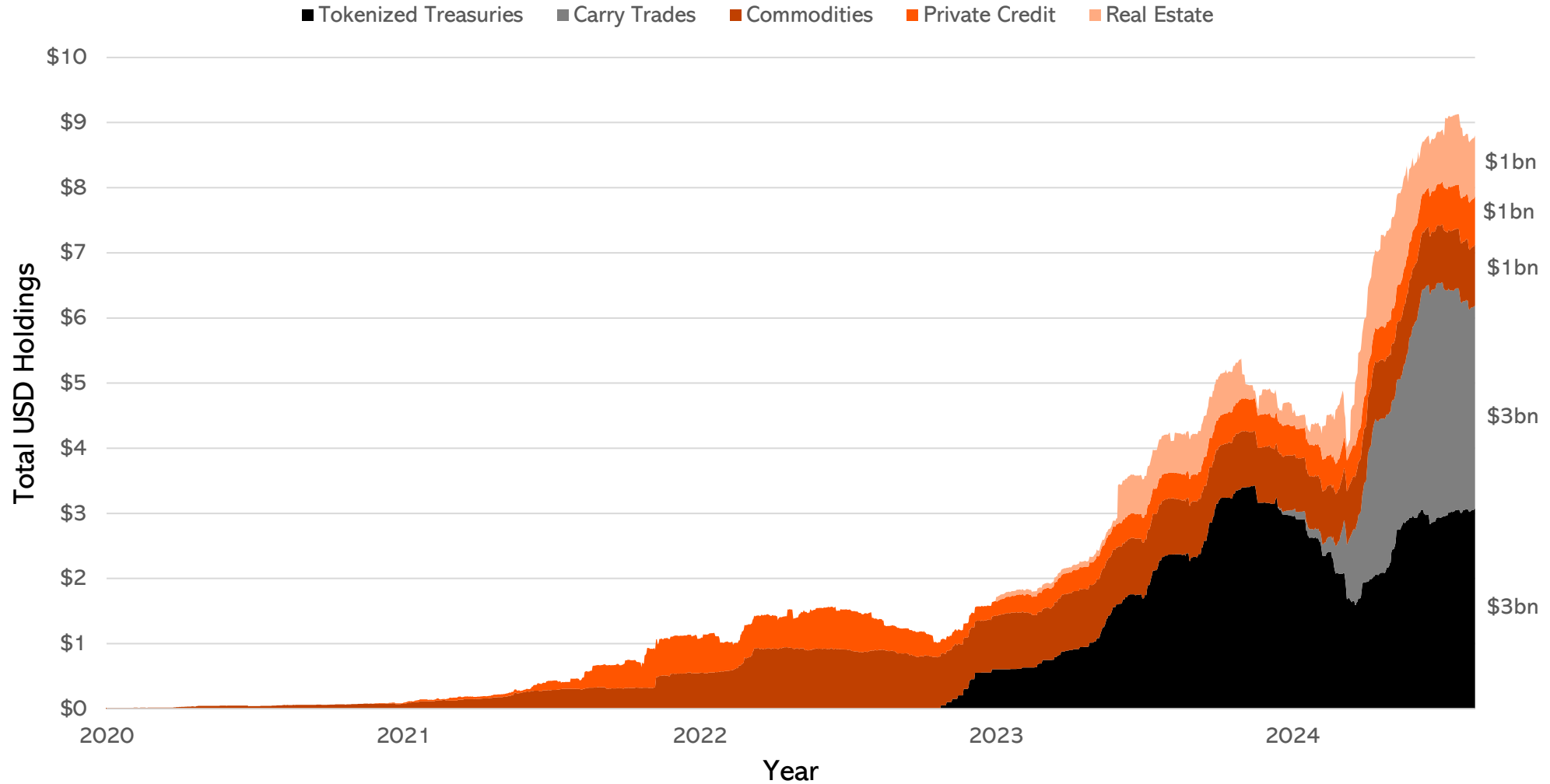
Source: IMF COFER and Glassnode.

CHART #33

Beyond Stablecoins, Tokenized Real-World Assets Also Appear to Be Growing Rapidly



Total Value of Tokenized Blockchain Assets by Sector



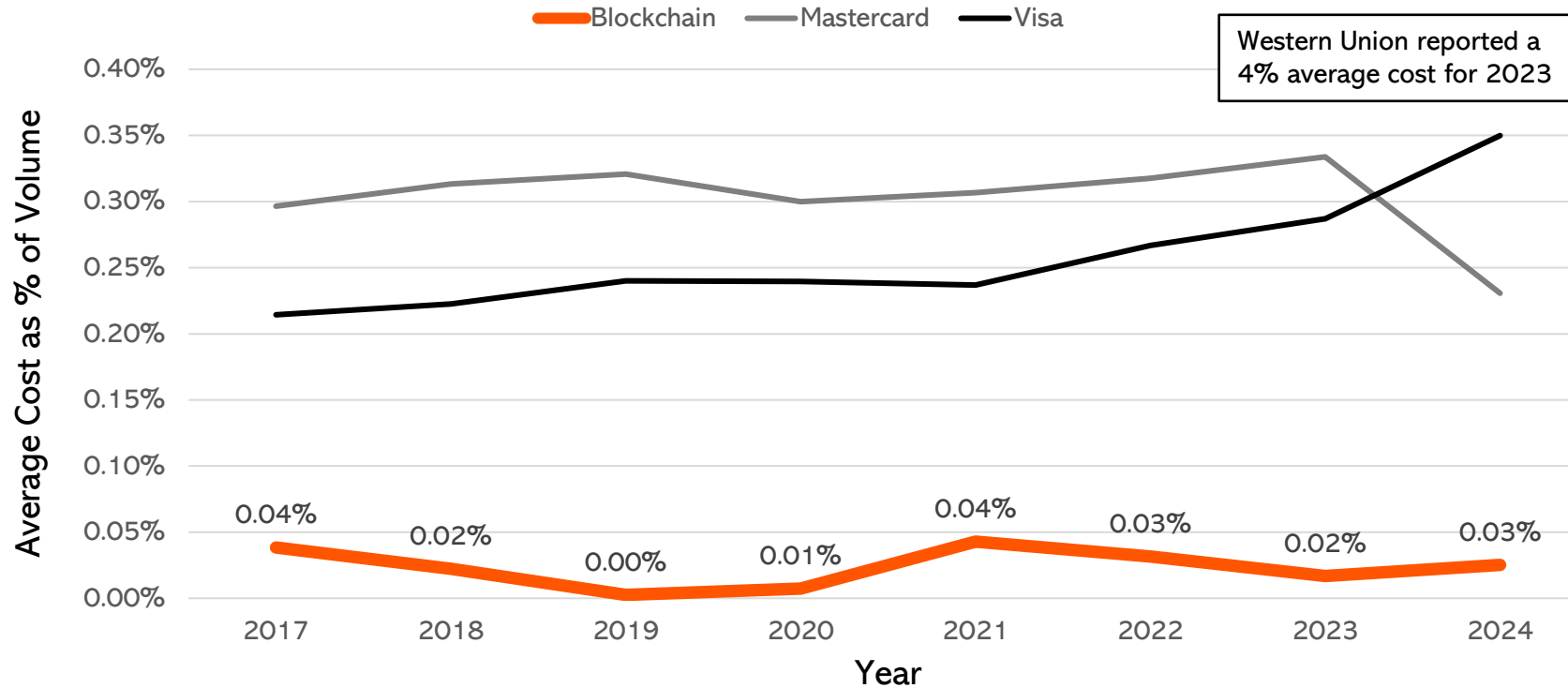
Note: Carry Trades refers to Ethena Synthetic Dollar backing. Data is as of 8/16/2024.
Sources: Messari, RWA.xyz and Dune Analytics (@Steakhouse, @21co)

CHART #34



Even As Block Settlement Times and User Features Have Significantly Improved, Transaction Costs on Major Blockchains Appear to Be Much Cheaper than Some Traditional Payment Rails

Average Transaction Cost as Percentage of Volume: Blockchain vs. Major Payment Networks



Note: Average transaction cost for Mastercard and Visa is calculated by dividing the annual payments-based revenue by the total annual transaction volume. Average blockchain transaction cost is calculated by dividing the total annual transaction fees by total settlement volume across eight blockchains. Blockchains include Bitcoin (BTC), Ethereum (ETH), Arbitrum (ARB), Avalanche (AVAX), Base, Near (NEAR), Polygon (POL) and Solana (SOL). Mastercard and Visa 2024 figures refer to year-to-date totals through 6/30/2024. Blockchain 2024 figures refer to year-to-date totals through 9/12/2024. Western Union figures refer to the 2023 ESG Report by Western Union.

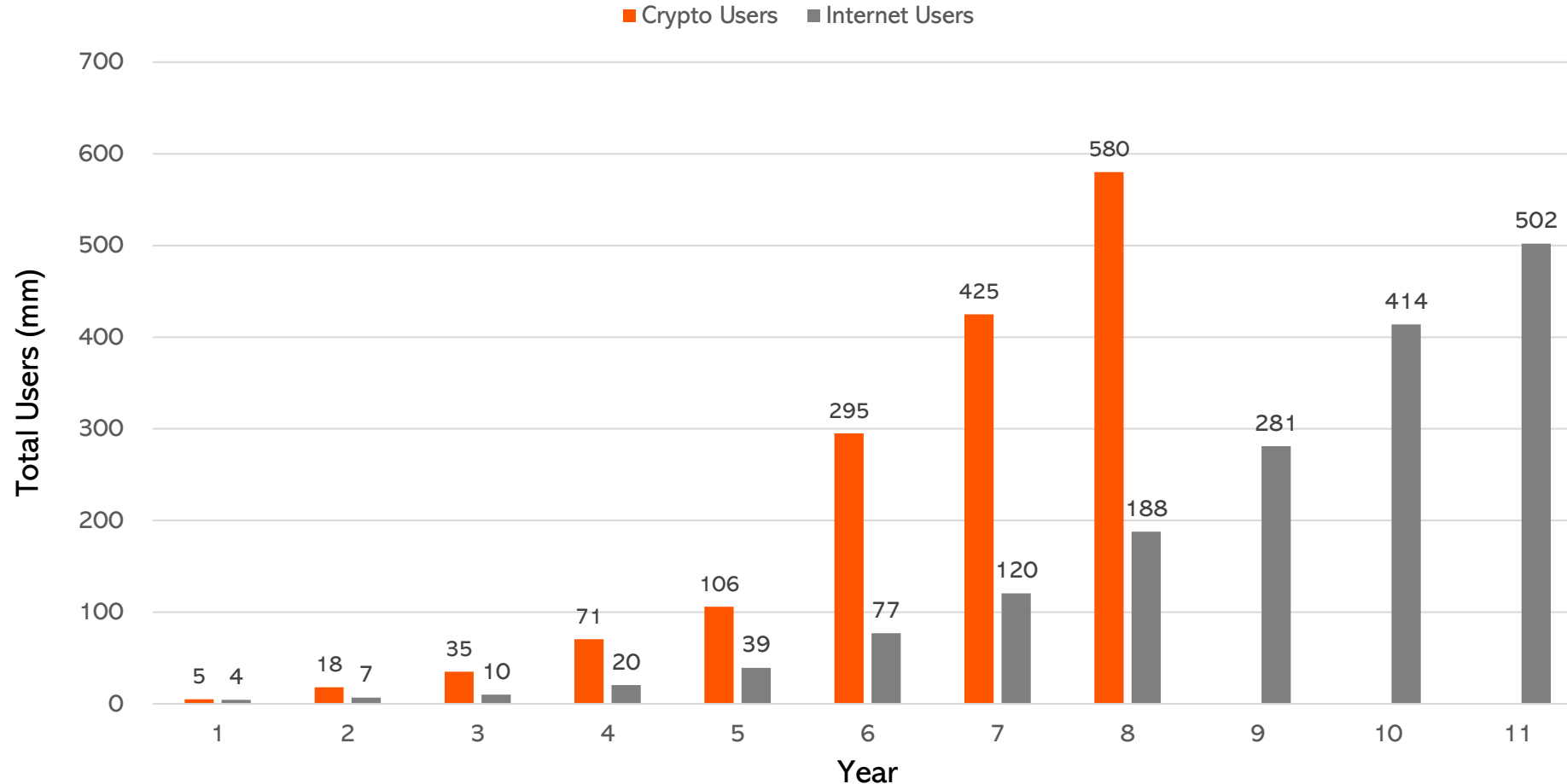
Sources: Artemis, Mastercard and Visa.

CHART #35

Crypto User Adoption Appears to Be Outpacing Early Internet User Adoption Based on Historical Comparisons



Total User Adoption: Crypto vs. the Internet



Note: Year corresponds to 1991 through 2001 for Internet Users and 2016 through 2026 for Crypto Users. Crypto User figures refer to University of Cambridge data for 2016 through 2018 and Crypto.com data for 2020 through 2023. 2019 Crypto User figures are an estimate, calculated as the average between 2018 and 2019 figures.
Sources: Crypto.com, the International Telecommunications Union and University of Cambridge.

