THE BITCOIN ECOSYSTEM

2024 Annual Report

FEBRUARY 19, 2025

EPOCH MANAGEMENT
epochvc.io
info@epochvc.io

Epoch

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Letter from the Founder

We live in a remarkable time. I started working in bitcoin because the technology is a solution to Investments by Category and it emerged precisely when it was needed. Often, I'm overwhelmed with the feeling that the bitcoin ecosystem was made for me as it aligns so Venture Trends 145 bitcoin is just technology, and Letter from the Founder We live in a remarkable time.

I started working in bitcoin because the technology is a solution the most significant issues in the world and it emerged precisely when it was needed. Often, I'm overwhelmed with the feeling that the bitcoin [illegible] The reality is that bitcoin

is just technology, and [illegible] ifferent reasons. I founded Epoch because I believe that will be the [illegible] The ecosystem

around this emerging monetary good requires capital. Capital is accumulated not by chance but [illegible] Epoch is a capital provider dedicated to building the infrastructure, applications, and adjacent technologies at the advent of this system. My [illegible] everything happening with bitcoin, educate as best we can, and [illegible] ecosystem. Working in this industry is [illegible] Influencing the ideas and beliefs at the vanguard of this emerging

ecosystem

- VJ Vesnaver, Operating Partner; until
- [illegible] We were @sultanofchart
- Clark Moody, Venture Partner; report. There are many things we
- [illegible] in our @_DannyKnowles

With that, enjoy.

Eric Yakes, Managing Partner

But little they know that it's so hard to find one rich man in ten with a satisfied mind

— Jonny Cash

Epoch

Operating Partner;

Introduction

There's so much more to Bitcoin adoption than just the number of Bitcoin owners.

@sultanofchart Clark Moody, Venture Partner:

This section will analyze the following:

Market Performance

- @_DannyKnowles
- With that, enjoy.

Eric Yakes, Managing Partner

- Bitcoin adoption among individuals:
  - Unique methodology for estimating U.S. and global ownership
  - Detailed U.S. Bitcoin ownership demographics and the key factors deterring non owners.

Business Adoption

- Jonny Cash
- Deep dive into business adoption, and Microstrategy (MSTR): see our Bitcoin Corporate Finance section

Institutional and Government Adoption

- Nation–To fully understand its current state, we examine
- Potential for governments to implement strategic bitcoin reserves.
- Emergence of Bitcoin spot ETFs and a breakdown of their ownership.

Network Activity

- Onchain metrics: Total value locked (TVL), Decentralized exchange (DEX) volume, and Fee revenue.
- Bitcoin's growth potential compared to other blockchains.
- Adoption trends in non-Detailed U.S. Bitcoin ownership demographics and the key factors deterring non

owners.

- Business Adoption
- Overview of corporate Bitcoin adoption trends.

Finance section

Institutional and Government Adoption

Nation

—state adoption trends

% over the past four years. It remains the best performer among major asset classes over the past four years, both in absolute terms and on a risk-adjusted basis.

While bitcoin's rolling returns showcase its historical volatility and propensity for boom-and-bust cycles, a broader perspective reveals an undeniable fact: Bitcoin's performance is unmatched — despite interim periods of volatility.

On one to two year timeframes, Bitcoin's performance has fluctuated between significant outperformance and underperformance versus traditional assets such as stocks, bonds and gold. Since 2017, its maximum drawdown was -83% over one year and -71% over two years.

However, Bitcoin consistently rebounded, erasing any unrealized losses. In 2023, its rolling one and two-year returns outperformed crypto-peers, and despite the ongoing bull market in stocks.

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% over the past four years. It remains the best performer among

Price Analysis[1]

[1] Chart data: over the past year, and ~1

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year halving schedule in mind, its performance overshadows all other asset classes. In spite of its significant volatility, bitcoin's four-year returns were over +100% at every point as of January 2025.

Since 2017, has rewarded investors willing to hold through an epoch (four year timespan), with a median return of ~1, [redacted] ~1,

However, comparisons with the 2017 and 2021 cycles points to an ongoing trend of diminishing returns.

Source: TradingView[3]

When using the Sharpe ratio to factor in volatility, Bitcoin continues to outshine other assets in risk-epochvc.io

year returns have dwindled from the explosive growth seen in its formative years, volatility has also dropped. Bitcoin's Sharpe ratio recently fell below that of the S&P 500 due to a rapid price rise exactly four years prior. The resilience of Bitcoin's Sharpe ratio throughout significant drawdowns have made it an ideal investment for long-202

[5] Since 2017 - -year timeframes since 2013 results in a median 4-year gain of ~1,700% and an average of 2,516,897%.
[3] over the past year, and ~1

Source: TradingView[4]

Even though the perception is that Bitcoin is a speculative and volatile asset, its realized volatility matches that of mega-cap stocks and runs below that of TSLA and NVDA. Most S&P 500 investors are significantly exposed to these companies, undermining the notion that a Bitcoin allocation is riskier. This misperception of Bitcoin's volatility shows up in the options market for BlackRock's Bitcoin ETF, IBIT. IBIT's current implied volatility is 61%, but its historical volatility over the past year was 52%.[5]

4 Chart data:
5 See volatility data here: https://marketchameleon.com/Overview/IBIT/IV/

shows up in the options market for

Source: TradingView[6]

Correlations

Over the past decade, Bitcoin has been highly correlated with global equities.

BTC Daily Correlations since 1/1/2015					
	Bond Index BND	All Country Stock Index ACWI	Gold		
[illegible]	4	[illegible]	0.88	[illegible]	[illegible]

runs Most S&P 500 .

[6] https://www.tradingview.com/

d significantly

Source: TradingView[7]

Bitcoin and equities are highly correlated with global liquidity which cSource: TradingView structurally expanded since 2009. That said, additional fundamental adoption drivers discussed throughout this section fuel Bitcoin's superior returns against broader asset classes.

[7] over the past year, and ~1

13

Source: TradingView[13]

As Bitcoin matures, we hypothesize that its narrative will shift from a speculative asset that benefits from expanding monetary policy, and geopolitical tensions, towards a safe-haven asset like gold.

We identify several fundamental drivers to support this shift:

1. **Declining Volatility:** If volatility continues to decline, investors with shorter time horizons will feel more comfortable allocating capital to Bitcoin.
2. **Credit Market Maturity.** Bitcoin's credit markets coming of age, discussed in the business model section of this report, will lead to further stability. Instead of market exuberance, expansionary cycles will be driven by proven leverage models, and we anticipate materially smaller drawdowns in bitcoin's price.
3. **Passive Index Flows:** Including bitcoin as an asset category for passive institutional investment flows will reduce its susceptibility to extreme market reactions.
4. **Evolving Investment Narratives:** These three drivers combine to fundamentally transform Bitcoin's narrative to become a valid part of an investment portfolio. We believe that bitcoin is experiencing its "gradually then suddenly" moment. This is when investor knowledge quickly expands, and nation-state and institutional adoption provides the social proof necessary for other investors to reevaluate their investment strategies. We expect this shift to be from "speculative asset with no cash flow" to "the world's scarcest

[13] https://www.tradingview.com/

As Bitcoin matures, we hypothesize that its narrative will shift from a speculative asset that benefits from expanding monetary policy, and geopolitical tensions, towards a safe haven asset like gold.

Declining Volatility — : If volatility continues to decline, investors with shorter time horizons will feel more comfortable allocating capital to Bitcoin. 2 . expansionary cycles will be drivenits correlation with other asset classes will decline. As money managers begin to see Bitcoin as a diversification tool, they may boost their Bitcoin allocations by an order of

https://www.tradingview.com/

Dominance

info@epochvc.io

Since Bitcoin's emergence, many cryptocurrencies have risen and fallen, tying their brief existence to unsustainable inflationary token economics, and creative marketing tactics. Much like how the market can remain irrational longer than one can stay solvent, often these narratives can persist for longer than expected.

Bitcoin's "competitors" have learned two lessons: first, don't compete with bitcoin as money because you will lose. Second, allowing a network to process more transactions, or adding more programmability requires network centralization. We anticipate that many projects (no matter their degree of decentralization) will continue to realize that interacting with Bitcoin is the best way to enhance its monetary capabilities.

Monetary demand is the lynchpin holding all other forms of utility together. At Epoch, we view monetary demand as gravity pulling all other forms of utility into its orbit over the long term.

As the broader cryptocurrency ecosystem comes to terms with this reality, Bitcoin's gravitational pull will deepen, demand for alternative cryptocurrencies will fall, and Bitcoin dominance will expand.

monetary demand

Source: TradingView[9]

BTC's steady expansion against the largest altcoins by market capitalization reflects the market's growing desire for one dominant chain. Bitcoin adoption is increasing but its value lags total cryptocurrency due to thousands of new coins launching with immaterial markets.

There is a divergence between money flows and adoption metrics because many new cryptocurrency investors chase narratives rather than taking a long term approach towards this industry. Large institutions participate as Bitcoin market makers, adding more liquidity and institutional capital to bitcoin.

In contrast, individuals are drawn to new coins that act like a lottery ticket.

Developers create thousands of new coins daily on Ethereum, Solana, and other chains, the absolute majority with near-At Epoch, our position on this remains unwavering. Since Bitcoin's emergence, many cryptocurrencies have risen and fallen, tying their brief

how the market can remain irrational longer than one can stay solvent, often these narratives can persist for longer than expected.[10]

[9] Chart data: Chart data:
[10] Source: Monetary demand is the lynchpin holding all other forms of utility together. At Epoch, we view

begin to

gravity pulling all other forms of utility into its orbit over the long term. As the broader cryptocurrency ecosystem comes to terms with this reality, Bitcoin's gravitational pull will deepen, demand for derivative cryptocurrencies will fall, and Bitcoin dominance will expand. and the only remaining chains will survive by adopting 's monetary value.

Individual Adoption

Strong price performance, risk-adjusted returns, and the potential use for portfolio diversification has helped drive Bitcoin adoption to more than ~300 million owners worldwide.

The launch of spot Bitcoin ETFs in the U.S. — with their whopping success — growing institutional, and nation state adoption bodes well for new bitcoin ownership moving forward. In fact, institutional support provides a form of social proof that can drive long-term adoption among many individuals.

Global bitcoin ownership has grown at a compound annual growth rate (CAGR) of approximately 36% since the first half of 2021. Crypto.com, a cryptocurrency exchange based in Singapore, estimates that by December 2024 there were roughly 337 million bitcoin owners, and around 659 million cryptocurrency owners. However, these estimates do not account for a key group that we call *owners by association* will lose money over time. Data from pump.fun, a popular "memecoin" launch site. $1,000, and only 0.5% made more than $10,000 — million cryptocurrency owners as of December 2024.