CHART #36

Bitcoin (BTC) Has Demonstrated Resilience and Significant Outperformance Through a Wide Range of Geopolitical Events and Market Shocks



S&P 500, Gold, Bond, and Bitcoin (BTC) Performance Through Major Geopolitical Events



| Event | Date | 5D Return | | | | 30D Return | | | | 90D Return | | | |
|----------------------------------|------------|-----------|------|-------|------|------------|------|-------|------|------------|------|-------|------|
| | | S&P 500 | Gold | Bonds | BTC | S&P 500 | Gold | Bonds | BTC | S&P 500 | Gold | Bonds | BTC |
| Brexit | 6/23/2016 | -4% | 4% | 5% | -4% | 3% | 4% | 5% | 0% | 2% | 5% | 3% | -10% |
| 2016 US Election | 11/9/2016 | 0% | -5% | -3% | 0% | 5% | -9% | -6% | 8% | 6% | -4% | -3% | 48% |
| US China Trade War | 3/8/2018 | 1% | 0% | 0% | -2% | -5% | 1% | 2% | -27% | 1% | -2% | 0% | -19% |
| FOMC Policy Error | 12/19/2018 | -7% | 0% | 0% | 9% | 6% | 2% | -1% | -2% | 12% | 4% | 0% | 9% |
| Powell Pivot | 1/4/2019 | 2% | 1% | -1% | 4% | 8% | 3% | -1% | -9% | 14% | 0% | 1% | 28% |
| US-Iran Escalation | 1/3/2020 | 1% | 1% | -2% | 10% | 1% | 2% | 5% | 28% | -22% | 4% | 21% | -7% |
| COVID Outbreak | 3/11/2020 | -13% | -10% | 5% | -37% | 0% | 2% | 5% | -13% | 17% | 4% | 1% | 23% |
| 2020 US Election Challenges | 11/4/2020 | 3% | -2% | -3% | 9% | 8% | -3% | -4% | 33% | 11% | -4% | -6% | 152% |
| US Withdrawal from Afghanistan | 8/16/2021 | 0% | 1% | 1% | 6% | 0% | 1% | 1% | 5% | 5% | 4% | -2% | 43% |
| Russia Invasion of Ukraine | 2/24/2022 | 0% | -1% | 3% | 16% | 6% | 0% | -5% | 16% | -7% | -5% | -13% | -23% |
| US Regional Banking Crisis | 3/9/2023 | 0% | 4% | 2% | 22% | 5% | 9% | 5% | 37% | 9% | 7% | -1% | 29% |
| Hamas-Israel Conflict | 10/7/2023 | 1% | 3% | 2% | -4% | 1% | 9% | 2% | 25% | 9% | 13% | 14% | 58% |
| Iranian Missile Strike on Israel | 4/12/2024 | -2% | 0% | -1% | -9% | 2% | -2% | 0% | -9% | 9% | 0% | 4% | -15% |
| Mini AI Crash | 6/18/2024 | -1% | 0% | 0% | -3% | 1% | 6% | -1% | -2% | 3% | 11% | 7% | -11% |
| Yen Carry Trade Unwinding | 8/5/2024 | 3% | 2% | -2% | 13% | 6% | 4% | 0% | 7% | N/A | N/A | N/A | N/A |
| Average | | -1% | 0% | 0% | 2% | 3% | 2% | 0% | 6% | 5% | 3% | 2% | 22% |
| Median | | 0% | 0% | 0% | 4% | 3% | 2% | 0% | 5% | 7% | 4% | 1% | 16% |

Note: Returns are calculated based on the closing price of each asset relative to the closing price on the date of each geopolitical event. For S&P 500, Gold, and Bond figures, if the return date does not fall on a trading day, the return is calculated using the closest available trading day after the specified date. Because the Hamas-Israel conflict occurred on a weekend, its figures refer to market-close prices from 10/6/2023. S&P 500 refers to the SPDR S&P 500 ETF Trust (SPY) and Bonds refer to the iShares 20+ Year Treasury Bond ETF (TLT). Red indicates negative returns. Yellow indicates returns between 0% and 5%. Green indicates returns greater than 5%. 90 days have not yet elapsed from 8/5/2024 at the time of publication. Data is as of 9/24/2024.

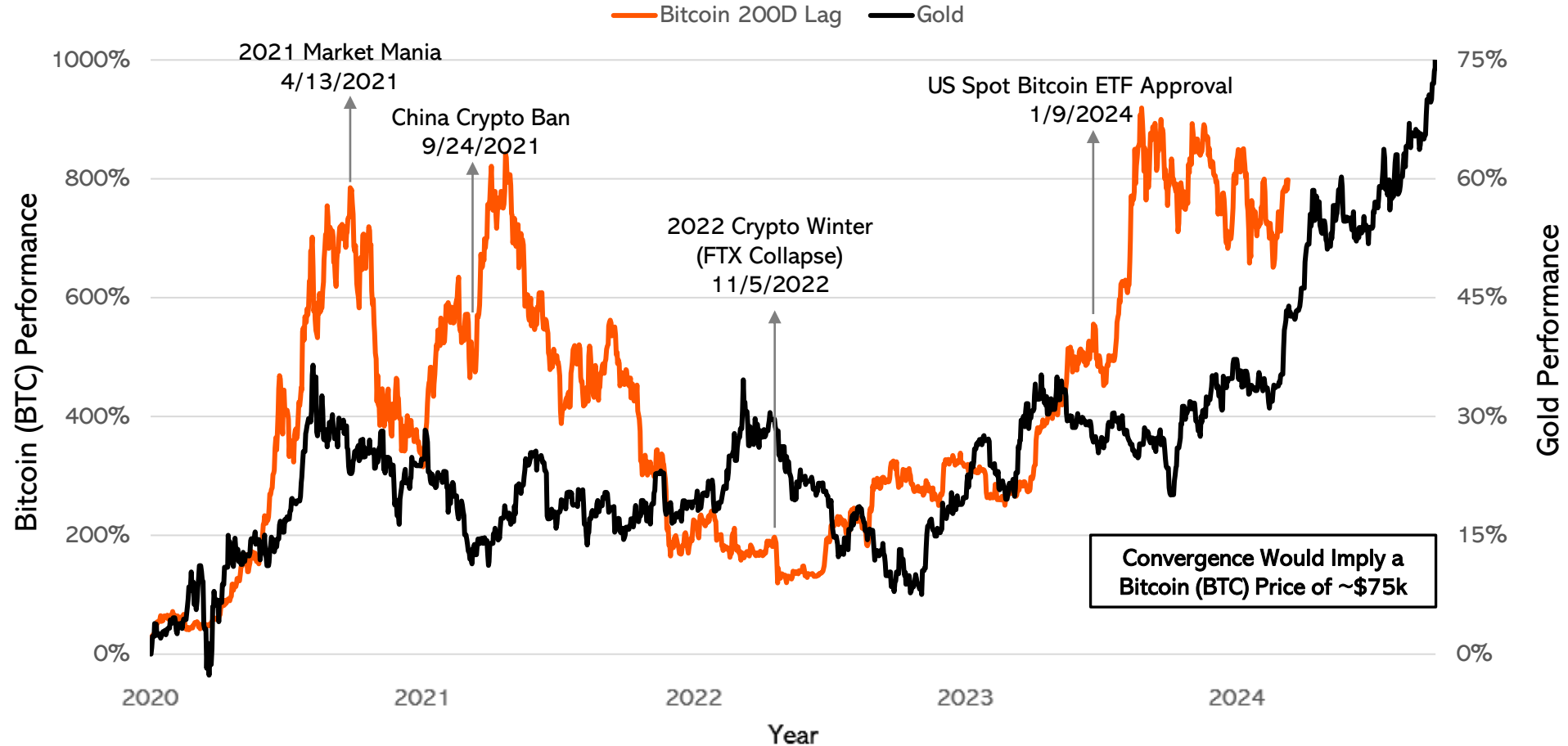
Sources: Artemis, Nasdaq and the World Gold Council. Inspired by BlackRock's report, "Bitcoin: A Unique Diversifier."

CHART #37



Gold Appears to Be a Leading Indicator of Bitcoin (BTC) Performance. Key Attributes of BTC May Position it as a Reserve Asset of the Future

Time-Shifted Bitcoin (BTC) vs Gold Performance



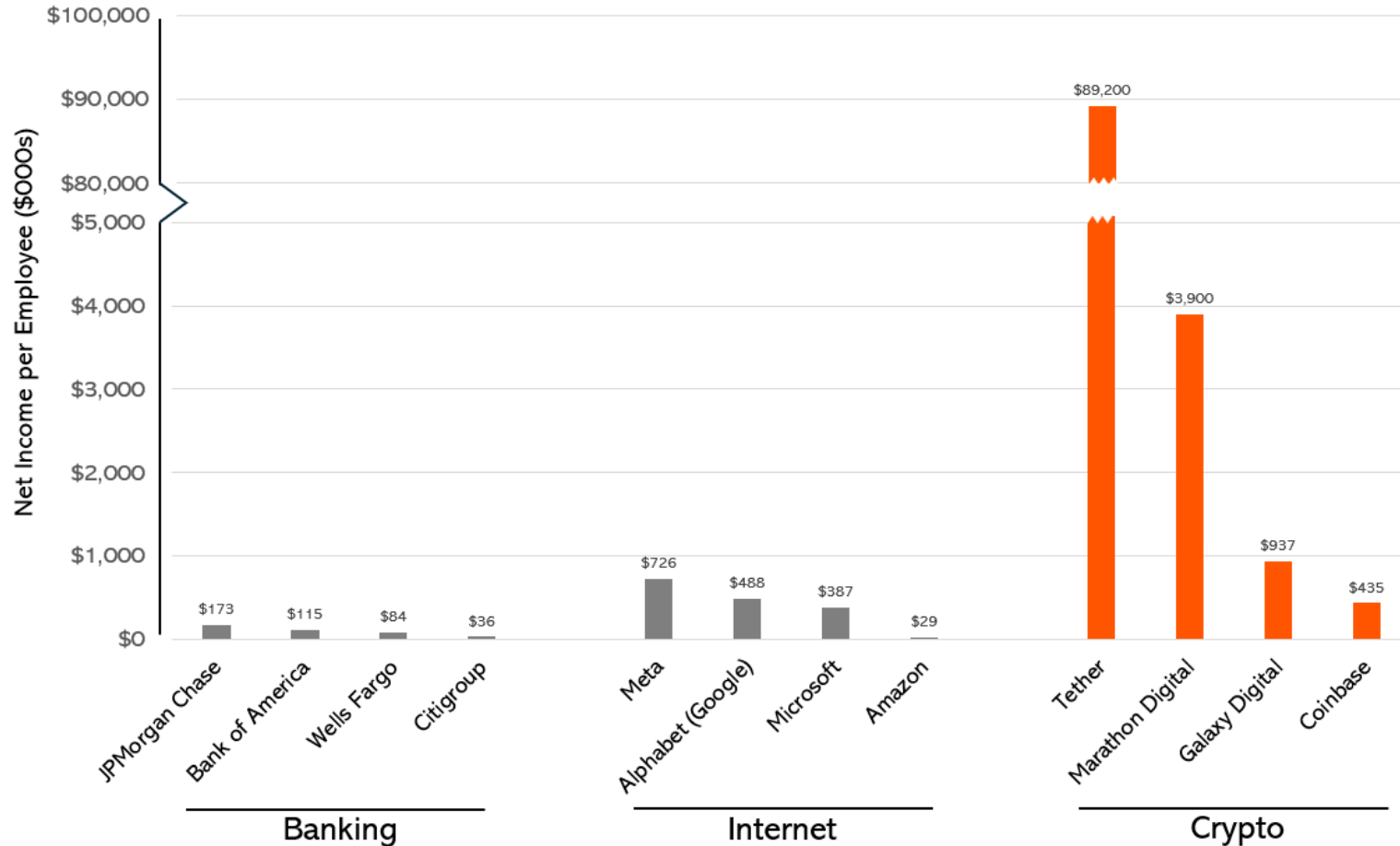
Note: Performance refers to the daily closing prices of Bitcoin (BTC) and gold relative to their closing prices on 1/1/2020. Bitcoin (BTC) performance is shown with a 200-day lag to gold, so labelled events appear 200 days earlier on the x-axis. The Bitcoin (BTC) 200-day implied price is calculated by dividing recent Bitcoin performance by gold performance and multiplying by Bitcoin's closing price on 1/1/2020. Data is as of 9/24/2024. Sources: Artemis and the World Gold Council.

CHART #38



The Crypto Industry Already Features Some Highly Profitable and More Efficient Business Models Versus Financial Services and Technology Incumbents; As Crypto Achieves Even Greater Scale, These Advantages May Grow

Trailing 12-Month Net Income per Employee



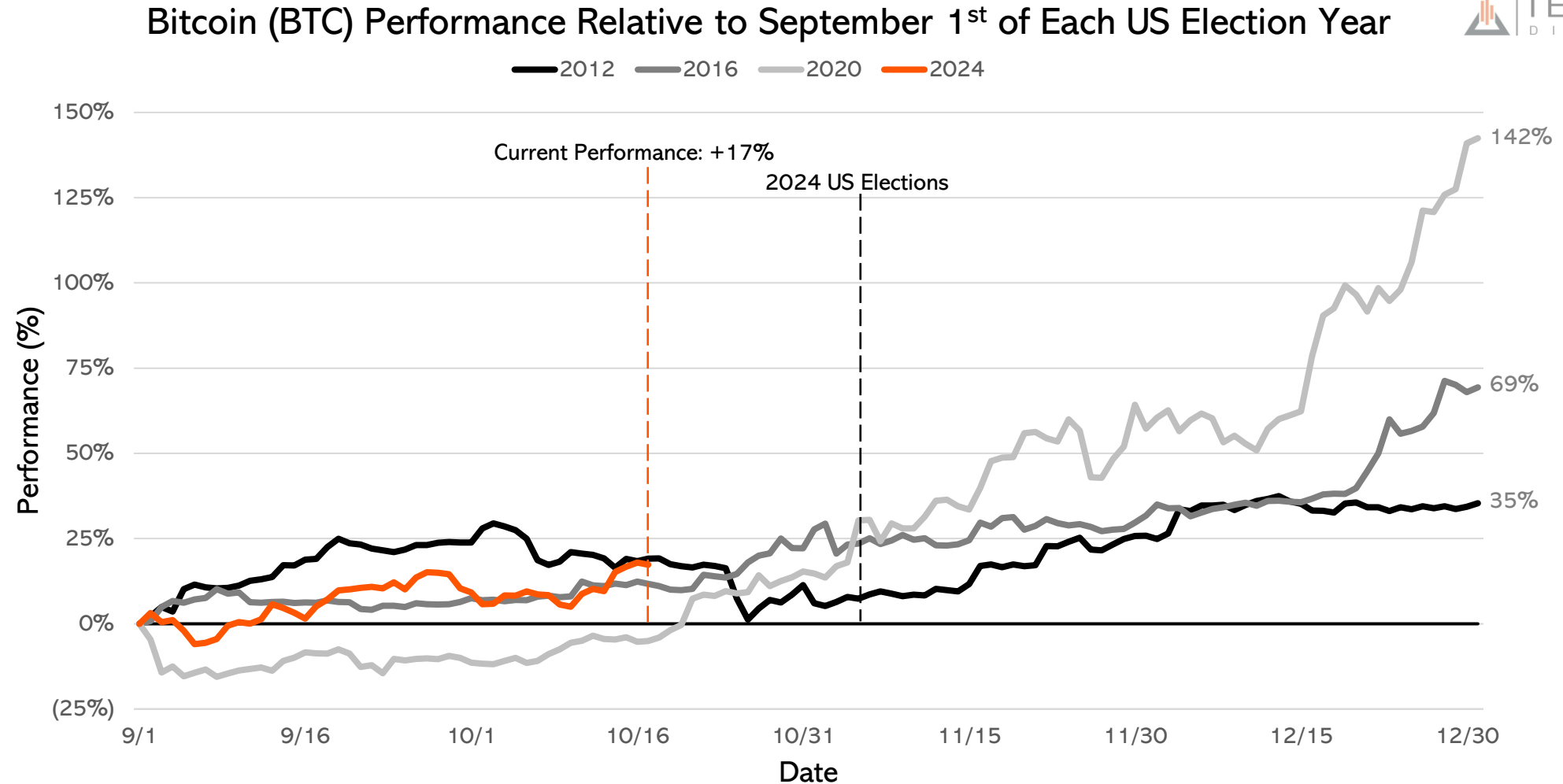
Note: Last 12-Month Net Income is aggregated from fiscal quarters ending 9/30/2023 through 6/30/2024. Employee figures are as of 6/30/2024, except for Nvidia and Coinbase, which refer to 12/31/2023. Tether figures assume a total of 100 employees, as estimated from multiple sources. Data is as of 9/27/2024.