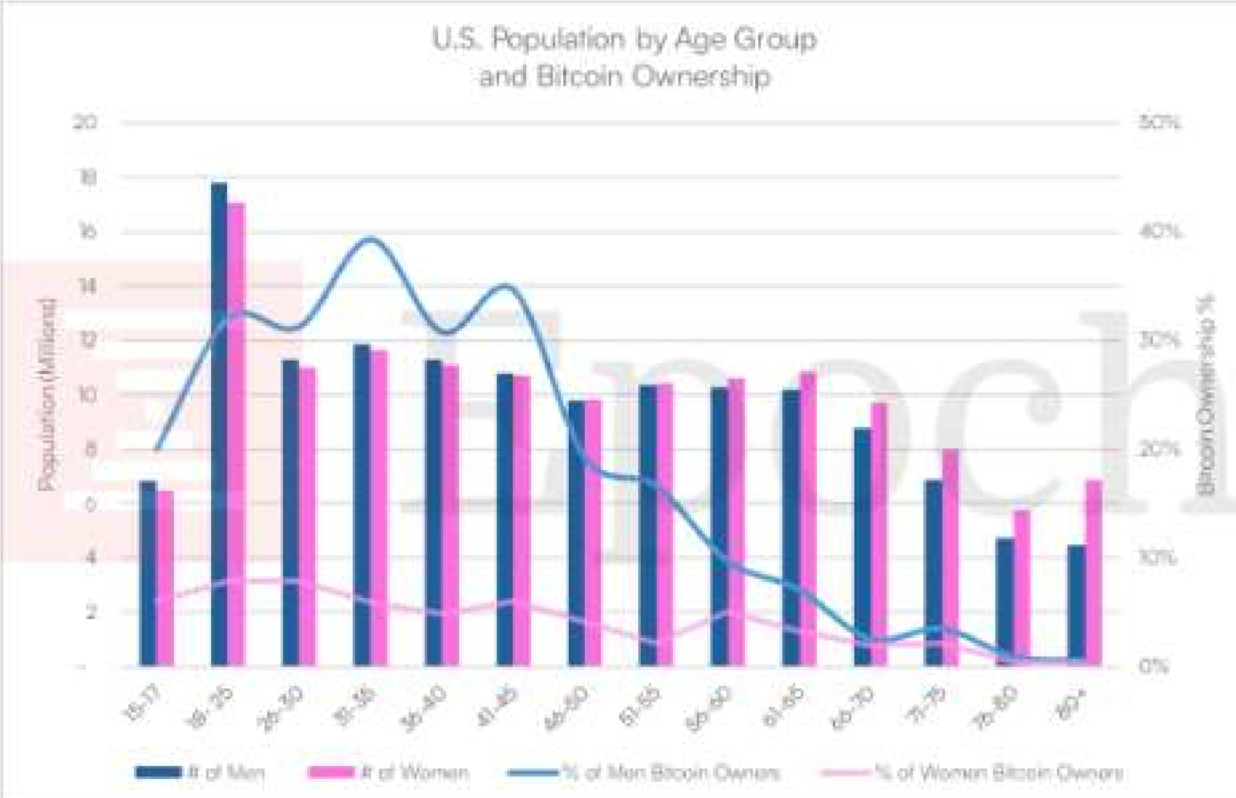
Crypto.com and other industry estimates track onchain and exchange data to calculate ownership estimates, but it ignores "owners by association." This group consists of people whose Source: common example of an owner by association is among married couples with combined finances. Typically, one spouse will singlehandedly manage their cryptocurrency holdings due to technical knowledge of wallet custody and mechanics. The other spouse is excluded from industry

but Bitcoin's growing dominance proves that marginal money is consistently flowing to BTC. We believe that there will come an inflection point in the industry where by the universe of alternative Bitcoin s monetary value.

Individual Adoption

Strong price performance, risk The

growing https://crypto.com/research/crypto-



that we call [12]

[redacted] [redacted]

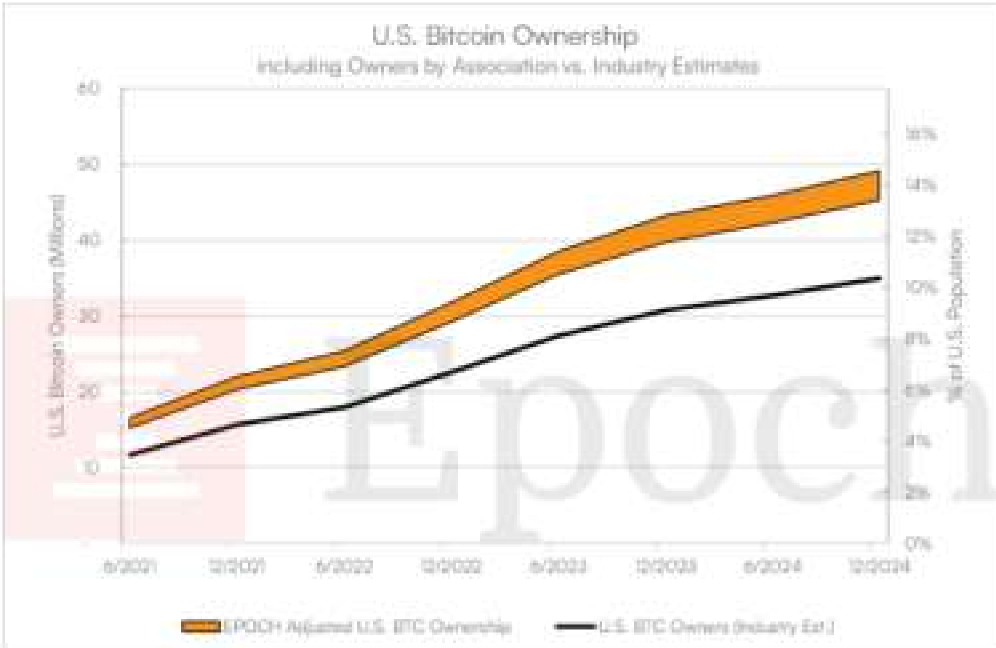
Our analysis estimates the true figure to be between [illegible]

824 to 890

- million cryptocurrency owners as of December 2024.
  Crypto.com and other industry estimates track onchain and exchange data to calculate
- ownership estimates, but it ignores "owners by association." This group consists of people whose
  wealth is linked to bitcoin or cryptocurrency, but who do not own the asse
- ts directly. The most
  common example of an owner by association is among married couples with combined finances.

knowledge of wallet custody and mechanics. The https://www.thenakamotoproject.org/report

[13] Statista, CDC.gov, Census.gov, ourworldindata.org



comprise a significant group of cryptocurrency owners that are not included in

- U.S. bitcoin ownership: 376 to 406 million.
- Global bitcoin ownership: 422 to 455 million bitcoin owners and 824 to 890 million cryptocurrency owners (25% to 35% higher than Crypto.com's estimates of 337 million for bitcoin and 659 for crypto)

https://crypto.com/research/crypto

Our inclusion of *owners by association* suggests that Crypto.com's and other industry figures may underestimate total Bitcoin ownership.

We hypothesize that the gap in ownership between Bitcoin and total cryptocurrency will narrow as Bitcoin's dominance expands.

Who owns Bitcoin in the U.S.?

In a mere 15 years, Bitcoin has touched the minds of 90-95% of Americans.

Roughly one in every seven Americans owns Bitcoin directly and the figure could climb as high as 65% when accounting for indirect ownership[14]

Using the data and marriage statistics, we estimate bitcoin ownership in the U.S. and similarly for the rest of the holding companies like Tesla. However, our focus is direct ownership, because it reflects a conscious decision to

Bitcoin ownership Direct

accounting for ownership by association.

Marriage factor: 65 to 90% of American couples assign one partner to manage cryptocurrency accounts.

Total ownership including spouses: Between 45 million and 49 million Americans (ranging between 13% to 15% of the total population).

The Nakamoto Project,

risk-https://www.thenakamotoproject.org/report

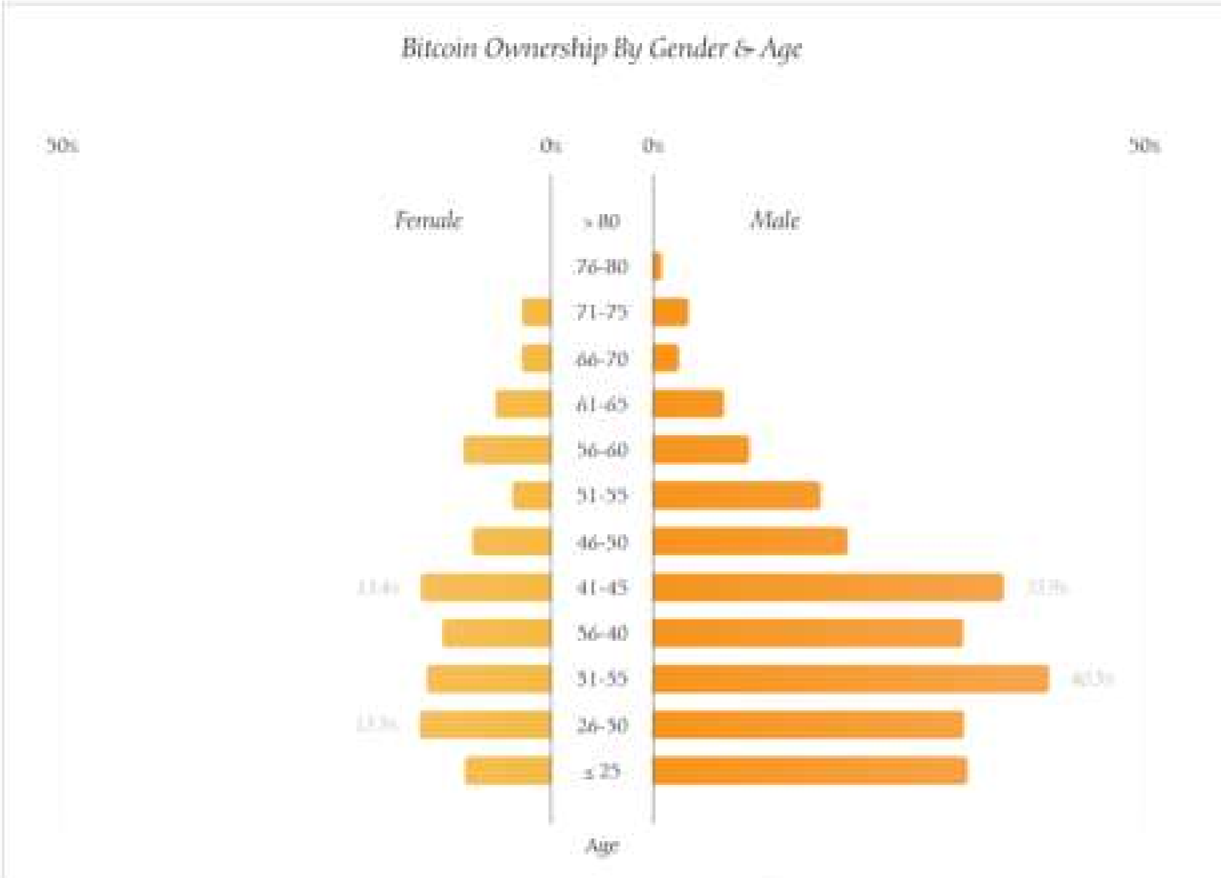
Statista, CDC.gov, Census.gov, ourworldindata.org 13%

18 to 45 claim to own Bitcoin, but direct ownership is lower as this figure includes *ownership by association*. Global bitcoin ownership: 422 to 455 million bitcoin owners and 524 to 590 million cryptocurrency owners (25% to 35% higher than Crypto.com's estimate of 337 million) for bitcoin and 659 for crypto *owners by association* suggests that Crypto.com's and other industry figures may underestimate total Bitcoin ownership. recent years

adoption eases access to Bitcoin and shifts risk perception, paving a path towards new ownership from Millennial and Gen-Z women and other risk-averse people.

For non-owners, the "trust" associated with financial institutions will initially lead many to the ETFs and while we prefer self-custody, the ETFs promote Bitcoin awareness and understanding. According to Gallup, 62% of Americans own stocks. Most of those investors likely own

knowledge of wallet custody and mechanics. The https://www.thenakamotoproject.org/report



Source: The Nakamoto Project[15]

Classes – Demographics Bitcoin ownership in the U.S. is dominated by young men, although the distribution is wider than expected when adding variables of gender, age and political preference. Men typically have a higher risk tolerance than women and opt for more technical fields of study, both of which are potential causes of greater Bitcoin adoption among men. However, the regulatory environment and a drop in perceived volatility bodes well for increased adoption among women and other risk [16] The only relationship the study found was a modest correlation between libertarians and Bitcoin ownership.

[15] The Nakamoto Project, https://www.thenakamotoproject.org/report
[16] knowledge of wallet custody and mechanics. The https://www.thenakamotoproject.org/report

New participation in Bitcoin, regardless of the method of owners

Source: The Nakamoto Project[17]

acceptance and institutional adoption, risk-averse demographics will flow into the market. Recent participation from trusted names like Blackrock and Fidelity yields a sense of security to [illegible]

s volatility has subsided greatly in recent years

[illegible] n increases. Trusted institutions' [illegible] alleviating these concerns through support of the Bitcoin ETFs. Money managers, along with institutions, control the perception of risk and with their stamp of approval, their clients and the 40%+ of people that fear instability will gain comfort investing in Bitcoin.

[17] The Nakamoto Project, https://www.thenakamotoproject.org/report

18

Source: 14

2 0 for money managers' support because they 15
Bitcoin ownership across the political spectrum is roughly a uniform distribution, debunking the issue. where they can collect fees on AUM. Allocating to Bitcoin ETFs allows them to continue charging AUM fees while achieving greater diversification with the best-performing asset on a risk-adjusted basis in recent history: info@epochvc.io This shift 16 7 their The Nakamoto Project, sentiment around Bitcoin ownership risk will rapidly improve.

people who use money managers, whom are uncomfortable investing in cryptocurrency. term, however, Bitcoin is a non partisan issue that can continue to grow across the political sp ectrum. Holdouts to Bitcoin Ownership may revolve around money managers -
alleviating these concerns through support of the Bitcoin ...

g in Bitcoin. 17 https://www.security.org/digital- ... -consumer-report/
g in Bitcoin. 17 https://www.security.org/digital- ... -consumer-report/

The second leading concern around cryptocurrency is a lack of banking and government oversight, which reached an inflection point in 2024 as the spot ETFs launched and a pro-crypto administration won the Presidential election. These dynamics are discussed at length in the regulatory and policy section of the report. Along with the ETFs, modest regulation should also permit more banking access for the Bitcoin and cryptocurrency industry.