Sources: JPMorgan Chase, Bank of America, Wells Fargo, Citigroup, Meta, Alphabet (Google), Microsoft, Amazon, Tether Holdings, Marathon Digital, Galaxy Digital and Coinbase.

CHART #39



Historically, Bitcoin (BTC) Has Demonstrated Strong Returns Following US Presidential Elections - Regardless of the Outcome



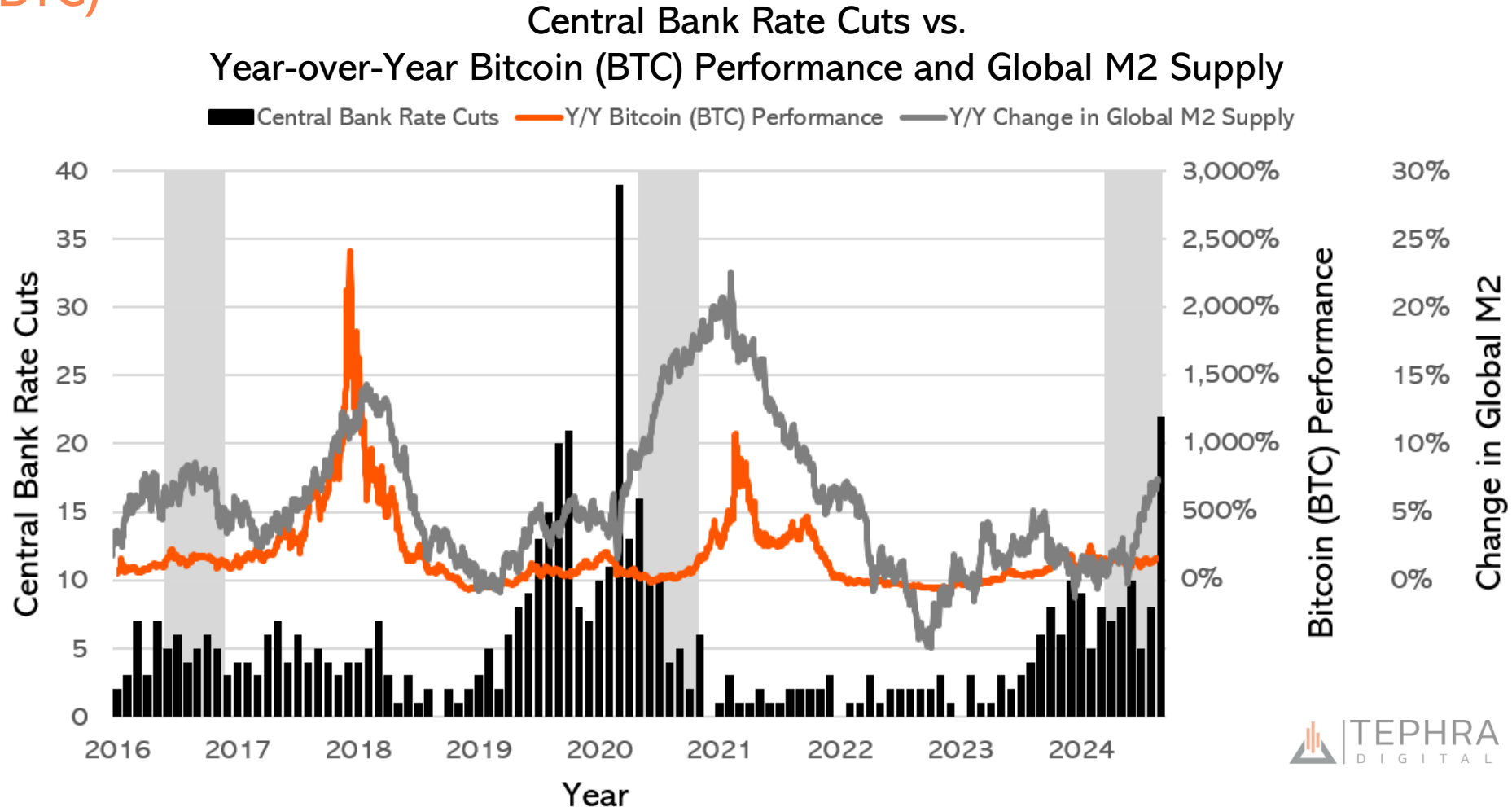
Note: Bitcoin (BTC) Performance denotes the closing price of Bitcoin (BTC) for each day following September 1st, relative to its closing price on September 1st for each US election year since Bitcoin inception in 2009. Data is as of 10/17/2024.

Source: Artemis.

CHART #40



Central Bank Rate Cuts (Largest Since 2020) Typically Lead to Global Money Supply Growth. Historically, This Has Driven Significant Increases in the Price of Bitcoin (BTC)



Note: Central Bank Rate Cuts refers to a sample of 52 central banks. Y/Y Change in Global M2 assumes 252 trading days per year. Shaded areas indicate Bitcoin halving dates and the six months that follow. Data is as of 9/27/2024.

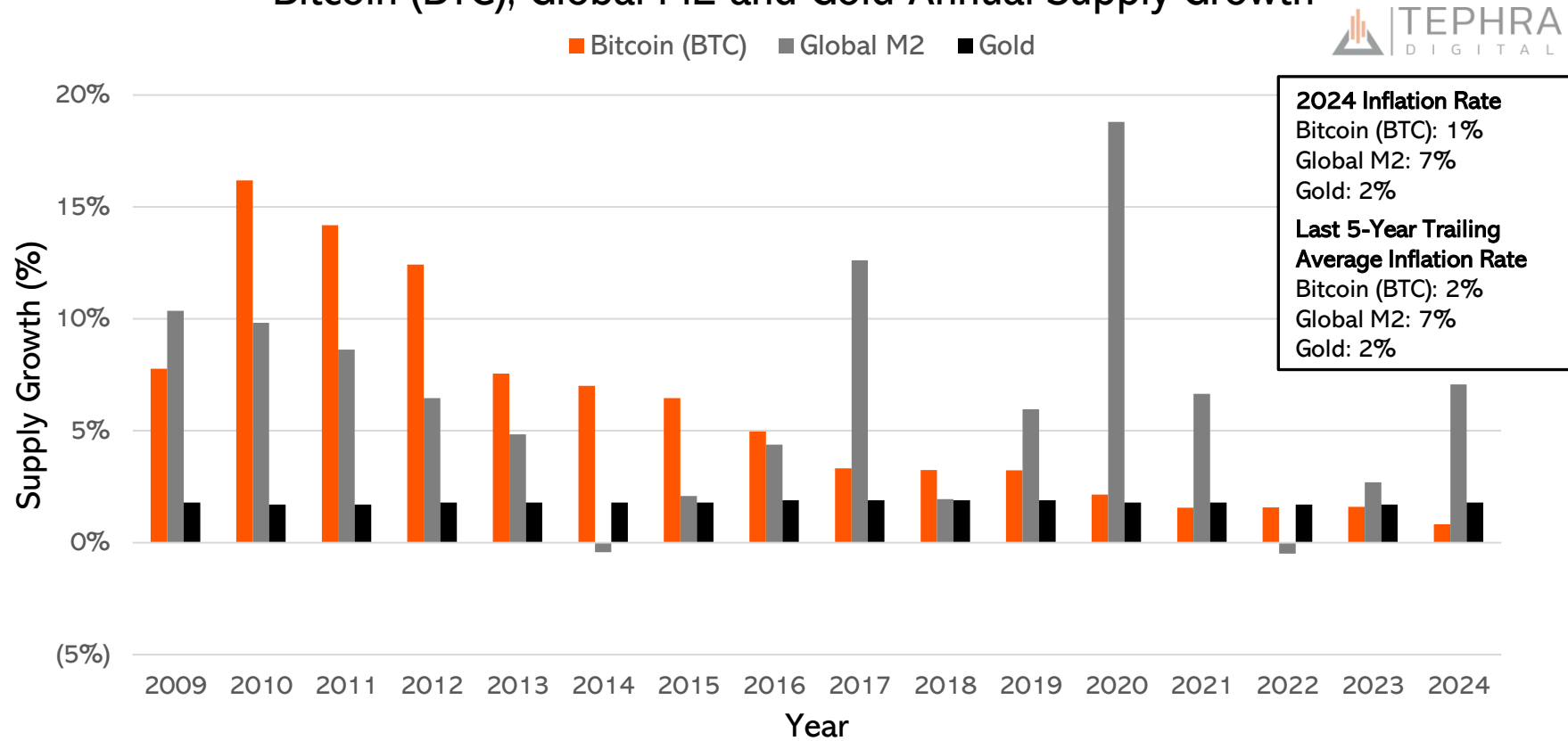
Sources: Bloomberg and Artemis.

CHART #41



Bitcoin (BTC) Is More Scarce Than Gold Based on its Current Supply Growth Rate. Unlike the Large and Irregular Increases in Global Money Supply (M2), BTC Supply Growth Is Both Predictable and Declining, Making It Increasingly Differentiated Over Time

Bitcoin (BTC), Global M2 and Gold Annual Supply Growth



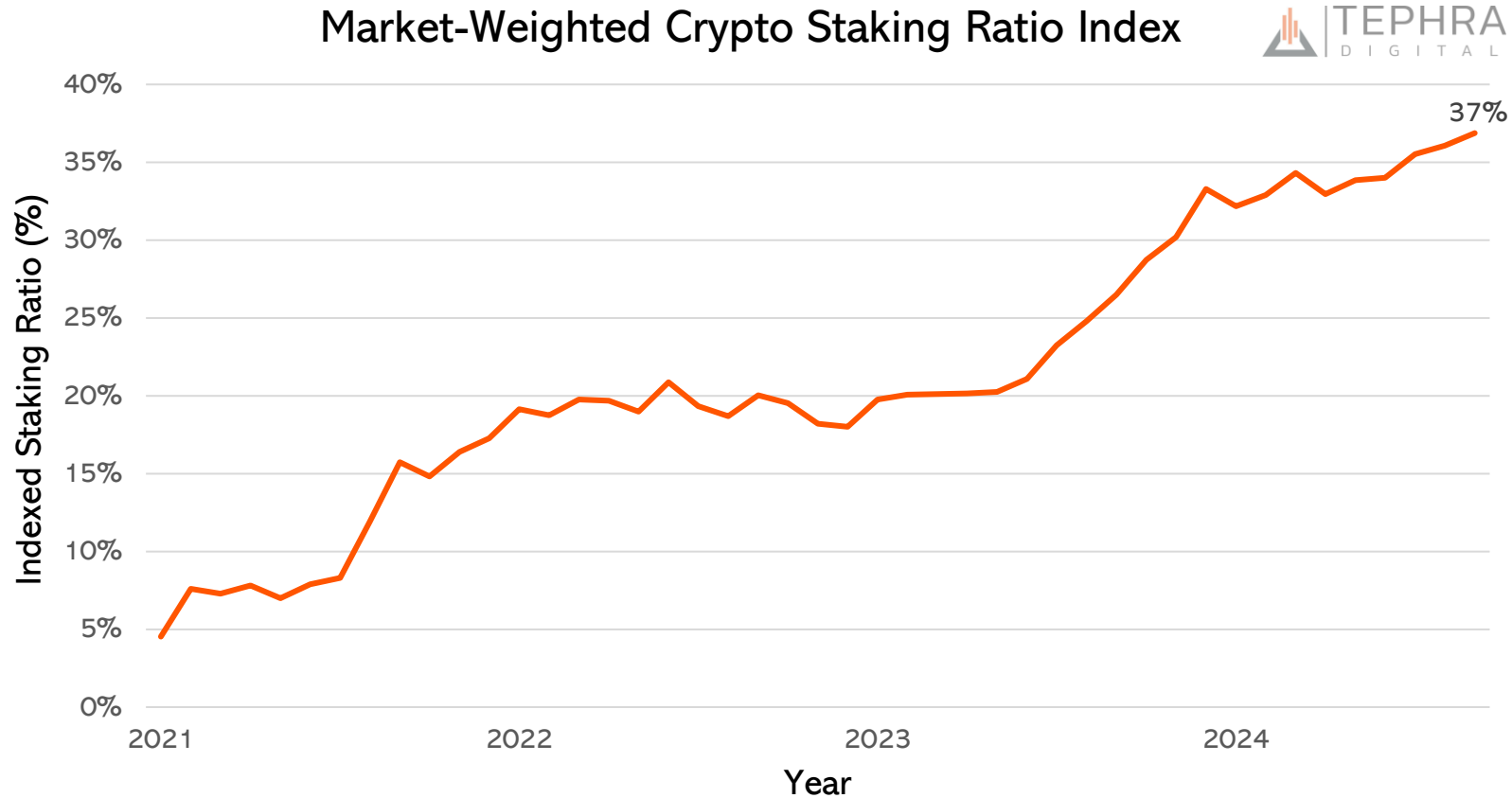
Note: Bitcoin (BTC) figures represent the year-over-year nominal supply growth as a percentage of the 21 million total BTC issuance. Global M2 figures represent the year-over-year supply growth. Gold figures represent the year-over-year supply growth from mining production. The 2024 Bitcoin (BTC) estimate is based on year-to-date supply growth through September 2024 and assumes an average of 450 BTC mined per day for the remainder of the year. The 2024 Global M2 estimate is based on year-to-date supply growth through September 2024 with respect to the same timeframe in 2023. The 2009 and 2024 gold figures are estimated based on average historical supply growth figures from 2010 through 2023. Data is as of 10/3/2024.

Sources: Bloomberg, Glassnode and the World Gold Council.

CHART #42



The Proportion of Digital Assets Being Staked Appears to Have Increased Significantly in Recent Years. Importantly, Staking Allows Users to Receive Token Rewards, While Blockchains Benefit from Greater Network Security and Transaction Efficiency as a Result



Note: The index includes blockchains with readily-accessible staking data: Ethereum (ETH), Solana (SOL), Tron (TRX), Toncoin (TON), Avalanche (AVAX), Polkadot (DOT), Near (NEAR) and Injective (INJ). Binance (BNB) and selected other protocols are excluded due to unavailable data. The index uses market-cap-weighted staking ratios of included blockchains, calculated at month-end. Data for NEAR, DOT, and INJ starts in January 2022, while TON begins in January 2024. Data is as of 10/11/2024.

Sources: Artemis, Avalanche, Dune Analytics (@21co), Glassnode, Staking Rewards, Ton Stat and Tronscan.

CHART #43



An Analysis of Bitcoin and S&P 500 Historical Seasonality Trends Suggests Strong Performance in October, Particularly Following the Conclusion of a Notable Holiday Period

| Bitcoin (BTC) and S&P 500 Returns Through Jewish Holidays and October | | | | | | |
|---|------------------|-------------------|---------------|---------------|----------------|-------------------|
| Year | Rosh Hashanah | Yom Kippur | BTC | S&P 500 | BTC (October) | S&P 500 (October) |
| 2010 | 9/8/2010 | 9/18/2010 | 0.0% | 1.9% | 211.0% | 3.8% |
| 2011 | 9/28/2011 | 10/8/2011 | (16.4%) | 0.5% | (36.5%) | 10.9% |
| 2012 | 9/16/2012 | 9/26/2012 | 3.6% | (2.7%) | (10.0%) | (1.8%) |
| 2013 | 9/4/2013 | 9/14/2013 | 1.5% | 2.2% | 61.2% | 4.6% |
| 2014 | 9/24/2014 | 10/4/2014 | (22.4%) | (1.5%) | (14.9%) | 2.4% |
| 2015 | 9/13/2015 | 9/23/2015 | 1.6% | (1.6%) | 36.7% | 8.5% |
| 2016 | 10/2/2016 | 10/12/2016 | 3.7% | (1.2%) | 18.8% | (1.7%) |
| 2017 | 9/20/2017 | 9/30/2017 | 19.8% | 0.5% | 54.4% | 2.4% |
| 2018 | 9/9/2018 | 9/19/2018 | 2.0% | 1.3% | (3.9%) | (6.9%) |
| 2019 | 9/29/2019 | 10/9/2019 | 6.3% | (1.4%) | 10.6% | 2.2% |
| 2020 | 9/18/2020 | 9/28/2020 | (2.3%) | 1.1% | 27.9% | (2.5%) |
| 2021 | 9/6/2021 | 9/16/2021 | (9.2%) | (1.3%) | 40.2% | 7.0% |
| 2022 | 9/25/2022 | 10/5/2022 | 7.2% | 2.5% | 5.2% | 8.1% |
| 2023 | 9/15/2023 | 9/25/2023 | (1.3%) | (2.5%) | 28.6% | (2.2%) |
| 2024 | 10/4/2024 | 10/12/2024 | 1.8% | 1.2% | (0.1%) | 0.5% |
| Average | | | (0.3%) | (0.1%) | 28.6% | 2.4% |

Note: S&P 500 figures refer to the SPDR S&P 500 ETF Trust (SPY). BTC and S&P 500 columns refer to the performance from Rosh Hashanah through Yom Kippur of each year. If the referenced date falls on a non-trading day, the prior day's closing price is used to calculate returns. Years including Bitcoin halvings and U.S. elections are highlighted in bold. 2009 is excluded as Bitcoin (BTC) price data is unavailable before July 2010. Bitcoin (BTC) data is based on a UTC 0:00 close, while S&P 500 data reflects the 4:00 PM EST market close. 2024 October figures are not finalized, as all data is as of 10/12/2024.

Sources: Artemis and Bloomberg.

CHART #44



Fiat Currencies Around the Globe Have Been Devalued Significantly Since 2000, as Economic Growth Has Come at the Cost of Ballooning Central Bank Balance Sheets. This May Underscore the Rising Popularity of Bitcoin as a Preferred Monetary Standard. Indeed, 1 BTC Is Still 1 BTC

1 BTC is Still 1 BTC



Implied Fiat Currency Devaluations Since 2000

| | 2000 to 2007 | | | 2000 to 2019 | | | 2000 to 2024 | | |
|----------------|--------------|------------------|---------------------|--------------|------------------|---------------------|--------------|------------------|---------------------|
| | GDP Increase | CB Balance Sheet | Implied Devaluation | GDP Increase | CB Balance Sheet | Implied Devaluation | GDP Increase | CB Balance Sheet | Implied Devaluation |
| US | 1.5x | 1.3x | 12% | 2.2x | 6.2x | (64%) | 2.9x | 10.6x | (72%) |
| China | 3.2x | 5.8x | (44%) | 13.1x | 12.8x | 2% | 16.9x | 15.7x | 8% |
| EU | 1.8x | 1.9x | (6%) | 1.9x | 6.2x | (69%) | 2.2x | 8.5x | (74%) |
| Japan | 1.0x | 1.0x | 2% | 1.0x | 5.1x | (80%) | 1.2x | 6.8x | (83%) |
| India | 2.7x | 3.0x | (11%) | 6.2x | 15.9x | (61%) | 8.3x | 20.9x | (60%) |
| UK | 1.5x | 3.1x | (52%) | 2.1x | 25.0x | (92%) | 2.6x | 35.5x | (93%) |
| Canada | 1.5x | 1.3x | 23% | 2.3x | 2.8x | (19%) | 2.9x | 6.5x | (55%) |
| Brazil | 2.5x | 2.9x | (15%) | 6.7x | 13.2x | (49%) | 10.1x | 18.4x | (45%) |
| Australia | 1.8x | 1.8x | 1% | 3.1x | 3.4x | (9%) | 4.1x | 8.3x | (50%) |
| Mexico | 2.0x | 2.2x | (11%) | 4.0x | 7.9x | (50%) | 5.1x | 9.9x | (48%) |
| Switzerland | 1.3x | 1.2x | 8% | 1.6x | 8.2x | (81%) | 1.8x | 7.7x | (77%) |
| Average | 1.9x | 2.3x | (8%) | 4.0x | 9.7x | (52%) | 5.3x | 13.5x | (59%) |

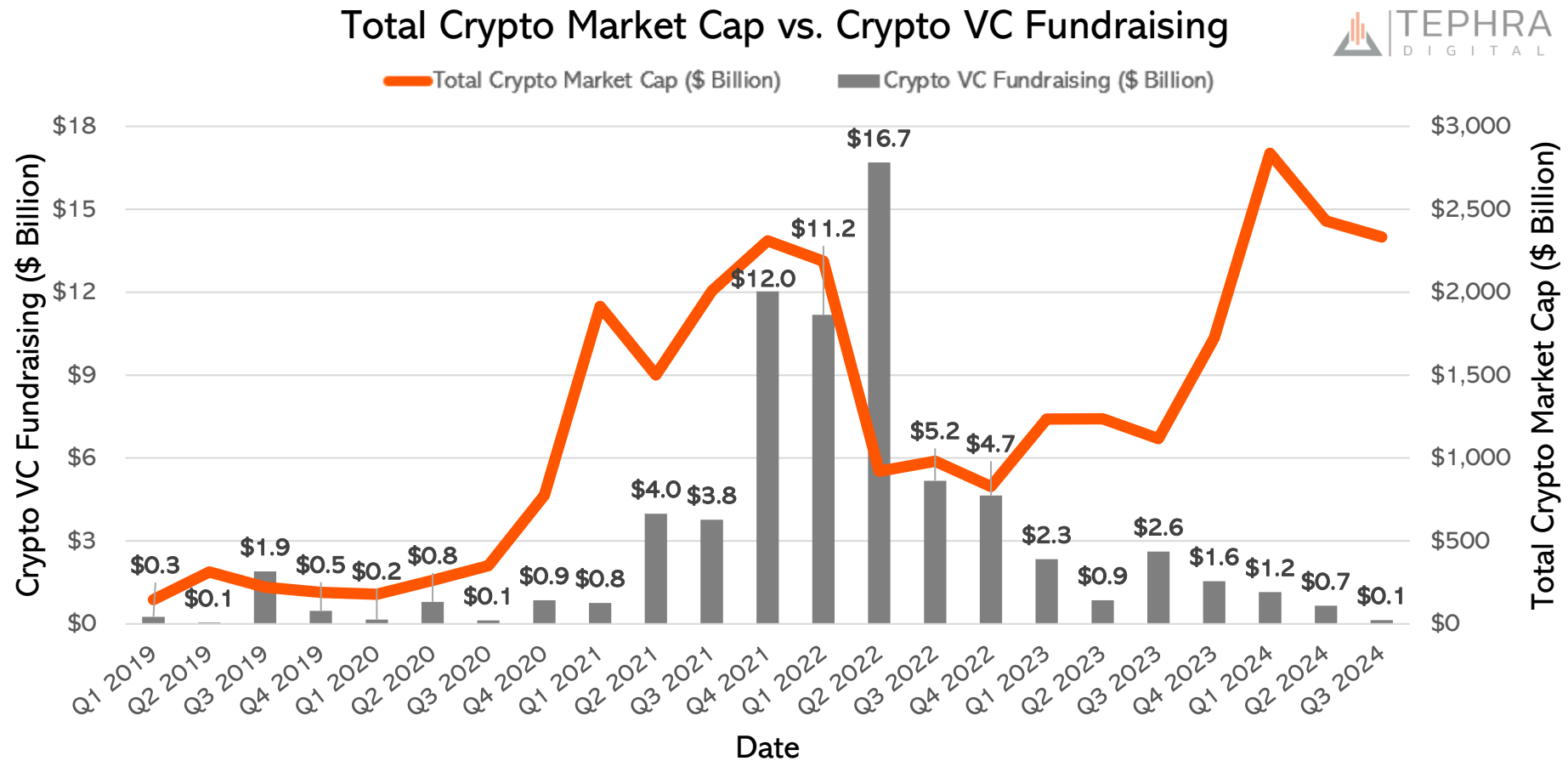
Note: Devaluation is measured by comparing GDP growth with the expansion of central bank balance sheet (CB B/S) assets for each country since 2000. CB B/S multiples are based on year-end figures (December 31st), except for the UK (end of February) and India (end of June for 2000, 2007, and 2019, and March for 2024 to reflect changes in fiscal year dates). GDP values represent annualized Q4 data, except for China and India, which use full-year GDP. The year 2000 serves as the baseline for comparison. For 2024, GDP figures for the US, Japan, Canada, Brazil, Australia, and Switzerland are seasonally-adjusted Q2 figures, while figures for the EU, UK, and Mexico are from Q1 2024. 2024 GDP figures for China and India are estimates according to the IMF. Balance sheet data for the US, Japan, UK, Canada, Brazil, and Mexico are through September 2024, while figures for China, the EU, and Switzerland are through August 2024. India's balance sheet data is through March 2024. Data is as of 10/16/2024.

Sources: Bloomberg, Federal Reserve Bank of St. Louis, People's Bank of China, Reserve Bank of India, European Central Bank, Bank of England, Government of Canada Statistics, Banco Central do Brasil, Reserve Bank of Australia, Swiss National Bank and the International Monetary Fund (IMF).

CHART #45



Crypto Venture Capital Fundraising Has Dwindled, Even as Digital Assets Have Seen a Resurgence. Instead of Deploying Capital in Private Markets at the Peak, Investors May Be Better Served by a Long-Term, Risk-Managed and Liquid Investment Strategy



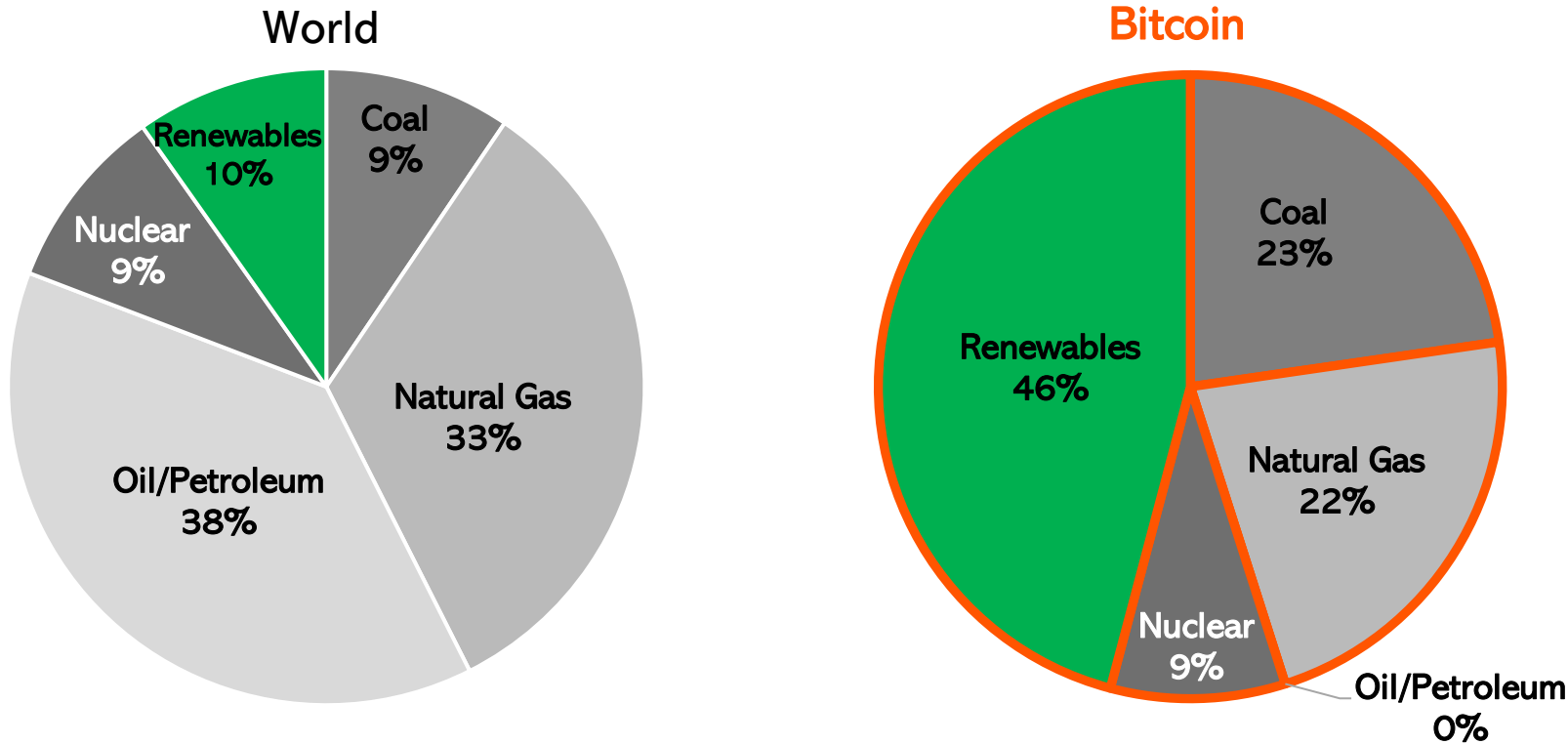
Note: Total VC fundraising is an aggregated metric sourced over each quarter. Crypto market cap data is a point-in-time metric sourced from the end of each quarter. Data is as of 10/16/2024. Sources: VisionTrack by Galaxy Research and CoinGecko.