Amid the tailwinds, Bitcoin and broader cryptocurrency adoption faces headwinds from bankruptcies and criminal activity including FTX, Voyager, Terra (LUNA), and many more. 19 According to market in equities.

construction. Less than a 1% portfolio allocation to Bitcoin from asset managers would generate over $1 trillion in inflows in the short portfolio rebalancing. This -shift could be imminent. Security .org. factors influence individuals' adoption of Bitcoin; this cycle may be most impacted by institutional adoption and widespread report/ is 23 ed in the following sections.

Business Adoption

Business adoption of Bitcoin is accelerating as Wall Street begins to understand the value proposition of Bitcoin. Spot ETFs, liquidity, price action, and MicroStrategy (MSTR) have dominated the headlines of mainstream financial media. banking access for the businesses allocating treasury reserves as a means towards increasing shareholder value is a growing corporate finance strategy. In January 2020, 13 public companies held 34,359 BTC compared to 69 public companies holding ~590k BTC at EOY 2024.

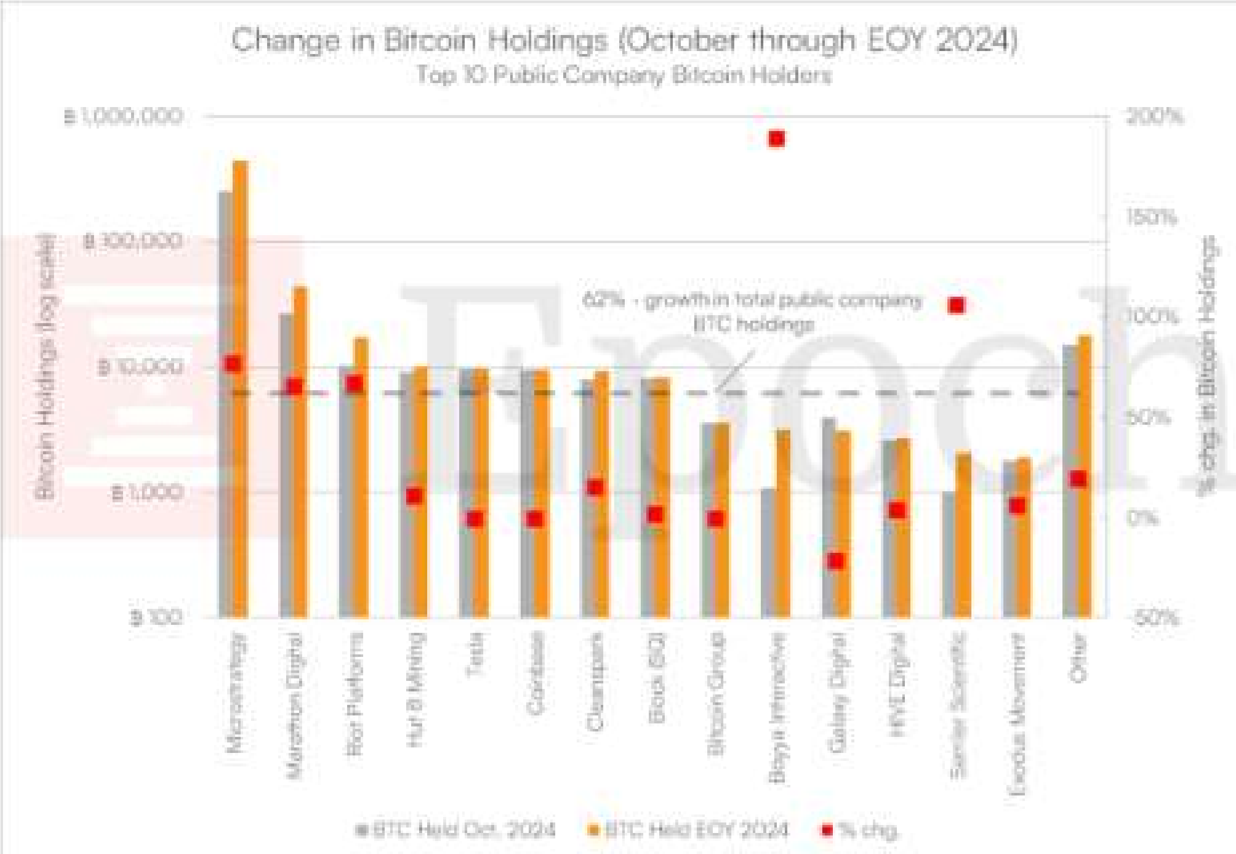
crypto owners https://bitcointreasuries.net/

impacted by institutional

Source: Bullish price action draws[21]

Public company adoption may have reached an inflection point in late 2024. In just 2-3 months between October 2024 and EOY 2024, total public company bitcoin holdings grew 62%

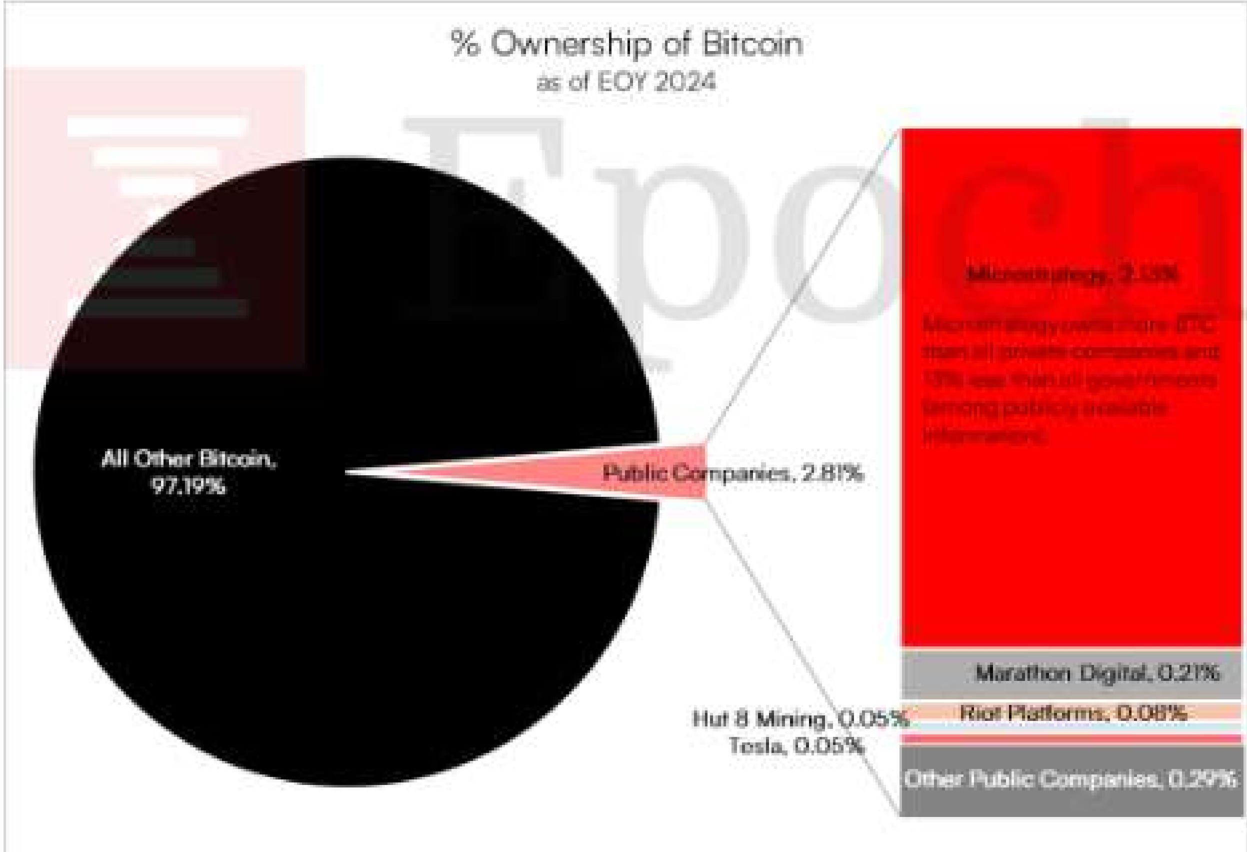
[21] crypto owners https://bitcointreasuries.net/



which[22]

Public companies held ~2.8% of total future bitcoin supply as of EOY 2024. MicroStrategy overshadows all other public companies with ~2.1% of supply.

[22] Bitcoin treasuries: https://bitcointreasuries.net/



which [23]

Adoption has come primarily from TSLA, dominated the headlines of mainstream financial media . In particular businesses allocating treasury ed is a growing corporate public companies [24] Shareholders rejected the 20 Bitcoin treasuries: with a proposal for 5% Source: Bitcoin Treasuries assets to be allocated to info@epochvc.io between October 2024 and mega-EOY 2024. total public company bitcoin holdings grew 62% shareholders may eventually info@epochvc.io 25

ten public 22 Public companies held ~2.8% of total future bitcoin supply as of EOY 2024 MicroStrategy overshadows all other public companies with ~2.1% of supply. [26] vote 26 momentum continues, mega-cap Public companies held ~2.8% may eventually allocate to Bitcoin. At current levels, a 5% Bitcoin allocation from the ten largest U.S. companies' cash reserves would generate ~ a BTC nearly 2% of Bitcoin's total future supply. A 15%

[23] Bitcoin treasuries: https://bitcointreasuries.net/
https://finance.yahoo.com/news/microsoft-shareholders-vote-assets -172000696.html
[25] TradingView News. https://www.tradingview.com/news/newsbtc:21799d371094b:0-bitcoin- shareholders-may eventually aises-eyebrows/
[26] TradingView Data: in their recent quarter.

allocation would produce over $120bn in inflows, equivalent to the size of U.S. spot Bitcoin ETFs (~$11 bn AUM).

ata

Bitcoin allocations from the largest companies are unlikely in the near term, but spot ETFs' impact on Bitcoin's acceptability potentially opens the door for increased company adoption. Bitcoin spot ETFs lead financial institutions to take a more positive 24 Bitcoin vote

against bitcoin 25 TradingView News, qualifies it bitcoin – bet amazon 5 bn[27] Even on weekends, when volume and volatility contracts, there is ample liquidity for large corporations to trade 24/7/365. According to Kaiko,