CHART #46



The Perception? Bitcoin Mining Is Not Environmentally Friendly. The Reality? The Bitcoin Network Appears to be Far More Environmentally Friendly than the World Overall. Environmental Concern Regarding Bitcoin Seems to be Misplaced, as Data Suggests that Bitcoin Is Actually Stabilizing Energy Grids and May be Fueling Renewable Energy Demand

Energy Consumption Mix: World vs. Bitcoin (BTC) Network



Note: World figures refer to point-in-time estimates from 6/30/2024. Bitcoin (BTC) Network figures refer to point-in-time estimates from 10/17/2024. Renewables includes biofuel, biomass, geothermal, hydro, solar and wind energy. All data is as of 10/18/2024.

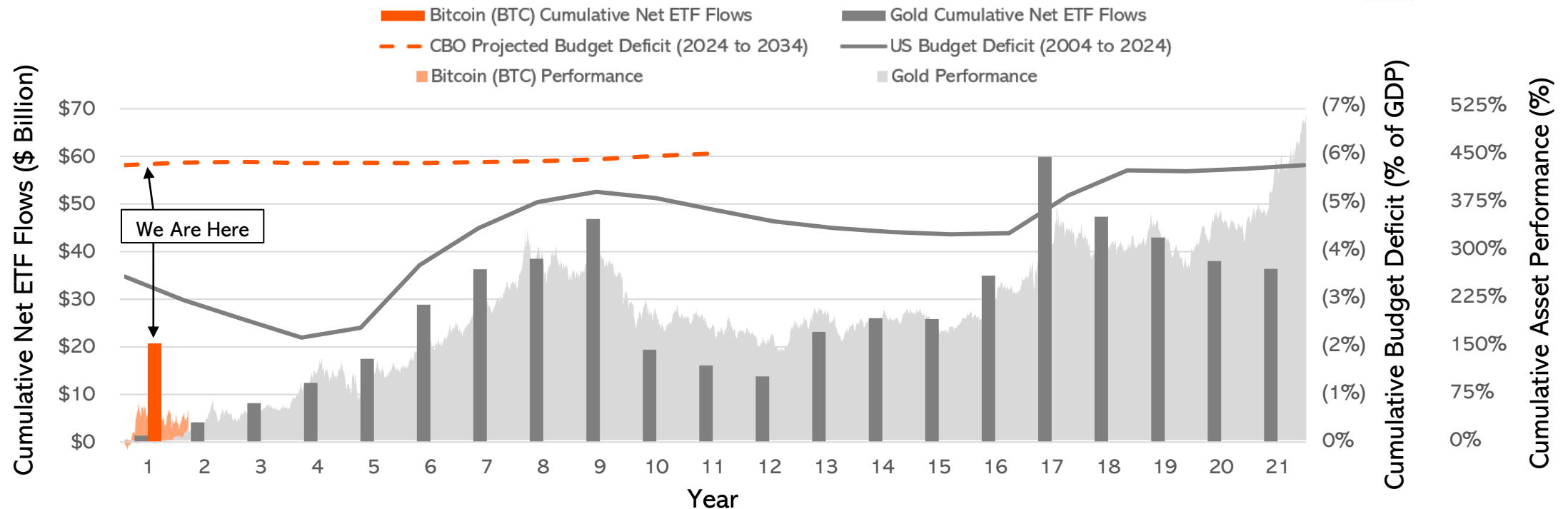
Sources: The US Energy Information Administration and the Bitcoin Energy and Emissions Sustainability Tracker.

CHART #47



The Past May be Prologue: Our Pattern Recognition of Gold Price Performance in the Wake of Swelling US Budget Deficits Suggests Significant Long-Term Appreciation for Bitcoin. Importantly, Based on First Year Net ETF Flows, Bitcoin's Performance Could Follow an Accelerated Trajectory

Bitcoin vs. Gold: Impact of Deficits on Flows and Performance



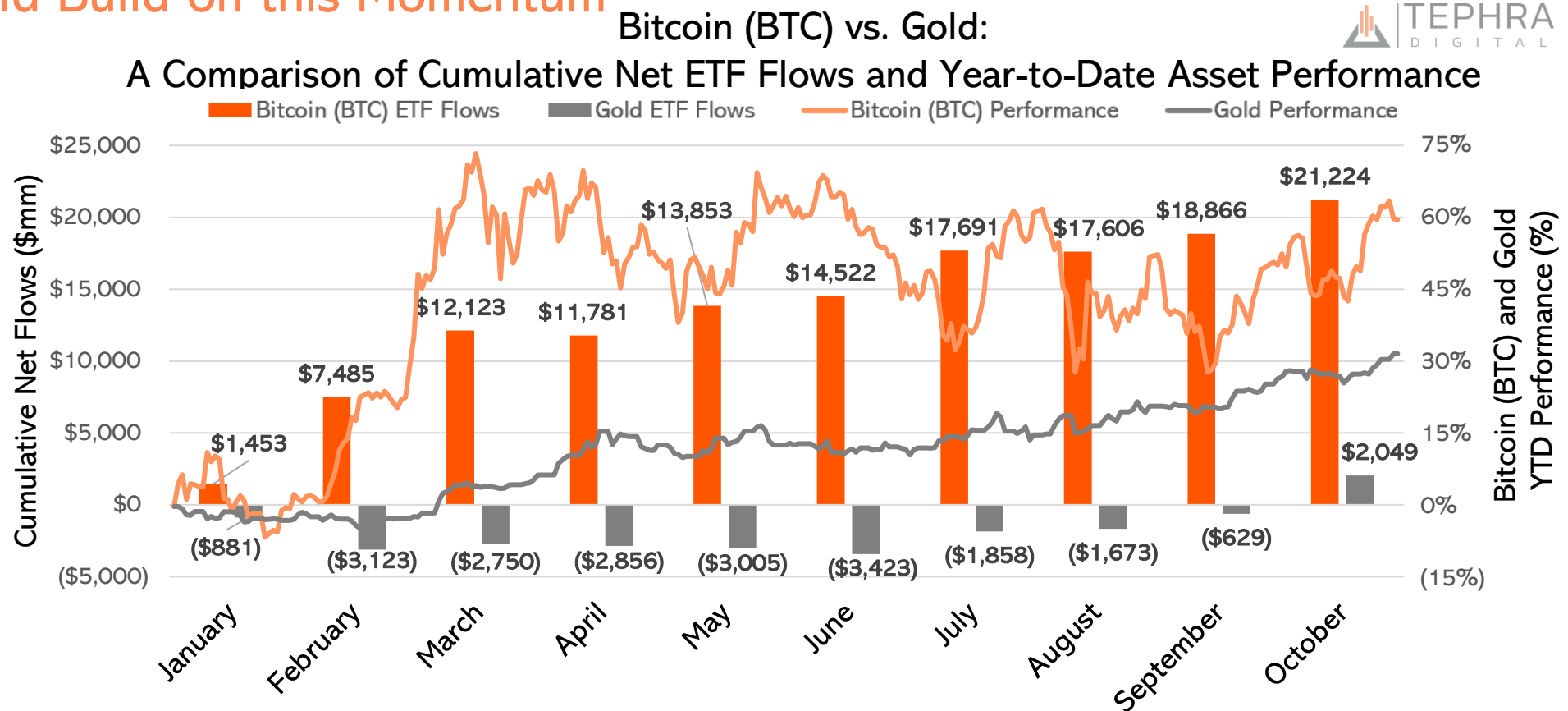
Note: Cumulative net flows for Bitcoin (BTC) and gold ETFs represent the aggregate net flows for each calendar year since their respective ETF launches. Gold ETFs include the SPDR Gold Shares ETF (GLD) and the iShares Gold Trust (IAU). Bitcoin ETFs include the iShares Bitcoin Trust ETF (IBIT), Grayscale Bitcoin Trust (GBTC), Fidelity Wise Origin Bitcoin Fund (FBTC), ARK 21Shares Bitcoin ETF (ARKB), Bitwise Bitcoin ETF (BITB), Grayscale Bitcoin Mini Trust (BTC), VanEck Bitcoin ETF (HODL), CoinShares Valkyrie Bitcoin Fund (BRRR), Invesco Galaxy Bitcoin ETF (BTCO), Franklin Bitcoin ETF (EZBC), and WisdomTree Bitcoin Fund (BTCW). Budget deficit figures reflect the cumulative average U.S. budget deficit as a percentage of GDP from fiscal years starting in 2004, with the orange line reflecting CBO projected from 2024 through 2034. Cumulative asset performance tracks the daily closing price of gold and Bitcoin (BTC) relative to their ETF launch dates (1/18/2004 and 1/11/2024, respectively). Data is current as of 10/21/2024.

Sources: Artemis, Bloomberg, the Federal Reserve Bank of St. Louis, the US Congressional Budget Office and the World Gold Council.

CHART #48



While Gold Has Been a Big Story this Year, Bitcoin (BTC) Is the Much Bigger Story in Terms of Performance as well as Net ETF Flows. We Expect Tailwinds for Bitcoin (BTC) Could Build on this Momentum



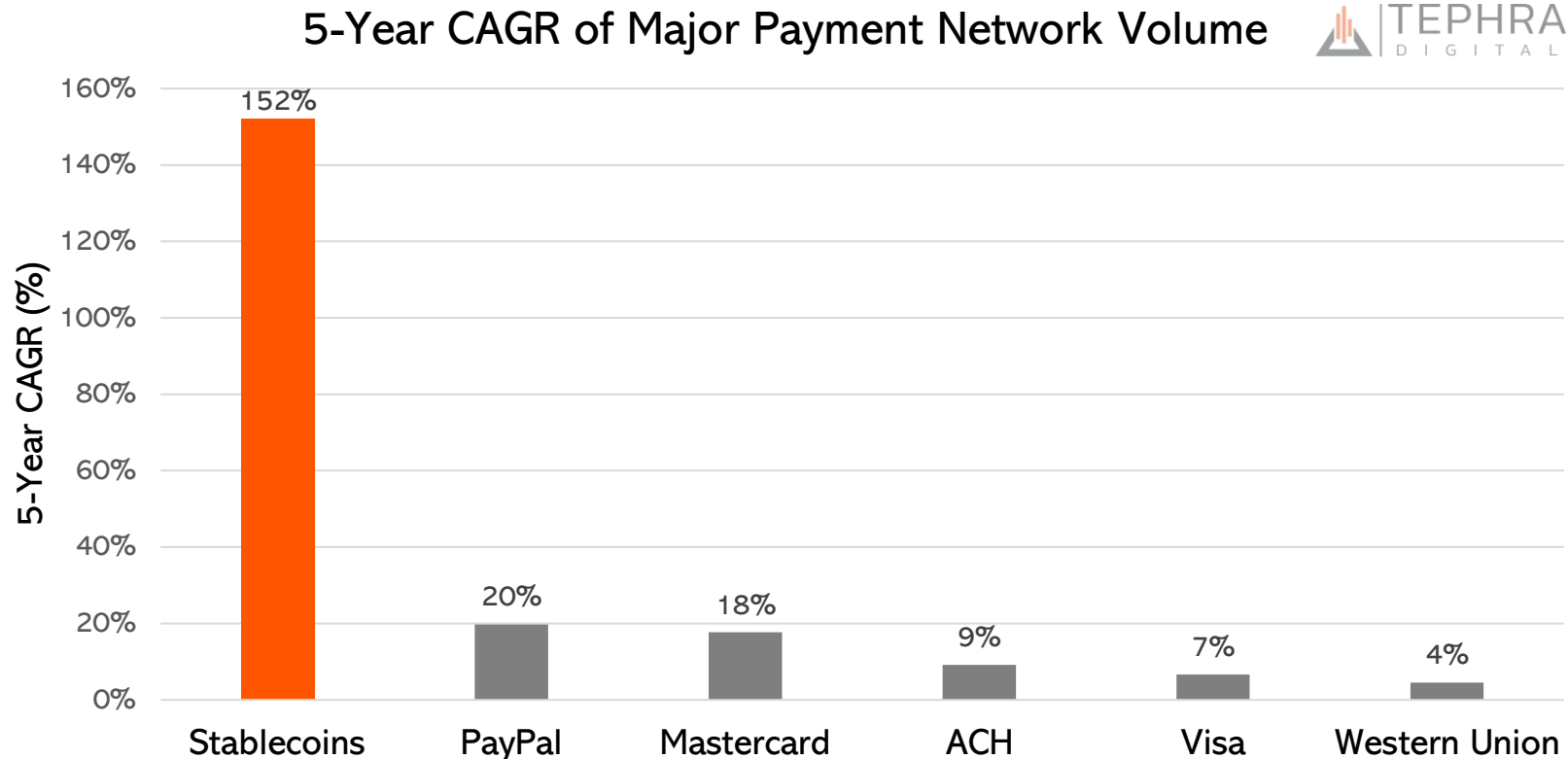
Note: Cumulative net flows are point-in-time metrics taken from the last day of each month, except for October, where the latest data reflects flows through 10/22/2024. All ETF flow figures represent cumulative flows since the launch of Bitcoin (BTC) ETFs on 1/11/2024. Bitcoin (BTC) and gold year-to-date performance measures each asset's closing relative to the closing price on 12/31/2023. Gold ETF flows are calculated by multiplying the daily change in ETF gold holdings by the daily gold price. Gold ETFs include the SPDR Gold Shares ETF (GLD) and the iShares Gold Trust (IAU). Bitcoin (BTC) ETFs include the iShares Bitcoin Trust ETF (IBIT), Grayscale Bitcoin Trust (GBTC), Fidelity Wise Origin Bitcoin Fund (FBTC), ARK 21Shares Bitcoin ETF (ARKB), Bitwise Bitcoin ETF (BITB), Grayscale Bitcoin Mini Trust (BTC), VanEck Bitcoin ETF (HODL), CoinShares Valkyrie Bitcoin Fund (BRRR), Invesco Galaxy Bitcoin ETF (BTCO), Franklin Bitcoin ETF (EZBC), and WisdomTree Bitcoin Fund (BTCW). Data is as of 10/22/2024.