[27] Coingecko, [redacted]

the dollar amount required to move Bitcoin's price by 2% remained above $250m throughout 2024.[27]

view

Source: Coingecko

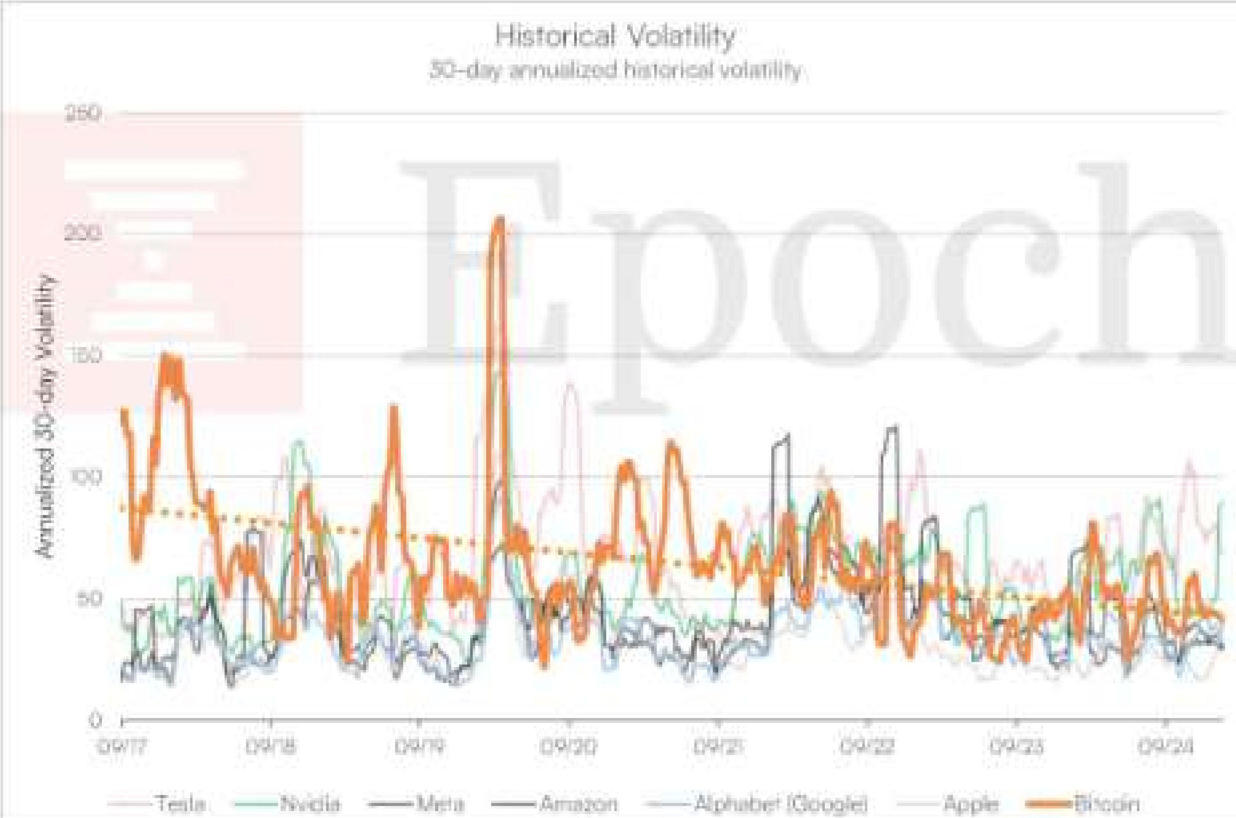
in inflows, equivalent

bn AUM). -Bitcoin allocations from the largest companies

term, but spot ETFs' impact on Bitcoin's acc eptability open the door

[28] increased https://www.kaiko.com/

[29] Coingecko historical Bitcoin data: a more positive



Source: TradingView[xxv]

their recent Bitcoin's extensive and 24/7 settlement.

qualifies it for business es of any size. In 2024, average daily trading volume was $38.7 in credit markets. In the Even on weekends, when volume and volatility contracts, there is ample liquidity for large corporations to trade 24/7

. According to Kaiko, [78]

[27] over the past year, and ~1

Nation State Adoption

2024 will be remembered as a seminal year in nation state adoption of bitcoin28Multiple presidential candidates, and the ultimate winner announced commitments to 28 Source: Coingecko adoption is increasing. Further, states such as Texas, Pennsylvania, and Wyoming are all proposing legislation for bitcoin reserve adoption. We expect this trend to continue.

This announcement has driven anticipatory demand for the asset with the market now considering just how far nation state adoption could spread. China, Japan, Russia, 25 even the EU have staked claims and called for bitcoin reserves. [illegible] of bitcoin as a treasury asset. We expect both trends

to continue as b [illegible] more prominent role as market makers.

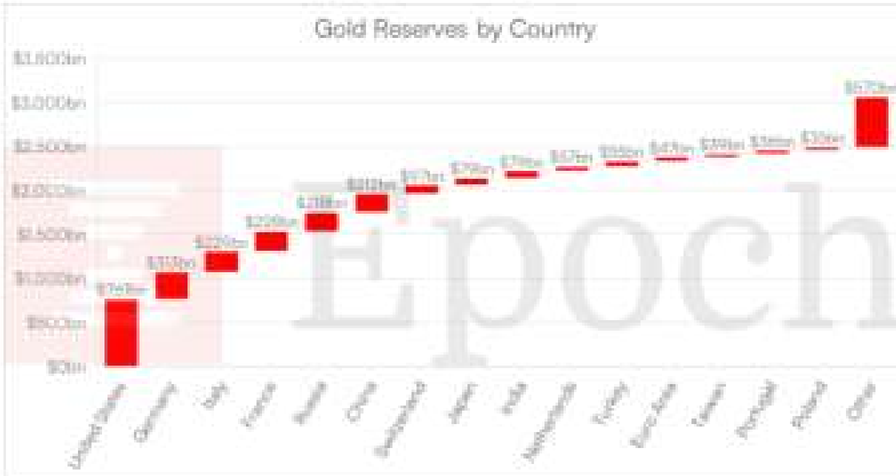
- 28 Kaiko
- Independent sovereign custody
- Liquidity of capital markets
- Certainty of scarcity
- Efficiency of verification and portability

For these reasons we view bitcoin as a superior sovereign reserve asset to gold and expect it to https://www.coingecko.com/en/coins/bitcoin/historical_data [illegible]
depth of 29 capital markets30 For a deep dive on MicroStrategy and Bitcoin Treasury allocations, see our

Nation State Bitcoin Bitcoin Corporate Finance section

As a final point on business adoption, we view the emergence of leveraged bitcoin corporate [illegible] Prior bitcoin cycles have always had a subsequent crash. , and this is exacerbated by [illegible] in gold and globally, total nation state gold reserves are over $3trn.

[31] Source: https://www.forbes.com/sites/tomemiv/2024/12/16/the-cold-war-[illegible]-bitcoin- -Multiple- [illegible]



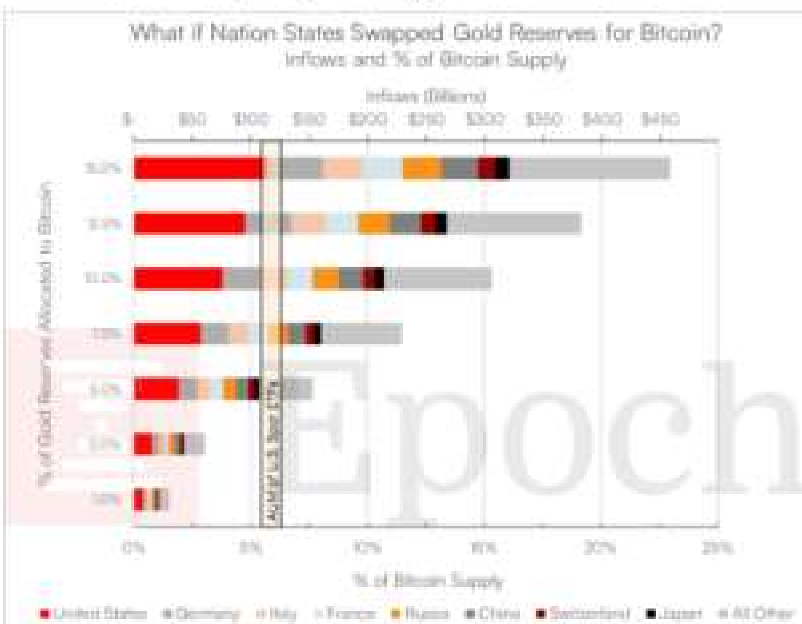
Source: Trading Economics

adoption. We expect this trend to continue % allocation to Bitcoin vs. their gold reserves. Bitcoin would see ~$53bn in inflows. At the current price, this would be ~7.7 of Bitcoin's total supply and ~$3 bn greater than the AUM of U.S. spot bitcoin ETFs. A 10% allocation would represent ~$305bn in inflows and 1.%

Independent sovereign custody Liquidity of capital markets Certainty of scarcity

gold's primary advantage over bitcoin is the depth of its capital markets. However, coming decade because bitcoin is superior in nearly every other category

Nation State Bitcoin



Reserves Market Potential

however,

and we https://tradingeconomics.com/country-list/gold-reserves

Nation State Summary

Country	Government Stance	BTC Holdings	Source of BTC	Key Information on BTC and Crypto
United States of America	Permitted	₿ 198,109	Seizure	• **Approved Spot BTC ETFs in Jan. 2024.** • Trump signed an Executive Order promoting digital assets in Jan. 2025 and appointed venture capitalist David Sacks as "AI and Crypto Czar." • The SEC repealed SAB 121, easing requirements for digital asset custodians. • 16 U.S. states have introduced legislation to establish a Bitcoin reserve as of Feb. 7, 2025. Vaneck suggests this could result in purchases of 243k+ BTC. • With Trump's pro-crypto stance, momentum is building for a federal strategic Bitcoin reserve, an initiative supported by well-funded lobbyist groups.
China	Partial Prohibition	₿ 190,000	Seizure	• Financial sector prohibited from trading crypto or facilitating crypto transactions. • Bitcoin mining is banned.
Hong Kong	Permitted: friendly	-	-	• **No capital gains tax on crypto for individuals, barring exceptions.** • Unregulated: no specific legislation.
Japan	Permitted	-	-	• Regulated and friendly: treated as property. • Reviewing its rules for Crypto industry - examining whether there is enough protection for investors and may lower taxes on digital assets (Bloomberg). • Proposal for a national Bitcoin reserve was rejected in Dec. 2024 (Binance).
Europe	Permitted but banned Tether			• **Europe banned Tether (USDT) for failing to comply with regulatory requirements. Europe comprised 64% of USDT volume. (@JacobKinge)** • Czech Republic removed capital gains taxes on crypto held for 3+ years and proposed an investment in BTC by the Czech National Bank (CoinDesk).
Germany	Permitted	-	-	• No capital gains tax on crypto held over a year. • Banks permitted to sell and custody cryptocurrencies.
India	Permitted	-	-	• Cryptocurrencies are unregulated. • Bitcoin used for remittance payments through companies like Crobo.
United Kingdom	Permitted	₿ 61,245	Seizure	• Regulated and subject to capital gains taxes. • Bill introduced in Sept 2024 to classify crypto as personal property. • Bitcoin ATMs were ordered to shut down in 2022 after failure to register or get licensed by the government.
France	Permitted	-	-	• Capital gains tax on crypto: 30% for individuals and 45% for professionals regardless of holding period.
Russia	Permitted but unfriendly and unclear	-	-	• Officially recognized cryptocurrency as property in international trade and eased tax laws for holders and miners in Nov. 2024. • In trials for a digital ruble (CBDC) since 2023 and a Russian lawmaker proposed a national Bitcoin reserve (Forbes). • **Imposed a 6-yr mining ban, supposedly due to energy shortages (Yahoo).**
Canada	Permitted	-	-	• **First-ever Bitcoin ETF launched in Canada in 2021.** • Regulated and treated similarly to commodities for taxes.
Italy	Permitted	-	-	• Reportedly walking back plans to raise taxes on crypto capital gains from 26% to 46%; instead planning to raise to 28% (Bloomberg).
El Salvador	Legal Tender	₿ 6,073	Purchased	• **First country to adopt Bitcoin as legal tender.** • Investing in BTC and holding it in its treasury.
Bhutan	Permitted	₿ 10,771	Actively Mining	• **First country to actively accumulate BTC and reach $1bn in holdings.** • Began Bitcoin mining in 2019 and have expanded operations since, fueled by immense hydroelectric power resources • Largest nation state Bitcoin holder as % of GDP: ~39% of GDP.
Argentina	Permitted • Common use among citizens	-	-	• **~1/3 of Argentinians use crypto daily, primarily as an inflation hedge** (Crypto Council for Innovation). • **Highest cryptocurrency adoption rate in the Western Hemisphere** (Forbes, SimilarWeb). • Endorsed Bitcoin's use in legally binding contracts. • **We believe it may soon adopt Bitcoin as legal tender and begin accumulating a strategic reserve.**
Switzerland	Permitted: friendly	-	-	• Regulated and friendly crypto environment. • BTC and crypto held over 6 mos. not subject to capital gains tax, barring exceptions.
Singapore	Permitted: friendly	-	-	• Allowed businesses the freedom to transact in BTC or other as early as 2013. • Hub for cryptocurrency startups.
United Arab Emirates	Permitted: friendly	-	-	• Regulated and friendly; no capital gains taxes. • Dubai is becoming a global crypto hub for business and investors.
Brazil	Permitted	-	-	• Popular among Brazilians as an inflation hedge and for remittances.