Sources: Artemis, Bloomberg and the World Gold Council.

CHART #49



Stablecoins (Digital Assets Pegged to Traditional Currencies or Collateral Baskets) Appear to be Growing Payment Volumes at 8x to 38x the Rate of Existing Networks. Recent Acquisition Activity and the Blockchain Integration Announcements of Global Banks and Credit Card Companies Suggest that the Mass Adoption Phase for Stablecoins May Be Beginning



Note: The 5-year CAGR is calculated based on the growth rate of year-to-date totals compared to the same periods in 2019. Stablecoin figures represent the year-to-date total settlement volume through 10/21/2024, across Arbitrum, Avalanche, Base, BNB Chain, Celo, Ethereum, Optimism, Polygon, Solana, Toncoin, and Tron. PayPal, Mastercard, Visa, and Western Union figures reflect year-to-date totals through 6/30/2024, while ACH figures represent totals through 9/30/2024. All data is as of 10/21/2024.

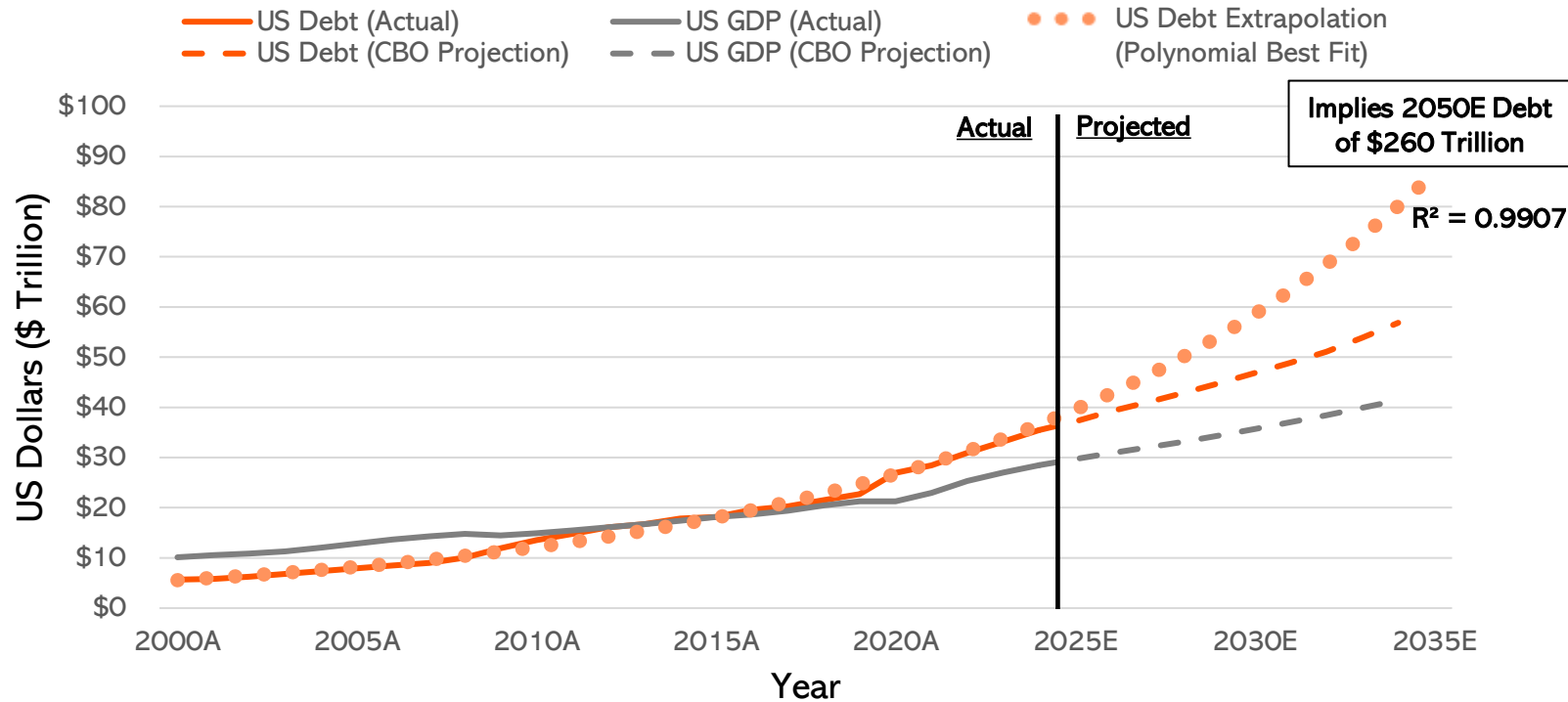
Sources: Artemis, PayPal, Visa, Mastercard, the National Automated Clearing House Association and Western Union.

CHART #50



The Growth of US Debt Has Significantly Outpaced the Growth of US GDP. The Rise of Bitcoin (BTC), Which Is Insulated from the Forces of Monetary Debasement, Is Likely to Continue as US Debt Growth Seems to be Following an Exponential Trajectory

US Debt Growth Appears to Be Exponential
US GDP Growth Appears to Be Linear



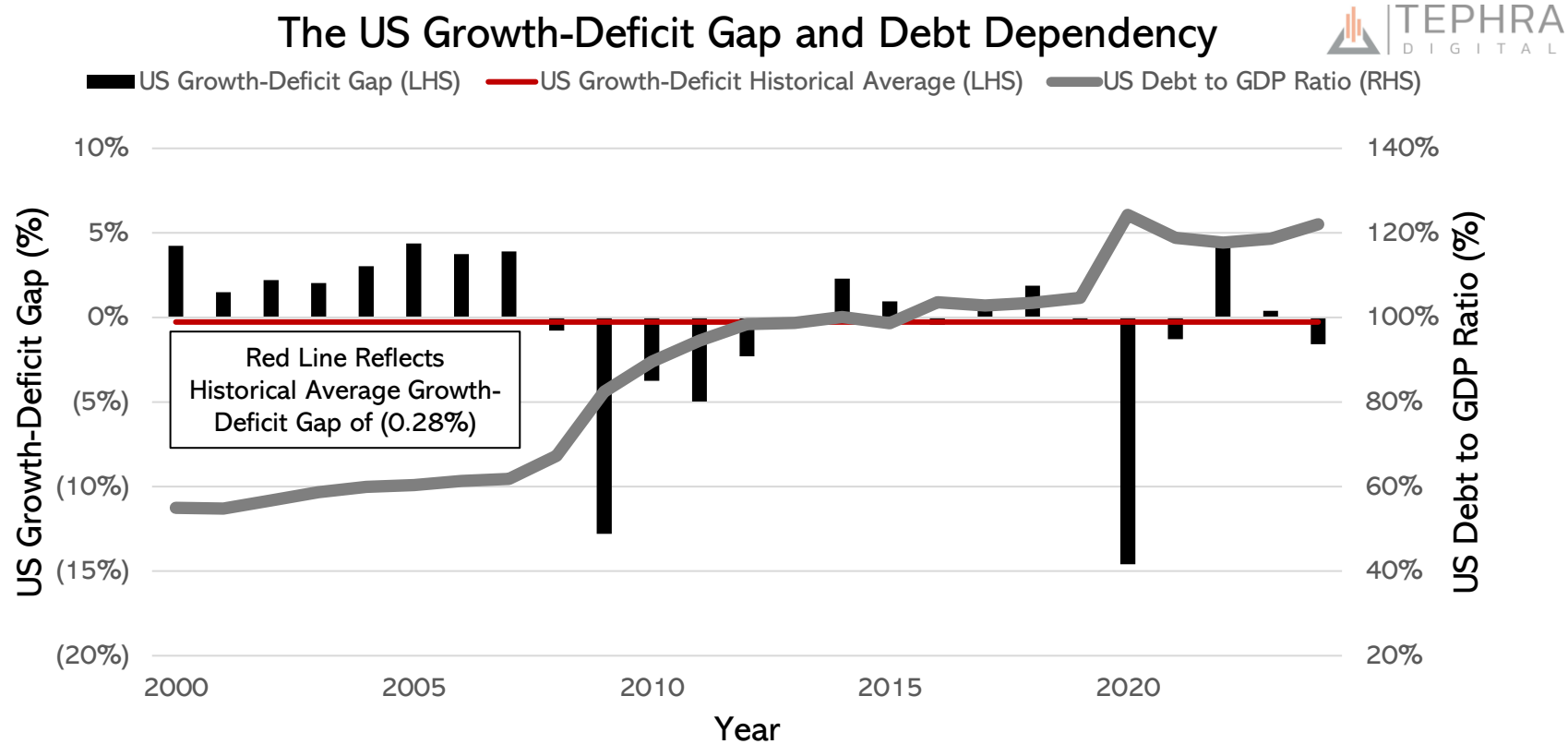
Note: The extrapolation, or "polynomial best fit," is a curve represented by actual historical data points used to generate predicted values through a process of error minimization that continues the existing trend. Historical debt figures are point-in-time metrics from the end of each U.S. fiscal year from 2000 through 2024. Debt projections refer to estimates from the United States Congressional Budget Office (CBO). Historical GDP figures are annual values from each fiscal year from 2000 through 2023, with GDP projections also sourced from the CBO. The U.S. debt extrapolation refers to an exponential best-fit line that yields an R-squared value of 0.99 based on historical debt figures from 2000 through 2024. This best-fit line is used to estimate the U.S. debt for 2050. Data is as of 10/24/2024.

Sources: The Federal Reserve Bank of St. Louis and the US Congressional Budget Office.

CHART #51



Historical US GDP Growth Has Relied Heavily on US Government Deficits. Even with High Deficit Spending, US GDP Growth Rates Have Trailed the Rate of Deficit Expansion. Future US GDP Growth Seems Increasingly Dependent on Significant US Debt Growth. This Underscores the Independence and Protection Afforded by Bitcoin (BTC)



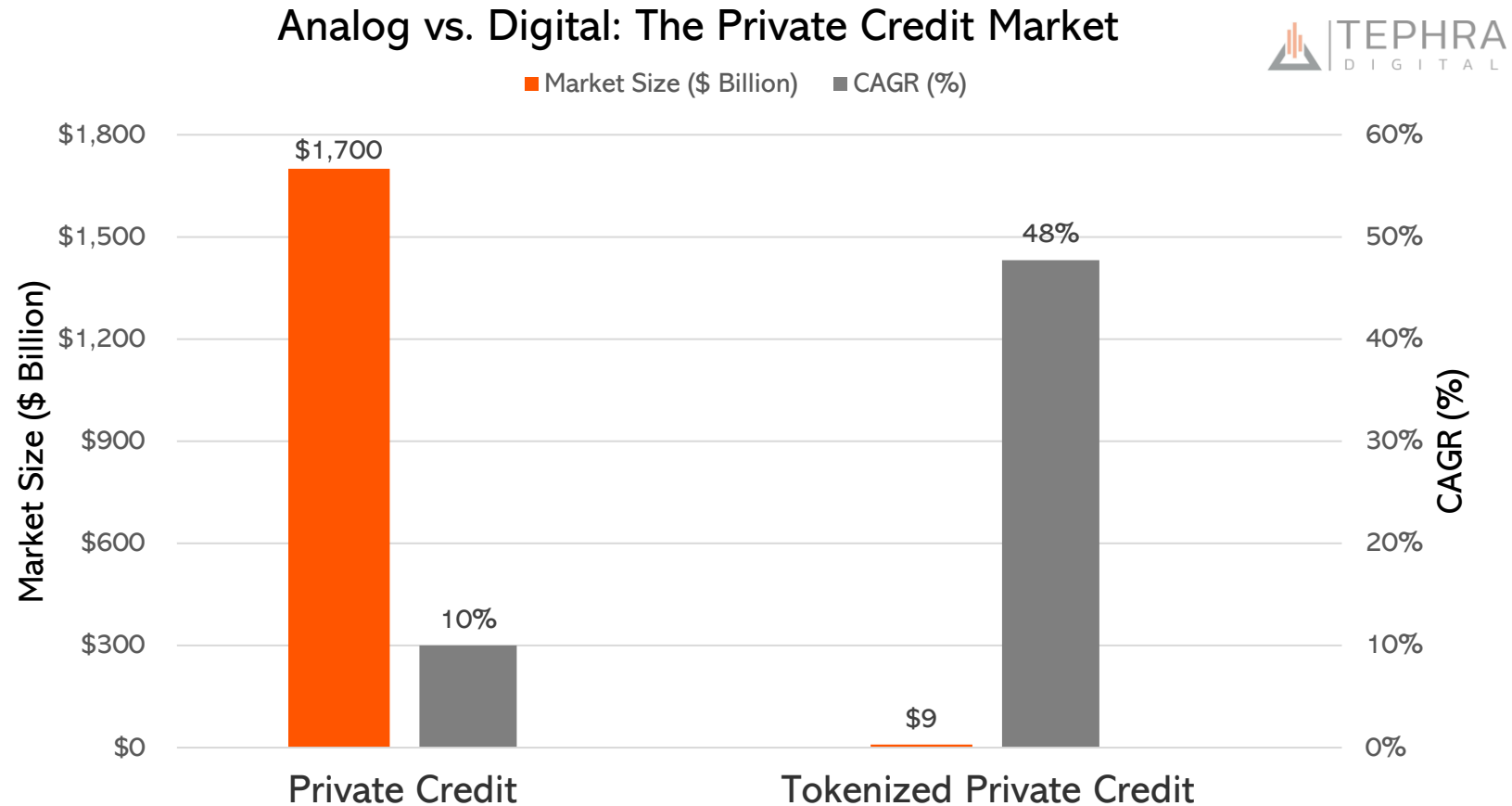
Note: The Growth-Deficit Gap is calculated by subtracting the annual U.S. budget deficit as a percentage of nominal GDP from the year-over-year nominal GDP growth rate. The U.S. Debt to GDP Ratio refers to point-in-time figures from the end of each fiscal year, except for 2024, where it incorporates the most recent debt data available as of 10/30/2024, instead of the fiscal year-end figure. All figures are historical values from fiscal years 2000 through 2024. Data is as of 10/30/2024.

Sources: Bloomberg and the United States Treasury.

CHART #52



Private Credit is Booming - and Tokenized Private Credit Could Redefine It. Blockchain-Based (or “Tokenized”) Assets Can Have Compelling Benefits for Investors and Issuers: Higher Transparency, Enhanced Liquidity, Greater Security, Cost Efficiency and Customization



Note: Tokenized Private Credit figures represent active loans from Figure, Centrifuge, Goldfinch, TrueFi, Curve, and Credix. Private Credit market size and CAGR figures are estimates from S&P Global. Tokenized Private Credit market size is point-in-time data from RWA.xyz on 10/29/2024, with its CAGR reflecting two-year growth up to that date. All data is as of 10/30/2024. Sources: S&P Global, "Tokenized Private Credit: A New Digital Frontier for Real World Assets" and RWA.xyz.