VanEck also released an interesting update on US bitcoin adoption by state:

Source: VanEck Digital Assets Research[31]

Bitcoin ETF Adoption

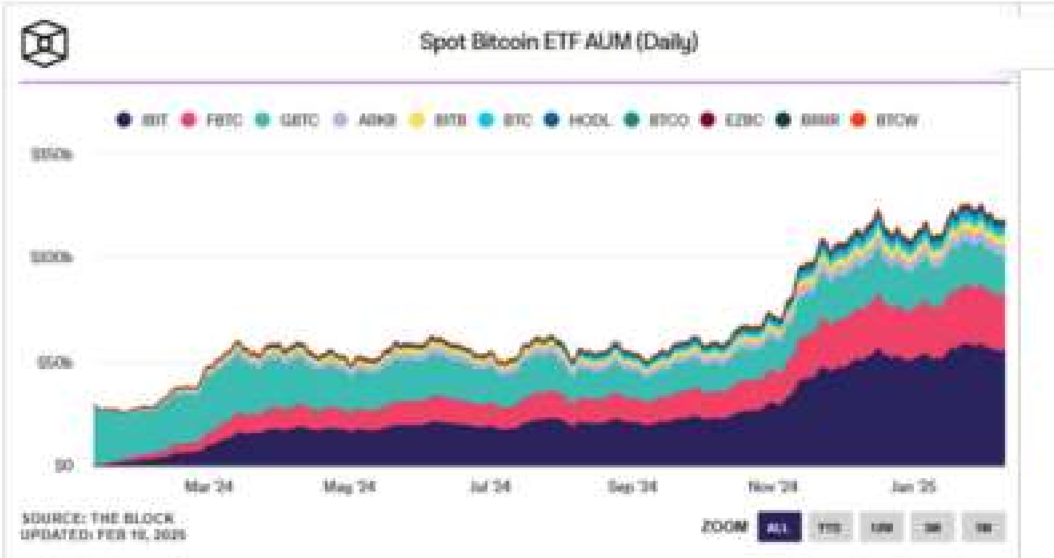
32 private sector, ETF approval has been a 53 ~7 7 % of Bitcoin's total suppl and ~$3 The ~$ 33 proof point for longstanding holdouts that Bitcoin can be trusted now that the largest and most heavily scrutinized financial institutions support the asset. The ETFs' ease of access through traditional financial markets has generated a long run The only primarily from retail investors who account for the bulk of ETF inflows.

Spot Bitcoin ETFs, 32 Trading Economics, launch in ETF history. IBIT and FBTC were the largest-reserve 34

[33] Nation State Summary

[34] info@epochvc.io 33 https://x.com/EricBalchunas/status/1755702963778023718

and spot Bitcoin ETFs in total breached $100bn in AUM on 11/20/2024. AUM as of 2/ /202 stands at ~$ 9bn



sector ETF n AUM approval has been a nother key contributor to bn risk [36]
Gold ETFs launched in 2004, compared to less than a year for Bitcoin ETFs.

Sources: and etfdb.com

† he largest and heavily scrutinized markets/bitcoin.etf/spot-bitcoin-etf-onchain-holdings.usd
[36] Gold ETF data: market
he largest and heavily scrutinized who a .etf/spot-bitcoin.etf-onchain-holdings.usd
[38] Gold ETF data: market

- launched in January 2024, had the most successful launch in ETF history. IBIT ever briefly in December 2024 when bitcoin touched $108k. Gold ETFs hold less than 1% of Gold's total value whereas U.S. on X. for ~5.8% of Bitcoin's total market cap ~6.4pot Bit -coin ETFs[39] Both assets have barriers to ownership — Gold is a physical asset that necessitates secure storage while Bitcoin requires 29 own distinct custodial arrangements.

10 $

1 b m To put this $

AUMSEC comprised 21.5% of holdings at the end of Q3 2024, while non-filers held 78. Non-filers" are impossible to parse, but the strong majority are 37 and etfdb.com own over 4% of the 21 million Bitcoin supply via the ETF.

matched

Source: Bitcoin Treasuries[40]

Retail investors have continued to buy since the ETFs launched in January 2024. Despite decline in Bitcoin's price from Q1 to Q2, retail investors (non- 37 $637.5m in inflows markets/bitcoin38 Gold ETF data: investors likely hold close to 95 due to b35 The biggest Q2 inflows came from

[39] Source: value

[40] crypto owners https://bitcointreasuries.net/

investment advisors at $1.1bn or 26% of their Q2 holdings, but their buying fell sharply in Q3. Hedge fund inflows were consistent between $400-500m in Q2 and Q3.

Q2

Source: NYDIG[1]

% of ~6.

% including non U.S. funds "own" Bitcoin on other blockchains. Tokens like WBTC and cbBTC are arrangements . Who . While they are not direct ownership of Bitcoin itself, Retail investors Institutions gravitated to SEC comprised 21.5 % of holdings

3 2024, while -nonfilers held over 78. . "Non are impossible to parse, but the strong majority are retail investors who now own over 6% of 40 since the ETFs launched in January 2024 retail investors (non filers)

$637.5m in inflows Retail inflows filings: 95 -due to. bitcoin-b by

grown significantly since launching the token on Sept. 12, 2024. It broke $100m in investment advisors at $1.1bn or 26% of their holdings . hedge fund inflows 4 in less than six months since Native

Bitcoin

Source:

[42] WBTC data from Defillama: Bitcoin https://glassnode.com/
[43] cbBTC data: ERC20 tokens backed

WBTC remains dominant at 5.2x cbBTC's size today, but the gap is narrowing. Coinbase's ability to leverage its extensive existing customer base and its delisting of WBTC makes it likely that this trend will continue.

and competing

Use of existing L2s

Bitcoin Layer 2 solutions aim to expand the capabilities of Bitcoin's base layer and close the functionality gap between BTC and alternative cryptocurrency blockchains that offer more developed applications. As the Bitcoin L2 ecosystem develops, we expect much of the total value locked and February 2025 2.6 bn or 0. 6 total BTC supply . WBTC is a meaningful portion of Bitcoin, .

but its is supply's flatten

X

Source: Bitcoin Layers[13]

F filings: Bitcoin L2 due to its unilateral exit guarantees. Lightning allows users to send/receive Bitcoin and alleviates Bitcoin's scalability limitations by enabling Sources: Glassnode, Defillamathroughput. Lightning's capacity has steadily increased since 2018 to >$300m today.

in less than

Source: Bitcoin Visuals[13]

[1] I broke $300m [illegible] $1bn within 2 months of: https://www.bitcoinlayers.org/
[45] Lightning network data:

Epoch

months since

its first day L2 applications have developed slower than 43 41 22 produc and divergence between Bitcoin and others among and onchain 38 Bitcoin has maintained a leadership position among cryptocurrency valuations since inception but to leverage its ex sive existing customer base and its delisting of WBTC trend will continue. Use of existing L2 close the alternative cryptocurrency blockchains that offer more developed applications As the Bitcoin methodical development is an advantage, these technological differences have drawn billions in venture investment to non BTC cryptocurrency development and fueled their onchain metrics to overshadow those of Bitcoin.

Onchain Metrics

Despite Bitcoin's market capitalization Bitcoin Layers ocurrencies in terms of onchain metrics. While B enabling theoretically unlimited throughput and times that of Solana 45 44 L2 data from Bitcoin Layers

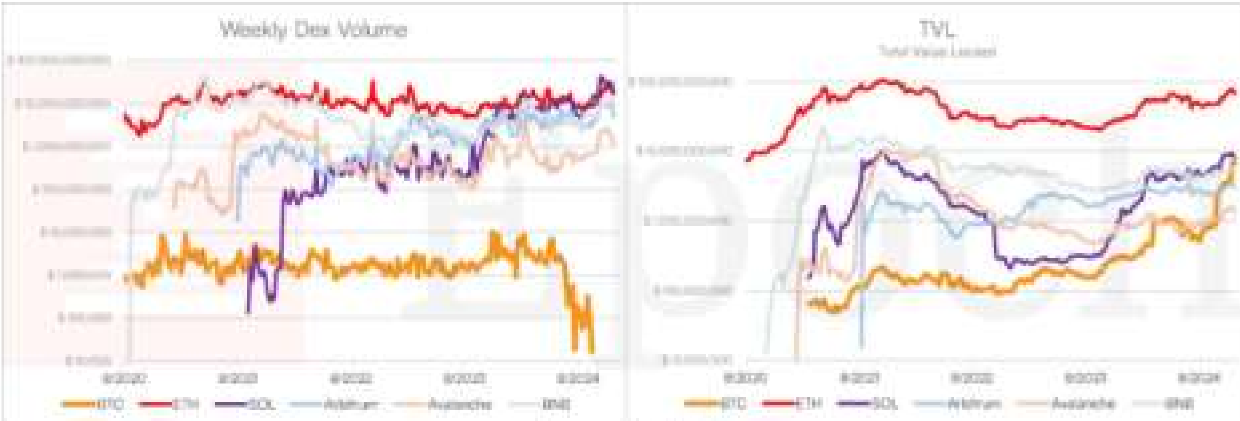
than

Source: 45 [47]

over the preceding 8 weeks.

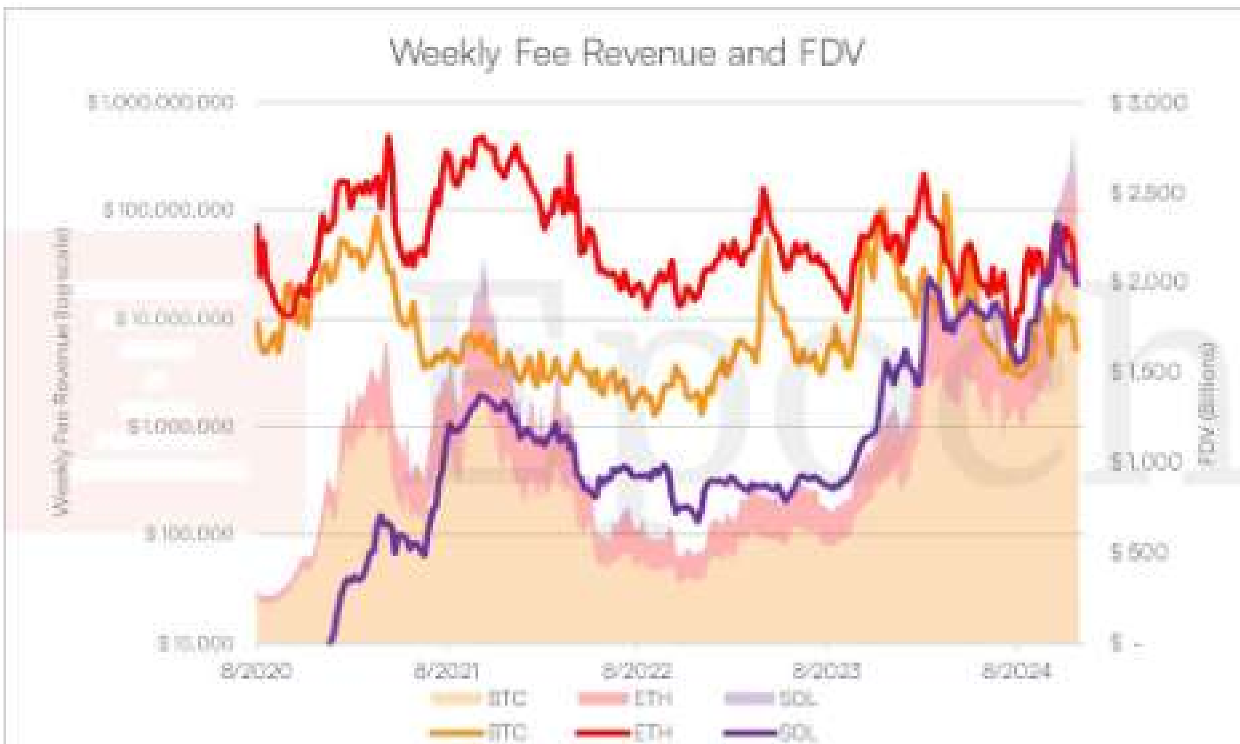
[47] Onchain data: slower

The gap in decentralized exchange volume is even more pronounced. While Bitcoin has narrowed the difference in total value locked, ETH's remains ~16 times higher as of the end of 2024.



Source: Artemis

valuations since inception but ... attract greater venture capital investment. ETH the and SOL originated with L2 28



Onchain data: slower

terms of

Source: Artemis[49]

Any growth from the Bitcoin native application ecosystem can reduce the gap with competing L1 cryptocurrencies driving substantial growth on technologica

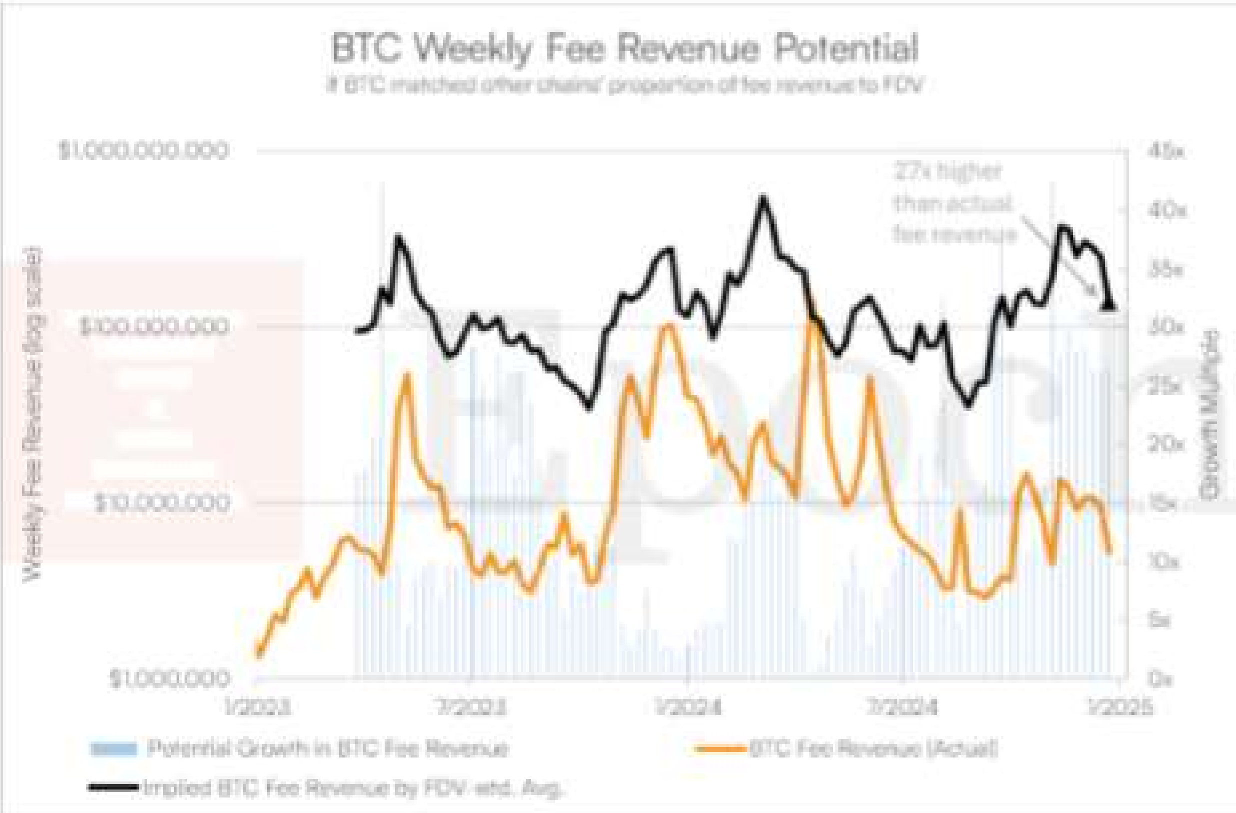
ferences have draw billions in venture investment

to non market dominance and widespread recognition could draw a migration of capital towards emerging Bitcoin native protocols. By analyzing Bitcoin's outsized market capitalization relative to other chains, we estimate potential growth in protocol revenue, DEX volume and TVL, especially as its native ecosystem matures.

onchain

49 Onchain data:

By applying the revenue/fully diluted valuation (FDV) metric as a weighted average across alternative cryptocurrency chains, Bitcoin's implied fromrevenue is times that of its current fee revenue.



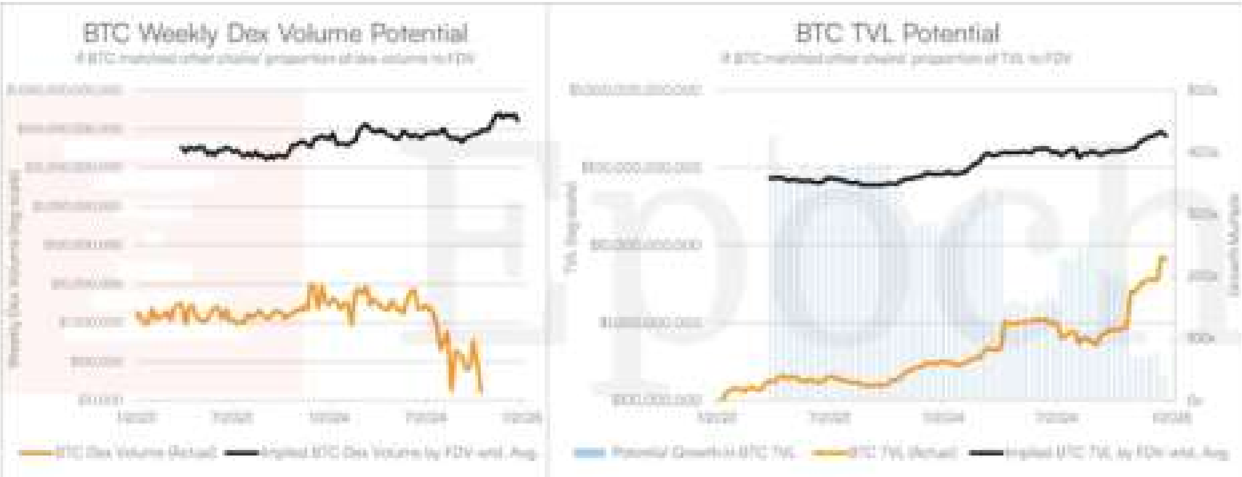
Source: Artemis

Similarly, DEX February 2025and TVL sharply underperform other chains as a percentage of FDV

Source: Artemis

60 Onchain data: slower
Onchain data: slower

datEX volume on BTC is near zero, though it can aspire to ~$166 billion The gap in ... olume is even more pronounced While Bitcoin narrowed the differencin ...'s current FDV implies ~$260 bi48 ...hough this ...itcoin's ecosystem



has less development[48]

magnitude discrepancies isitcoin native protocol growth to accelerate through its current and upcoming cycles. If Bitcoin's ecosystem expanded to match the proportions of alternative cryptocurrency ecosystems, it could drive approximately 27 times more fee revenue, generate some DEX volume competing L1 ...enabling ...

growth both native ecosystem to trail the broader cryptocurrency ecosystem. We believe that many crypto user cases currently rely on unsustainable token incentive models — a practice that will exist in Bitcoin-native protocols but to a lesser degree. As the Bitcoin-towards emerging Bitcoin native protocols ... protocol [redacted] evenue, -DEX volume and TVL-, especially as its native ecosystem matures the 49 market size remains uncertain.

Bitcoin in the Media

info@epochvc.io's adoption and onchain By applying the revenue/ fully diluted valuation FDV metric as a weighted average across alternative cryptocurrency chains and itcoin's implied 28 revenue is times that of its current fee ectrums revenue increased compared to previous cycles, 51 50 societal entrenchment.

... mentioning "bitcoin" in CNBC and New York Times epochvc.io D , EX ... though it can aspire to ...since maintained more consistent coverage while following general price action.[54] on Bitcoin surged -over 2,000% in 2024, and yet.

---

[48] Onchain data: slower
[53] Figures are weighted to FDV. If BTC price doubles, fee revenue would grow 40x instead of 20x.
[54] Our data is indexed relative to the number of articles each website posted.

second highest month — 52 We anticipate B itcoin native protocol to accelerate through its current and upcoming cycles. If Bitcoin's ecosystem

anticipate in bolstered its Bitcoin attention throughout 2024. Still current media anticipate from CNBC and 53 However, we expect Bitcoin's

have

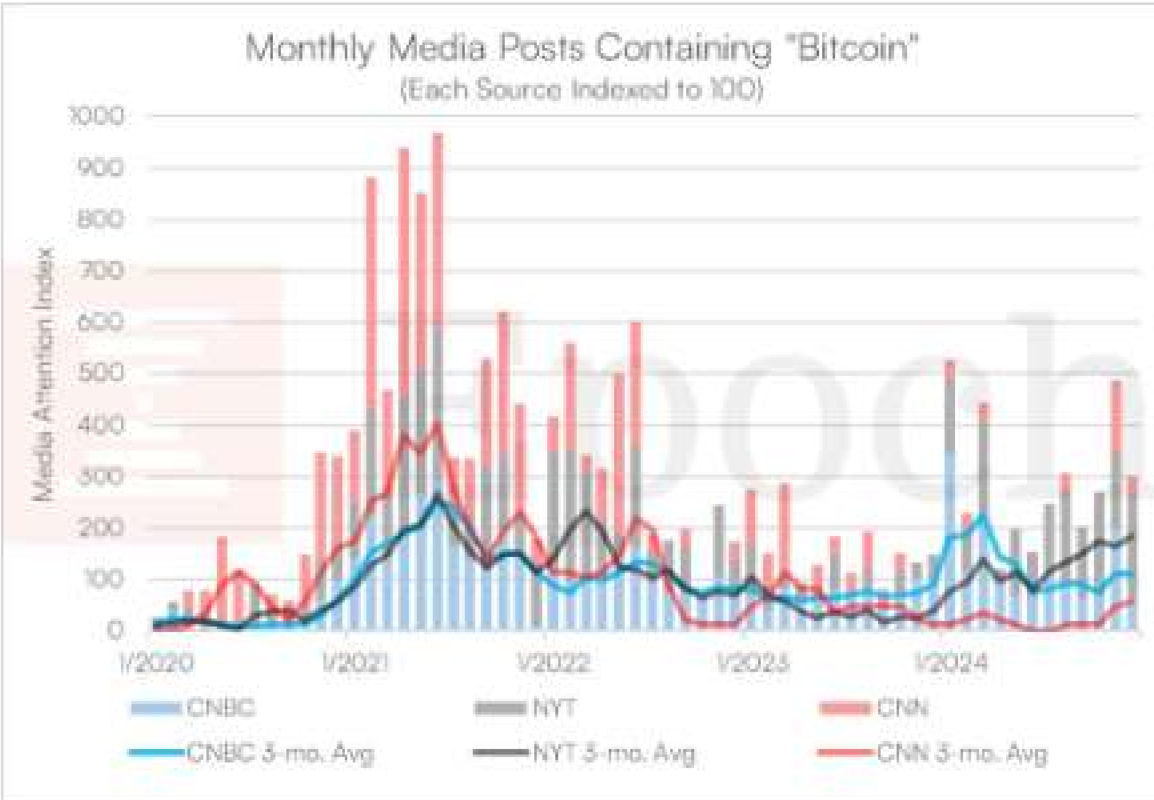
native

ecosystem to 55

Recent data including CNN shows a stark contrast between 2021 and present coverage. CNN's info@epochvc related articles have declined significantly. Despite a brief uptick in November 2024, its coverage of Bitcoin over the past 18 months remains subdued relative to prior years. The disparity between the New York Times and CNN in 2024 — both non financial publications — with noteworthy.

attention https://www.cnbc.com/ and searches

clear cyclical patterns that align with Bitcoin's price movements. Trough levels during bear



previous [67]

Comparing "bitcoin" with related search terms from the New York Times and CNBC reveals distinct patterns. The New York Times' coverage closely tracks bitcoin's price cycles, with notable divergence since 2021 between the terms Bitcoin, cryptocurrency and Ethereum. 54 time high in late 2017 52 . "cryptocurrency" maintained prominence during the bear market partly due to the collapse of FTX and other platforms.

From 2020 through today, CNBC data largely parallels the New York Times, except for heightened Bitcoin coverage in 2021 and early 2024 during the second highest month January 2024 The spot bitcoin ETF coverage Since 2021, CNBC cover Bitcoin through the recent anticipate bear market The New York Times reached and peak the 2021 and [68]

[67] attention https://www.cnbc.com/ and searches and the New York Times be included for more than one keyword. Data for "cryptocurrency" may be lifted by articles about bitcoin that also mention cryptocurrency whereas articles about cryptocurrency broadly may not mention bitcoin.

itcoin, cryptocurrency and

Traditional media coverage reflects news organizations' perception of public interest, while social media trends should serve as both leading indicators 56 55 Sources: measure of public sentiment.

https://www.nytimes.com/ 56 greater volatility. , naturally 46 Bitcoin's price. 57 Comparing "bitcoin" with related search terms from and CNBC reveals distinct patterns The 52 .