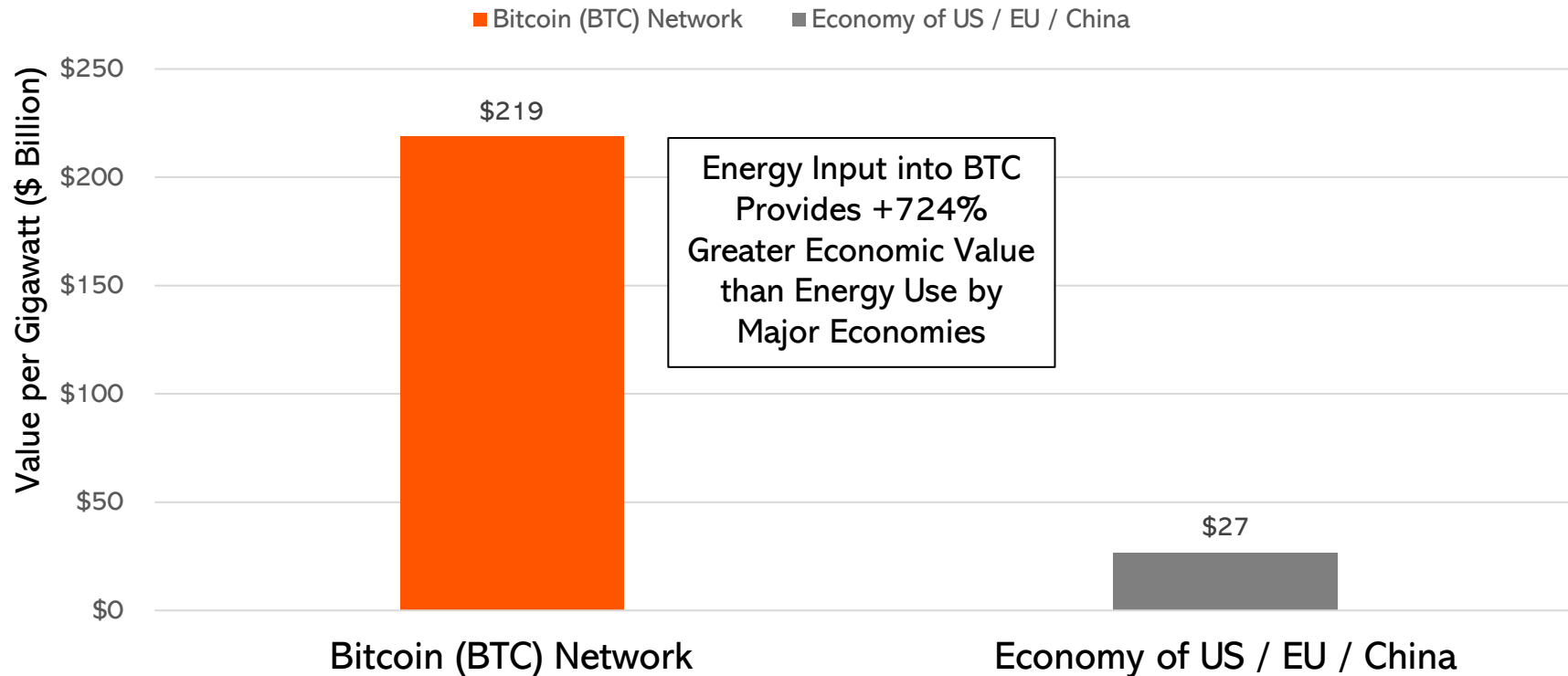
CHART #53



Data Indicates that the Bitcoin (BTC) Network Delivers Greater Economic Value from Each Incremental Gigawatt of Energy Use than Major Economies



Economic Value Generated per Gigawatt of Energy: Bitcoin (BTC) vs. Major Economies



Note: The Bitcoin (BTC) Network figure was calculated by taking Bitcoin's market capitalization at the market close on 10/31/2024 and subtracting the market capitalization from the date when the Bitcoin network's energy consumption was one gigawatt lower. The energy consumption data for the Bitcoin network is based on a one-year moving average provided by the Cambridge Bitcoin Electricity Consumption Index. The US/EU/Chinese figure was calculated by averaging the GDP growth for the United States, European Union, and China over fiscal years 2020 to 2023, then dividing that by the average increase in continuous gigawatt usage for these same countries over the calendar years 2020 to 2023. Gigawatt usage was determined by dividing total gigawatt-hours by the number of hours in each year. All data is as of 10/31/2024.

Sources: Artemis, Eurostat, the Federal Reserve Bank of St. Louis, the State Council of the People's Republic of China, the University of Cambridge Centre for Alternative Finance and the US Energy Information Administration.

CHART #54



U.S. Presidential Elections Have Served as a Clearing Event for Bitcoin (BTC) Performance. Historical Data Shows that, Between Bitcoin Halving Cycles, Daily Average Returns Are 3.6x Greater After U.S. Presidential Elections than Before

Bitcoin (BTC) Performance:
Before and After US Presidential Elections



| Halving Date | US Presidential Election Date | Halving to Election Performance | Implied Average Daily Performance | Election to Next Halving Performance | Implied Average Daily Performance |
|--------------|-------------------------------|---------------------------------|-----------------------------------|--------------------------------------|-----------------------------------|
| 11/28/12 | 11/6/12 | N/A | N/A | 13% | 0.61% |
| 7/9/16 | 11/8/16 | 11% | 0.09% | 1,093% | 0.85% |
| 5/11/20 | 11/3/20 | 63% | 0.36% | 364% | 0.29% |
| 4/20/24 | 11/5/24 | 18% | 0.09% | N/A | N/A |

| | | | |
|---------|-------|---------|-------|
| Average | 0.18% | Average | 0.57% |
|---------|-------|---------|-------|

Average Daily Return
Increase Post-Election: 3.6x

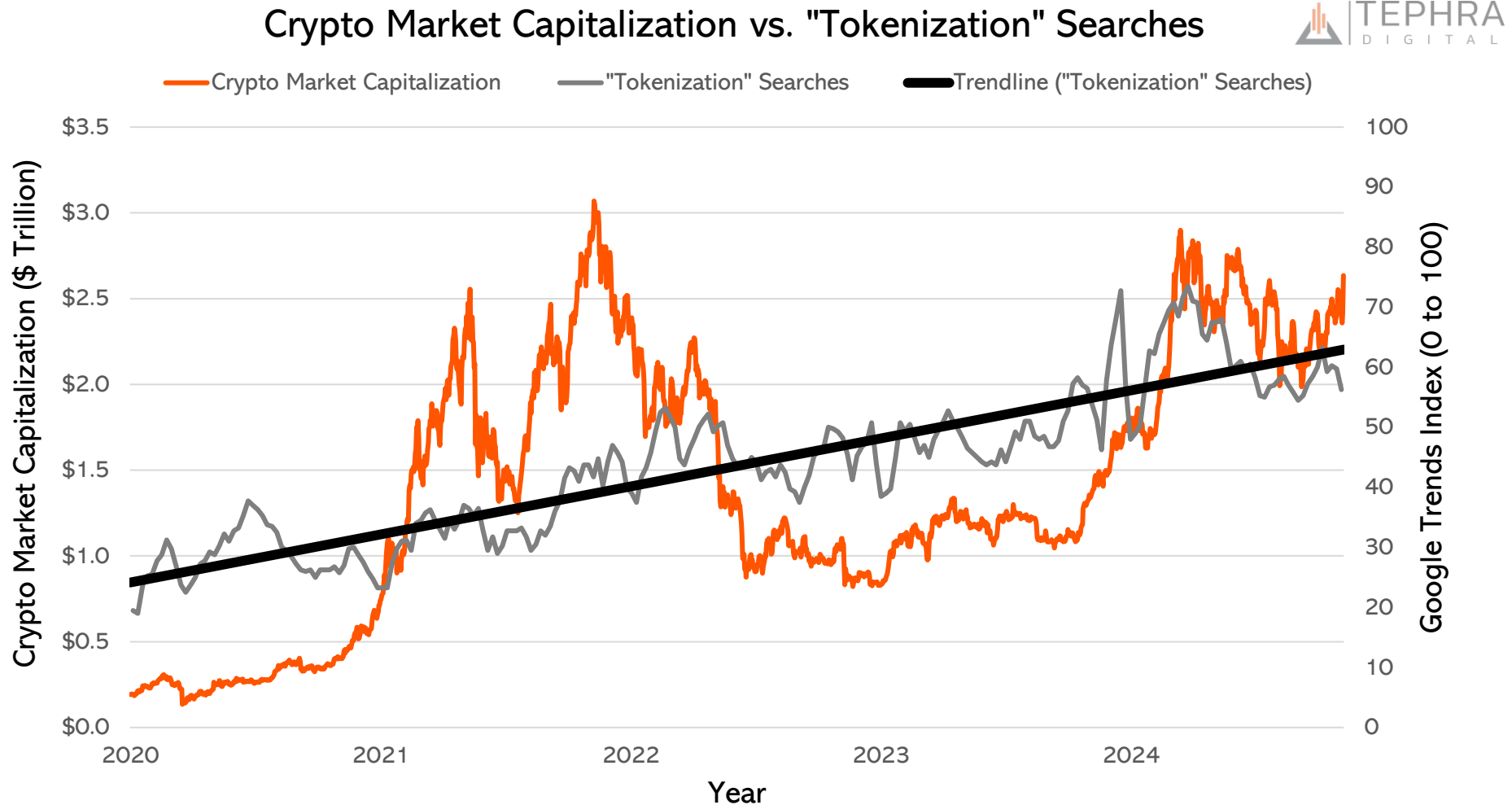
Note: Halving to Election Performance is calculated as the percentage change between Bitcoin (BTC) closing price on each US presidential election date and the closest prior halving event. The first row is unavailable because the first Bitcoin halving occurred after the US presidential election in that same year. Because the 2024 US Presidential Election has not occurred as of this analysis, figures in the last row use Bitcoin's price as of 12 p.m. EST on 11/4/2024. Election to Next Halving Performance is calculated as the percentage change between Bitcoin (BTC) closing price on each halving date and the closest prior US presidential election. The last row is unavailable because, as of this analysis, there has not been a halving event following the 2024 US presidential election. Implied Average Daily Performance is calculated by dividing the cumulative performance between each event by the number of days in that period. Data is as of 11/4/2024.

Sources: Artemis and Coin Metrics.

CHART #56



Interest in Tokenization Has Demonstrated a Steady Ascent Since 2020, Even Though Periods of Crypto Market Volatility



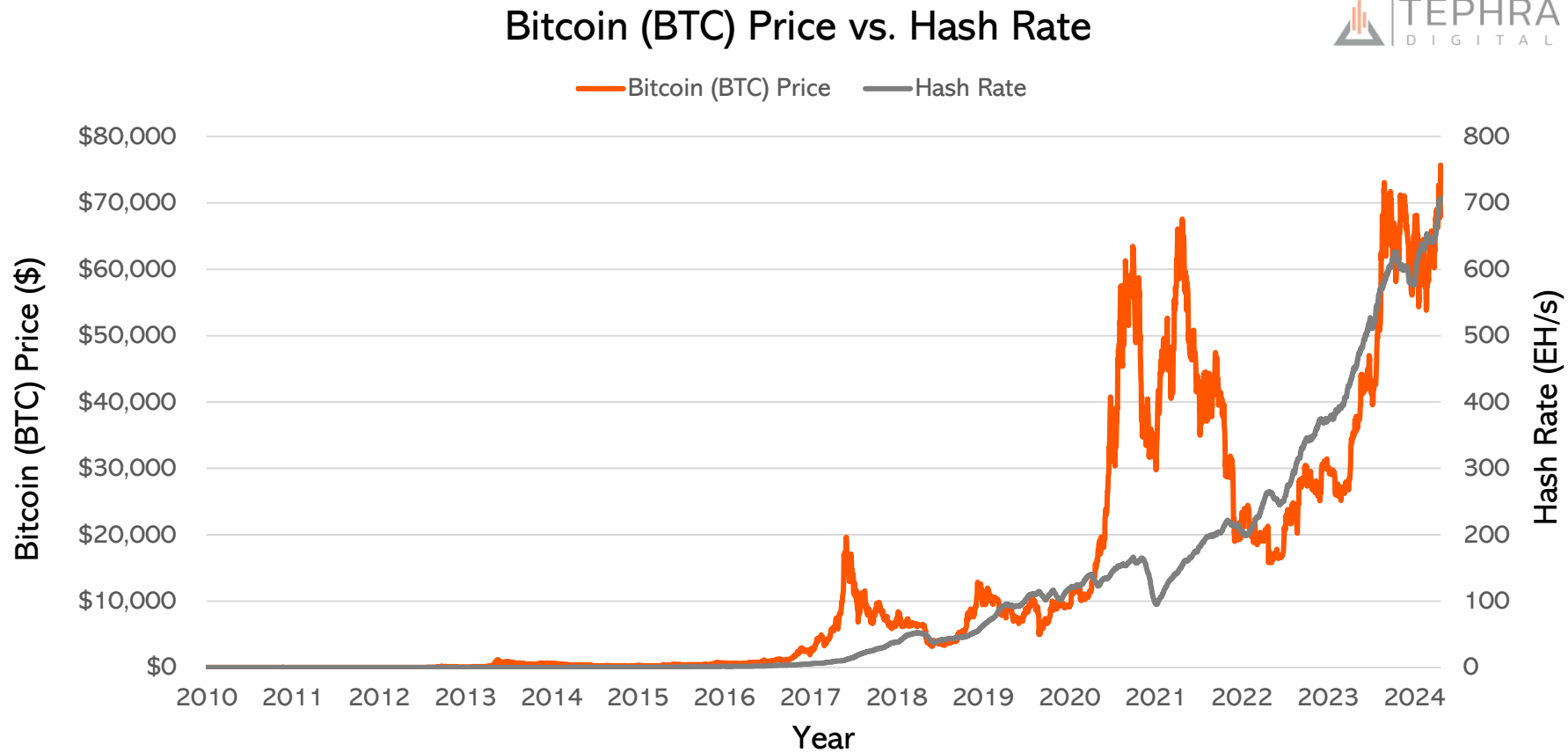
Note: Crypto Market Capitalization reflects the value of over 15,000 cryptocurrencies. "Tokenization" Searches represents a four-week moving average from Google Trends' index, tracking search interest in tokenization. Data is as of 11/6/2024.