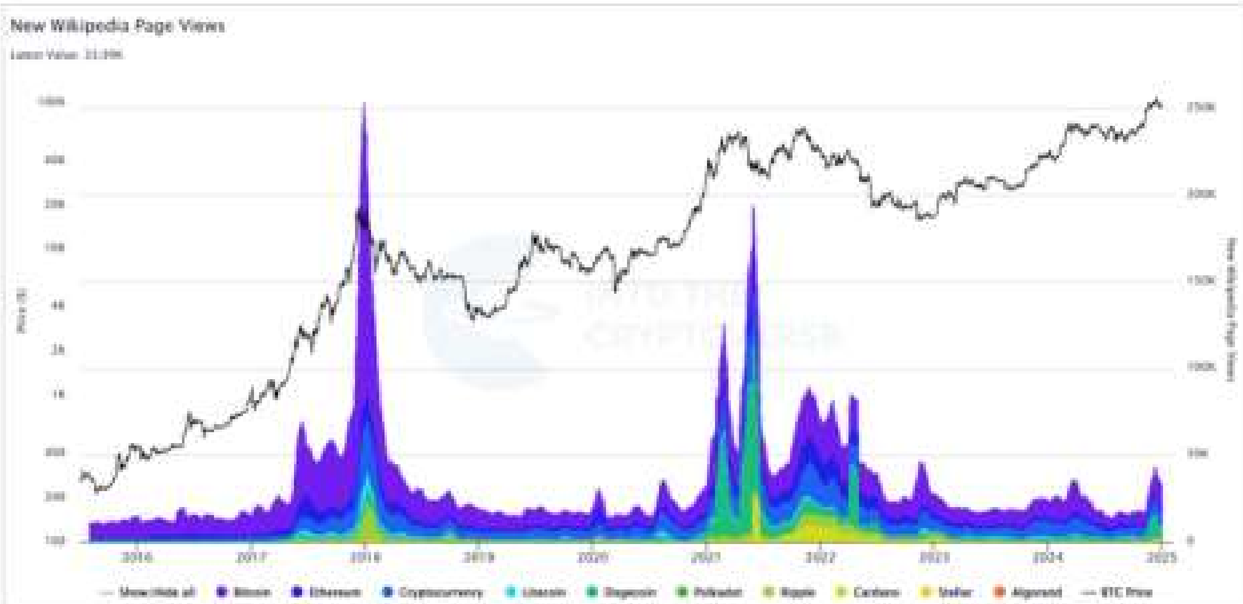
E

New York Times coverage

Source: closely tracks[59]

[59] Google Trends: the terms B

all three early 2021 as bitcoin surpassed $50 ,000 "cryptocurrency" during the bear market partly -due to the collapse of FTX and other platforms except for heightened Bitcoin coverage in 2022 and early 2024 28



during the day Moving Average; Source: Into the Cryptoverse

cryptocurrency – " thereum" Bitcoin-related channels — mirror broader attention trends but with notably lower volatility. The drawdown in 58 57ube views from peak to trough appears more modest compared to Google Search and Wikipedia 24 patterns 58 57ube content creators typically increase video production during bull markets, which should amplify volatility in both views and subscriber Traditional media coverage reflects 58 57news organizations perception of public

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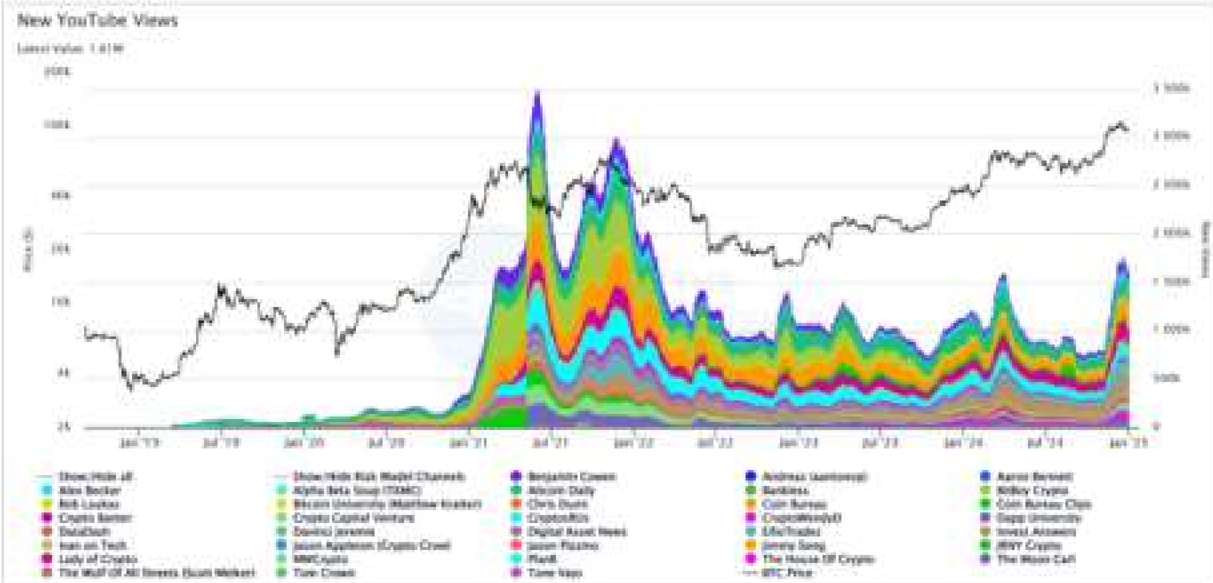
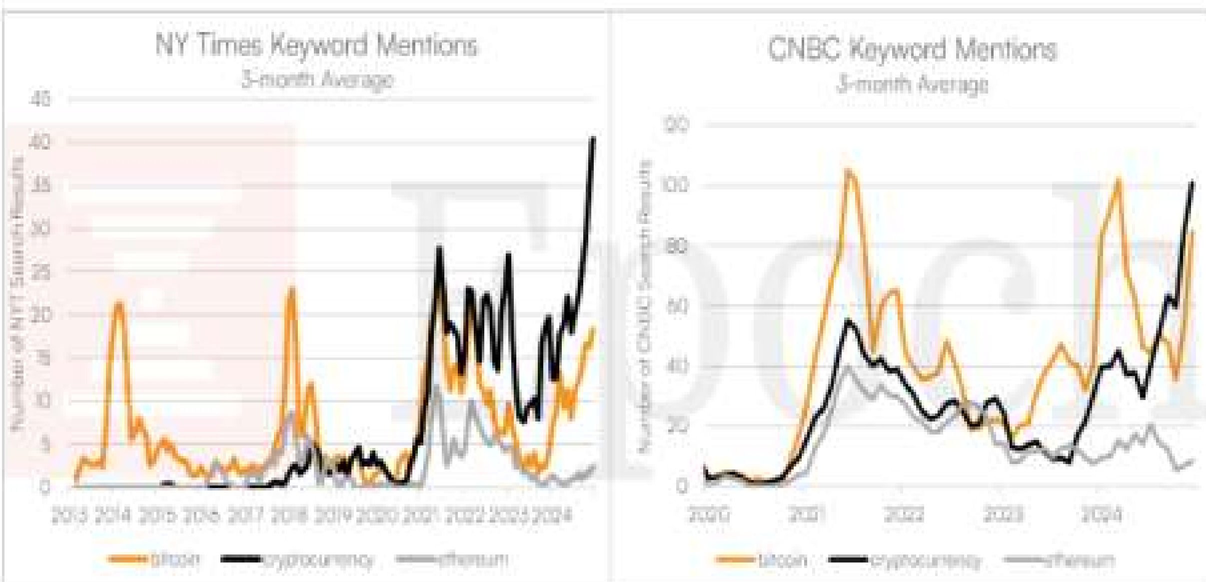
, while https://intothecryptoverse.com/



New Youtube Views. Daily. 30-day Moving Average; Source: Into the Cryptoverse[61]

public sentiment. -Google Search trends and Wikipedia page views-, which capture one - off searches for information naturally correlate with Bitcoin's 58 5Tube rice. Over the past five years, 15 Google trends. peaked in 2021 with late 2024 activity reaching approximately 65 % of that level as Bitcoin topped $100

[58]



Google Trends Source: Into the Cryptoverse[62]

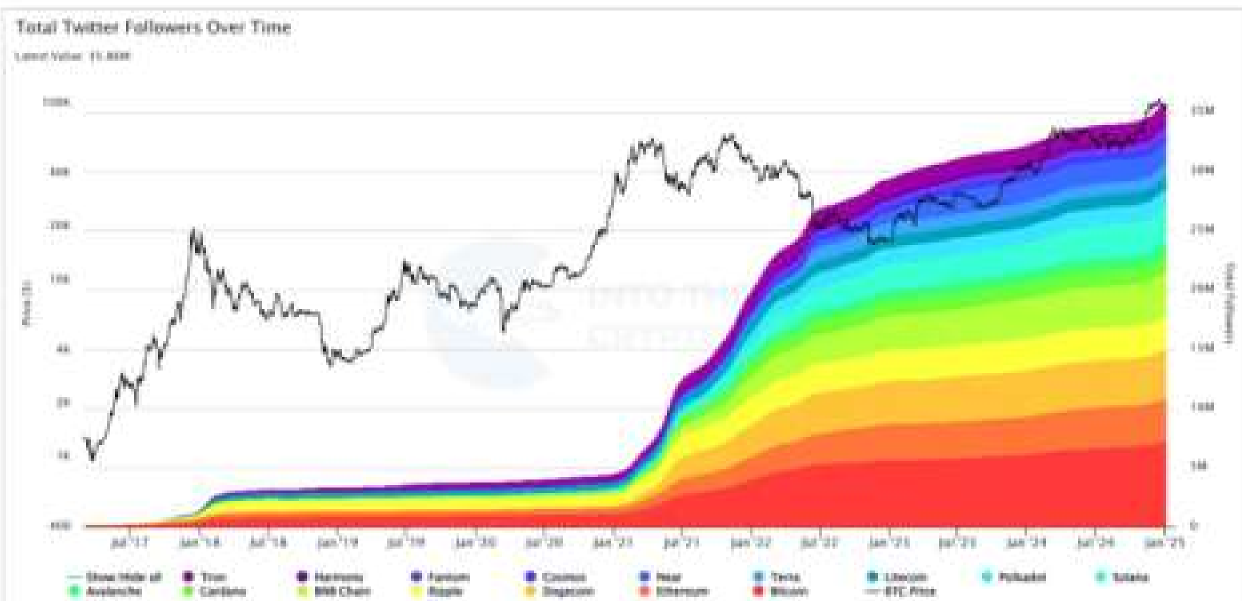
[61], while https://intothecryptoverse.com/
[62], while https://intothecryptoverse.com/

mirror broader attention

New Twitter Followers to Analysts Daily, 30-day Moving Average; Source: Into the Cryptoverse[63]

trivial

since curiosity about Bitcoin Wikipedia may



day Moving Average; Source: Into the Cryptoverse[64]

Into the Cryptoverse— tracking instances where "experts" and media declare Bitcoin dead — illustrate the historically defamatory coverage from media and traditional finance. However,

[63] Sources: https://intothecryptoverse.com/
[64] , while: https://intothecryptoverse.com/

reported Bitcoin "deaths" have declined sharply from their 2017 peak when viewed over a one year period[28] The from peak to trough Bitcoin a appears more modest compared to Google Search and Wikipedia patterns ube content creators typically during bull acknowledge its utility.

day Moving Average;

Source: Bitcoin is Dead

both views and subscribe and individual interest as reflected in bear market 60 Source the bull market has plenty of upside and time media day Moving Average; Source: Into the Cryptoverse below 2021 levels, and significantly under late 2017's exuberance. Traditional media attention towards Bitcoin is increasing, driven partly by the ETFs and the The ,000 price level, though some outlets like CNN show only marginal increases from bear ectrum. levels. Though bear markets typically lead new subscribers disengage or ignore many will content regardless of market conditions in late 2024 Though attention correlates with price 62 61 baseline interest levels irrespective of price action — gradually to Analyst.

[28] Source: , Daily, 30

63

to non Twitter followers for @ growthin 2021. . Growth 22 has maintained a slow but steady place, with signs of acceleration emerging over the past one to two months.