Sources: CoinGecko and Google Trends.

CHART #57



Bitcoin Prices Have Risen Along with Hash Rate, Which Represents Bitcoin's Computing Power and Network Security. As More Energy and Mining Equipment Are Added to the Bitcoin Network, Bitcoin's Hash Rate Can Continue to Soar, Driving a Corresponding Rise in Bitcoin Price



A time-lapse video chart is available upon request or on our LinkedIn page (Tephra Digital).

Note: Bitcoin (BTC) Price refers to daily closing price as of 0:00 UTC. Hash Rate refers to the 30-day moving average of daily average network hash rate. Data begins on 7/18/2010 and runs through 11/7/2024.

Source: Coin Metrics.

DISCLOSURES AND DISCLAIMERS



GRAPHS AND CHARTS

Views expressed in content are solely those of authors. Information in content may rely on third-party sources Tephra Digital LLC or its affiliates (together, "Tephra") believe to be reliable, but not independently verified, and make no representations about enduring accuracy or appropriateness. Charts and graphs are solely for informational purposes and not to be relied upon for investment decisions. Projections, estimates, forecasts, targets and/or opinions in any content are subject to change without notice and may differ or be contrary to other opinions. Content is for informational purposes only, not investment decisions; it is not, and should not be assumed to be, complete. Content is not to be construed as legal, business, or tax advice. You should consult your own advisors. References to securities or digital assets are for illustrative purposes only, and do not constitute investment recommendations or offers of investment advisory services. Any investment is not representative of all Tephra investments; there can be no assurance these will be profitable, or future investments will share characteristics or results. Content does not constitute investment advice, an offer to sell, or solicitation of an offer to purchase any limited partner interest in any investment vehicle.

CONFIDENTIAL AND PROPRIETARY

This document is not an offer to sell securities of any investment fund or a solicitation of offers to buy any such securities. Securities of any private investment fund to be offered or managed by Tephra Digital LLC ("Tephra") are offered to selected investors only by means of an offering memorandum and related subscription materials which contain significant additional information about the terms of an investment in Tephra Digital Assets Fund LP, Tephra Digital Fund Ltd., and/or Tephra Digital Master Fund Ltd., (the "Funds", and each, a "Fund", and such documents, the "Offering Documents"). Any decision to invest must be based solely upon the information set forth in the applicable Fund's Offering Documents, regardless of any information investors may have been otherwise furnished, including this document.

The information in this document was prepared by Tephra and is believed by Tephra to be reliable and has been obtained from public sources believed to be reliable. Tephra makes no representation as to the accuracy or completeness of such information. Opinions, estimates and projections in this document constitute the current judgment of Tephra and are subject to change without notice. Any projections, forecasts and estimates contained in this document are necessarily speculative in nature and are based upon certain assumptions. In addition, matters they describe are subject to known (and unknown) risks, uncertainties and other unpredictable factors, many of which are beyond the Funds' control. No representations or warranties are made as to the accuracy of such forward-looking statements. It can be expected that some or all of such assumptions will not materialize or will vary significantly from actual results. Accordingly, any projections are only estimates and actual results will differ and may vary substantially from the projections or estimates shown. This document is not intended as a recommendation to purchase or sell any commodity, particular security, strategy, or investment product. Tephra has no obligation to update, modify or amend this document or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, project on, forecast or estimate set forth herein, changes or subsequently becomes inaccurate.

This document is strictly confidential and may not be reproduced or redistributed in whole or in part nor may its contents be disclosed to any other person without the express consent of the Tephra. Any reproduction or other distribution of this material in whole or in part without the prior written consent of Tephra is prohibited. All statements in this document are the opinions of Tephra, unless otherwise specified.

The description herein of the approach of Tephra and the targeted characteristics of its strategies and investments is based on current expectations and should not be considered definitive or a guarantee that the approaches, strategies, and investment portfolio will, in fact, possess these characteristics. In addition, the description herein of the Fund's risk management strategies is based on current expectations and should not be considered definitive or a guarantee that such strategies will reduce all risk. These descriptions are based on information available as of the date of preparation of this document, and the description may change over time. The past performance of these strategies is not necessarily indicative of future results. There is the possibility of loss, and all investment involves risk including the loss of principal.

References to market or composite indices, benchmarks, or other measures of relative market performance over a specified period of time are provided for information only. Reference or comparison to an index does not imply that the portfolio will be constructed in the same way as the index or achieve returns, volatility, or other results similar to the index.

This presentation cannot and does not guarantee or predict a similar outcome with respect to any future investment. Tephra makes no implications, warranties, promises, suggestions or guarantees whatsoever, in whole or in part, that by participating in any investment of or with Tephra you will experience similar investment results and earn any money whatsoever.

The holdings identified do not represent all of the securities purchased, sold, or recommended for the Funds. It should not be assumed that recommendations made in the future will be profitable or will equal the performance of the securities in this list. Past performance does not guarantee future results. Additional information on the Funds' performance during the month may be provided upon request.

The graphs, charts and other visual aids are provided for informational purposes only. None of these graphs, charts or visual aids can and of themselves be used to make investment decisions. No representation is made that these will assist any person in making investment decisions and no graph, chart or other visual aid can capture all factors and variables required in making such decisions.

RISK FACTORS REGARDING DIGITAL ASSETS



DIGITAL ASSETS

Digital Assets are loosely regulated and there is no central marketplace for currency exchange. Supply is determined by a computer code, not by a central bank, and prices can be extremely volatile. Digital Asset exchanges have been closed due to fraud, failure, or security breaches. Any of the Fund's funds that reside on an exchange that shuts down may be lost. Several factors may affect the price of Digital Assets, including, but not limited to: supply and demand, investors' expectations with respect to the rate of inflation, interest rates, currency exchange rates or future regulatory measures (if any) that restrict the trading of Digital Assets or the use of Digital Assets as a form of payment. There is no assurance that Digital Assets will maintain their long-term value in terms of purchasing power in the future, or that acceptance of Digital Asset payments by mainstream retail merchants and commercial businesses will grow. Digital Assets are created, issued, transmitted, and stored according to protocols run by computers in the Digital Asset network. It is possible these protocols have undiscovered flaws which could result in the loss of some or all assets held by the Fund. There may also be network scale attacks against these protocols which result in the loss of some or all of assets held by the Fund. Some assets held by the Fund may be created, issued, or transmitted using experimental cryptography which could have underlying flaws. Advancements in quantum computing could break the cryptographic rules of protocols which support the assets held by the Fund. The Fund makes no guarantees about the reliability of the cryptography used to create, issue, or transmit assets held by the Fund.

DIGITAL ASSETS EXCHANGES

The Fund expects to mainly use Coinbase, Inc., ("Coinbase") as the Fund's primary Digital Assets exchange but may use other Digital Asset Exchanges in its sole discretion. While Coinbase is a registered broker-dealer, Digital Assets, in general, are relatively new and largely unregulated and may therefore be more exposed to theft, fraud and failure than established, regulated exchanges for other products. In general, Digital Asset exchanges may be start-up businesses with limited operating history and limited publicly available financial information. Exchanges generally require cash to be deposited in advance in order to purchase Digital Assets, and no assurance can be given that those deposit funds can be recovered. Additionally, upon sale of a Digital Asset, cash proceeds may not be received from the exchange for several business days. The participation in exchanges requires users to take on credit risk by transferring Digital Assets from a personal account to a third-party's account. The Fund will take credit risk of an exchange every time it transacts (including Coinbase). Digital Asset exchanges may impose daily, weekly, monthly, or customer-specific transaction or distribution limits or suspend withdrawals entirely, rendering the exchange of Digital Assets for fiat currency difficult or impossible. Additionally, Digital Asset prices and valuations on Digital Asset exchanges have been volatile and subject to influence by many factors including the levels of liquidity on exchanges and operational interruptions and disruptions. The prices and valuation of Digital Assets remain subject to any volatility experienced by Digital Asset exchanges, and any such volatility can adversely affect an investment in the Fund. Digital Asset exchanges are appealing targets for cybercrime, hackers, and malware. It is possible that while engaging in transactions with various Digital Asset exchanges located throughout the world, any such exchange may cease operations due to theft, fraud, security breach, liquidity issues, or government investigation. In addition, banks may refuse to process wire transfers to or from exchanges. Over the past several years, many exchanges have, indeed, closed due to fraud, theft (e.g., Mt. Gox voluntarily shutting down because it was unable to account for over 850,000 Bitcoin), government or regulatory involvement, failure or security breaches (e.g., the voluntary temporary suspensions by Mt. Gox of cash withdrawals due to distributed denial of service attacks by malware and/or hackers), or banking issues (e.g., the loss of Tradehill's banking privileges at Internet Archive Federal Credit Union). Any financial, security or operational difficulties experienced by such exchanges may result in an inability of the Fund to recover money or Digital Assets being held by the exchange, or to pay investors upon withdrawal. Further, the Fund may be unable to recover Digital Assets awaiting transmission into or out of the Fund, all of which could adversely affect an investment in the Fund. Additionally, to the extent that the Digital Asset exchanges representing a substantial portion of the volume in Digital Asset trading are involved in fraud or experience security failures or other operational issues, such Digital Asset exchanges' failures may result in loss or less favorable prices of Digital Assets, or may adversely affect the Fund, its operations and investments, or the Limited Partners.

RISKS OF BUYING OR SELLING DIGITAL ASSETS

The Fund may transact with private buyers or sellers or virtual currency exchanges. The Fund will take on credit risk every time it purchases or sells digital currency or Digital Assets, and its contractual rights with respect to such transactions may be limited. Although the Fund's transfers of Digital Assets or cash will be made to or from a counterparty which the Investment Manager believes is trustworthy, it is possible that, through computer or human error, or through theft or criminal action, the Fund's Digital Assets or cash could be transferred in incorrect amounts or to unauthorized third parties. To the extent that the Fund is unable to seek a corrective transaction with such third party or is incapable of identifying the third party which has received it, the Fund may incur a loss. Tephra may at any time adjust, increase, decrease or eliminate any of the targets, depending on, among other things, conditions and trends, general economic conditions and changes in Tephra's investment philosophy, strategy and expectations regarding the focus, techniques and activities of its strategy. Fund's Digital Assets or cash (through error or theft), the Fund will be unable to recover incorrectly transferred Digital Assets or cash, and such losses will negatively impact the Fund.

RISK FACTORS REGARDING DIGITAL ASSETS (CONTINUED)



CUSTODY OF FUND ASSETS

With respect to Digital Assets, the Investment Manager primarily maintains custody of the Fund's Digital Assets with Fidelity Digital Assets Services and Coinbase, however the General Partner, at its sole discretion and without prior notice to Limited Partners, may select other custodians in the future. Fidelity Digital Asset Services, LLC is a New York State-chartered limited liability trust company. Coinbase is a registered broker-dealer. The Investment Manager may also maintain custody of the Fund's Digital Assets with other third-party custodians selected by the Investment Manager, including the use of multiparty computation custodians or on or within "hot wallets" on exchanges. The Investment Manager may also utilize proprietary storage methods developed by the General Partner or Investment Manager. Digital Asset exchanges may also require the Investment Manager to provide control of the private keys when the exchange is utilized by the Fund. The Investment Manager may not be able to obtain control of the private keys generated by the exchanges utilized by the Fund, because each exchange may use different methodologies and security systems. The General Partner and Investment Manager are not liable to the Fund or to Limited Partners for the failure or penetration of the security system absent gross negligence, fraud or criminal behavior.

SYSTEMS AND OPERATIONAL RISK

The Fund's investment strategy relies extensively on computer programs and systems to trade, clear, and settle Digital Assets transactions, to evaluate certain Digital Assets based on real-time trading information, to monitor its portfolio and net capital, and to generate risk management and other reports that are critical to oversight of account activities. In addition, certain of the General Partner's and Investment Manager's operations interface with or depend on systems operated by third parties, including its prime brokers and market counterparties and their sub-custodians and other service providers, and the General Partner and Investment Manager may not be in a position to verify the risks or reliability of such third-party systems. These programs or systems may be subject to certain defects, failures, or interruptions, including, but not limited to, those caused by worms, viruses and power failures. Any such defect or failure could have a material adverse effect on the Fund's portfolio.

COMPUTER MALWARE, VIRUSES, BUGS, ETC.

Computer malware, viruses, and computer hacking and phishing attacks have become more prevalent in the industries in which the Digital Assets exchanges (including Coinbase) operate and may occur on Coinbase's or other Digital Assets exchanges' systems or technologies. Though it is difficult to determine what, if any, harm may directly result from any specific interruption or attack, any failure to maintain performance, reliability, security, and availability of Coinbase's, or other Digital Asset exchanges' products and technical infrastructure may harm such Coinbase's, or Digital Asset exchanges' reputations, their ability to retain existing users and attract new users, and their results of operations. Digital Assets exchange (including Coinbase) products and internal systems generally rely on software that is highly technical and complex, and such internal systems depend on the ability of such software to store, retrieve, process, and manage immense amounts of data. Such software may now or in the future contain undetected errors, bugs, or vulnerabilities. Some errors may only be discovered after the code has been released for external or internal use. Errors or other design defects within such software may result in a negative experience for users and marketers who use Coinbase, or other exchange products, delay product introductions or enhancements, or result in measurement or billing errors. Any errors, bugs, or defects discovered in Coinbase's, or another Digital Asset exchange's software could result in damage to Coinbase, or such other Digital Asset exchanges' reputations, loss of users, loss of revenue, or liability for damages, any of which could adversely affect such exchanges and could result in significant losses.

HIGHLY VOLATILE MARKETS

The prices of Digital Assets in which the Fund may invest can be highly volatile. Price movements of Digital Assets in which the Fund's assets may be invested are influenced by, among other things, interest rates, changing supply and demand relationships, trade, fiscal, monetary and exchange control programs and policies of governments, and national and international political and economic events and policies. The Fund is subject to the risk of failure of any of the centralized exchanges on which their positions trade.

HIGH RISK INVESTMENTS

While investments in Digital Assets offer the opportunity for significant capital gains, such investments involve a high degree of business, financial, technological and regulatory risk, which can result in substantial losses. Moreover, the Fund's portfolio may include investments particularly subject to increased risk because they are in Digital Assets at an early stage of development. As a result, the Fund may experience substantial volatility and potential for loss. The Investment Manager believes that its investment program and research techniques moderate this risk through a careful selection of Digital Assets and other financial instruments. However, no guarantee or representation is made that the program will be successful.



CONTACT INFORMATION

ir@tephradigital.io

33 Irving Place
New York, NY 10003