- This report uptoTh herald —— day Moving Average over the past decade, delivering unmatched returns despite its volatility.
    - Volatility: Contrary to popular belief, Bitcoin's volatility is comparable to 64 mega-cap stocks Bitcoin has consistently reported -Bitcoin "deaths" have declined sharply
    - year except for the persistent narrative that appears to be fading as even -some of Bitcoin's harshest critics begin to acknowledge its utility. Bitcoin
    - is Bitcoin's market cap relative to other cryptocurrencies continues to expand capital migrates from other chains We expect this to continue over the long run
- Bitcoin Adoption: Global Bitcoin ownership exceeds 400 million people (metrics show upward momentum, they remain, including approximately 48 million U.S. owners
    - late 2017 's exuberance Trad itional media the ETFs and may ,000
    - price level, though some outlet like CNN show only marginal increases from bear - Google Search trends spiked price broke through $70.

,000 in late 2024 hough

- attention correlates with price in the short term . we expect baseline interest levels rise irrespective of price action gradually over time 65 $120 b in inflows, surpassing current U.S. spot Bitcoin ETFs (Conclusion $11 adoption in AUM).
- growth since its 2009 inception driving its unparalleled price performances across major asset classes. P rice erformance : -Bitcoin has defined investment portfolio performance over the past decade, delivering unmatched returns despite its volatility. approximately $ Volatility b Bitcoin's volatility is
- comparable to some cap stocks Accounting for its volatility, Bitcoin and consistently

year on a risk adjusted

their first year. Retail investors account for the majority of inflows, holding 78.5% of the ETFs' AUM as of Q3 2024

Bitcoin adoption extends beyond ownership to include native Bitcoin use onchain metrics across different networks, and L2 adoption device-specific media anticipate

- **Non-native BTC:** Wrapped Bitcoin tokens (WBTC, cbCBTC) provide exposure to Bitcoin on alternative blockchains. They account for less than 1% of the total supply, but reveal demand for Bitcoin from native users of other blockchains
- **Comparing Onchain Metrics:** Despite Bitcoin's market cap dominance, its limited L2 functionality results in lower TVL, DEX volume, and fee revenue compared to alternative cryptocurrency networks. If the Bitcoin-native application ecosystem catches up to Demographics Ownership is concentrated could young men , though gender
- gaps narrow as risk perceptions ease. Bitcoin Holdouts The greatest adoption barriers including "unstable value" and "lack of government or banking oversight," are levels the launch of spot ETFs and is approaching an inflection point across multiple sectors: Business Adoption shareholder proposals at mega cap companies like Microsoft and Amazon signal A 15% cash allocation from

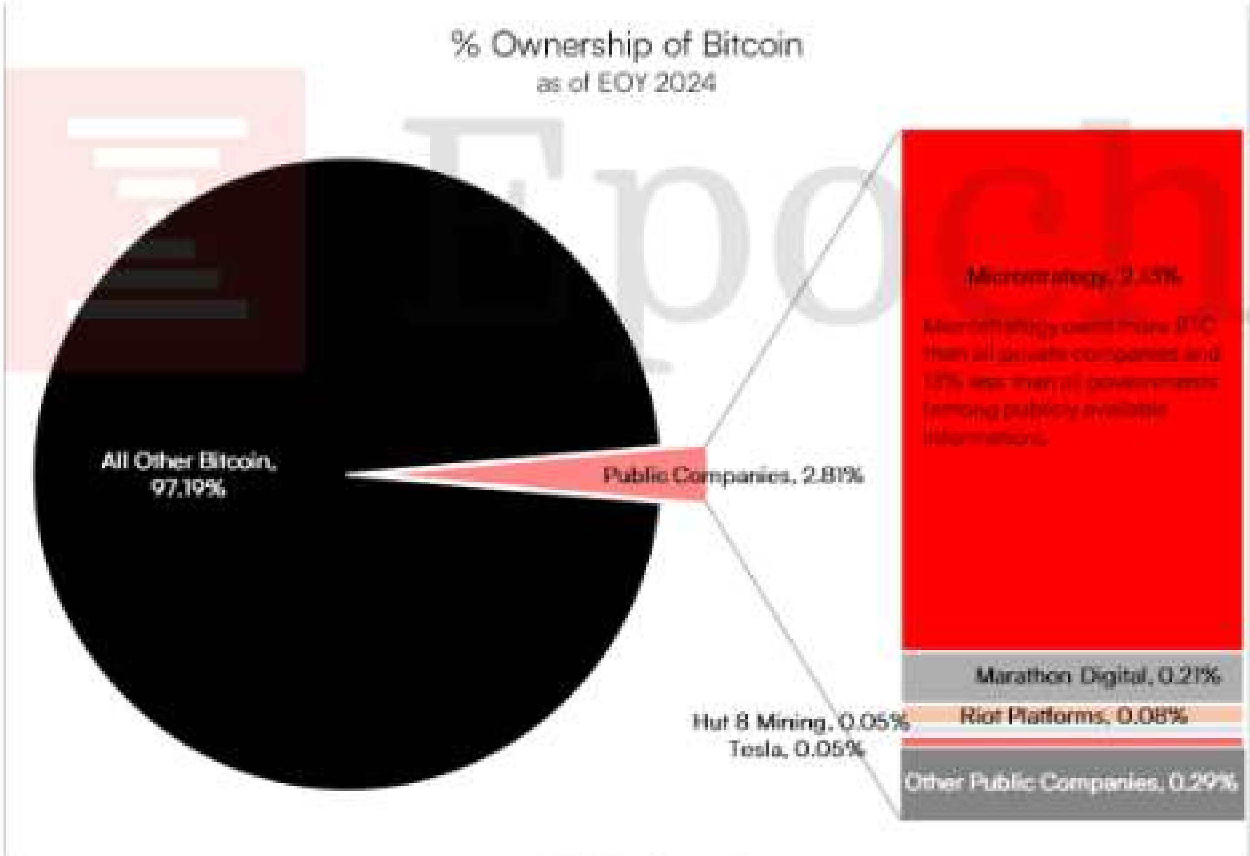
the top 10 largest companies would generate over $120 45 illion in inflows, surpassing current U.S. spot Bitcoin ETFs roughly .9 billion Nation State Adoption: In 2024, U.S. presidential candidates proposing and strategic bitcoin reserve, prompting other

Epoch

Bitcoin Corporate Finance

Introduction

Our adoption section highlighted substantial growth in Bitcoin as a balance sheet asset, warranting its own section with dedicated analysis:



which

reserve asset to gold.

- If countries sought a modest [illegible] approximately 153
- illion in inflows.
- Bitcoin ETF Adoption: Launched in January 2024, U.S. spot bitcoin ETFs,
- experienced [illegible] Epoch estimate

Bitcoin treasuries: https://bitcointreasuries.net/

their first year.

Retail investors account

1. **Inflation protection:** Long-term allocation to scarce asset as a store of value against monetary inflation. Companies should balance the tradeoff between short-term volatility and solvency risks when determining a holistic treasury allocation.
2. **Dilution protection:** High performant treasury assets can extend capital efficiency, and reduce the need for future fundraising. This is most advantageous to early-stage 153 by preserving founder equity, and its subsequent incentives.
3. Despite Bitcoin's market cap dominance, its limited L2 functionality
4. **Strategic marketing initiatives:** Bitcoin stakeholders are unique because they benefit from fee revenue cryptocurrency networks. Bitcoin adoption. Businesses that accept bitcoin and hold it on their balance sheet can leverage this for Bitcoin-Bitcoin's onchain

metrics

exponentially grow coverage, and social media data our portfolio companies determine economic considerations when exploring bitcoin treasury allocation. The following analysis compares how a startup can be affected by holding Bitcoin on its balance sheet compared to USD treasury allocation.

(1) Consider a startup that raised $1 million for 10% equity and is burning $2052 per month. If this startup allocated 50% of its cash to Bitcoin and bitcoin's price increased annually by 30%, Bitcoin adoption expanding the and we believe year period is on the precipice of rapi, particularly among businesses and nation states in later section s of this report. we explore

usiness https://casebitcoin.com/charts#sharpe_chart

A deep dive on the

(2) Consider the same company, but Bitcoin Corporate Finance$3055 With bitcoin on its balance sheet, the startup would still need to fundraise67 This section of the report will explore: — The fundamentals of a Bitcoin Treasury allocation,-focusing on earlystage itcoin companies strategies

MicroStrategy

(3) Even with Bitcoin's well-documented price cyclicality, downside risk remains manageable. With a 40% price decline in 2025, the 56 a fundraiser three months earlier and effectively dilute itself only 1.3% more.

S

Applying historical bitcoin price performance to ong term allocation to scarce asset as a store of value against monetary inflation he tradeoff short term volatility and solvency risks when determining a holistic treasury allocation Dilution protection: H igh performant treasury ass e

can extend capital efficiency, and reduce the need for future Bitcoin fundr aising stage – by preserving founder equity, and its subsequent incentives. 5
Strategic financing capabilities: Mature companies market access for more Bitcoin
4. Strategic marketing initiatives Bitcoin stakeholders are unique because they benefit to B from

support ing businesses that further B itcoin adoption. Businesses that accept bitcoin 400
itcoin specific marketing Bitcoin as Dilution Protection for Starts Ups m At Epoch, we've seen in start s the B asset. Epoch 's model help

bitcoin treasury allocation analysis compares .[69] and found two compelling examples of benefits for businesses operating a Bitcoin treasury strategy.

- (1) million -for 10% equity per month. If this startup allocated 50% of its cash to Bitcoin and bitcoin's price increased — annuallyby 30% profits into bitcoin. Before this decision it had three franchise locations, as of 2023 the company has expanded to 44 locations. Along with the financial benefits of their Bitcoin strategy (having survived a 74% drawdown), Tahini's enjoyed an uptick in benefits from their marketing efforts. Tahini achieved viral marketing success through their Bitcoin strategy — building a profitability and million sustainability. 5 8 The historical CAGR of bitcoin is much higher than this along with its benefits were unprecedented.
- Real Bedford FC: P$30 ,000. With bitcoin on its balance sheet, t he startup would still need to fundraise, but primary reserve asset — accepting BTC as a form of payment. It has built a global fanbase as "the Bitcoin soccer team" driving record-extended runway could equity dilution. a global fanbase — 58 necessity to (3) Even with Bitcoin's well manageable. W ith 0% price declines

in 2025 B. the company would need a fundraiser 58 three 1.3% more. historical bitcoin price performance to a Bitcoin allocation Bstrategy wouldmaterially benefit the company's financial position. Even with conservative growth Bassumptions, adoption and are always exploring investments in companies finding a impact short term financial Bitcoin marginal considerations. While price volatility

requires active

solvency management. under extreme scenarios serves

River Financial documented four primary strategies that businesses implement today

1. management options, along with Bitcoin's
   - asymmetric-return profile.
   - start founders should
   - consider
   - allocatinga proportion of idle funds
   - itcoin.

---

financial report on business adoption of bitcoin: potential . bitcoin, million https://river.com/learn/files/business-bitcoin-report-2024.pdf

2. strong incentive
    - within
    - businesses
    - that
3. are furthering its adoption.
    - suited for multi-59
    - Applicable primarily to startups which can raise for three years of runway.
    - Startups maintain one year cash runway.
    - Can justify raising excess capital if Bitcoin allocation outperforms future dilution.
4. last
    - year detailing various case studies-term conviction.
    - Requires minimal cash for immediate expenses.
    - Bitcoin is the dominant Tahini's
    - Canadian [71]

For startups, governance policy should prioritize dilution risk management. Many of these considerations are based on access to capital which can be influenced significantly by the market. Importantly, when considering leveraging their loan collateral in Bitcoin, founders should take into account total liquidity: cash runway along with borrowing capacity during drawdowns). Companies that offer to collateralized bitcoin loans include Ledn, Debifi, and Unchained Capital. Banks are soon to come.

Bitcoin Allocations with Strategic Financing Capabilities

Once a firm reaches a specific scale, it can employ more complex financing capabilities.

MicroStrategy (MSTR) exemplifies sophisticated Bitcoin financing at scale. Given its access to capital markets, the firm can publicly market debt and equity offerings to qualified purchasers. Real Bedford FC : P eter McCormack, The B itcoin podcasting sensation, bought his home the value of bitcoin. While its primary reserve asset capital markets. Any drop in market appetite could threaten the sustainability of financing model.

[71] The Space website: channels to building

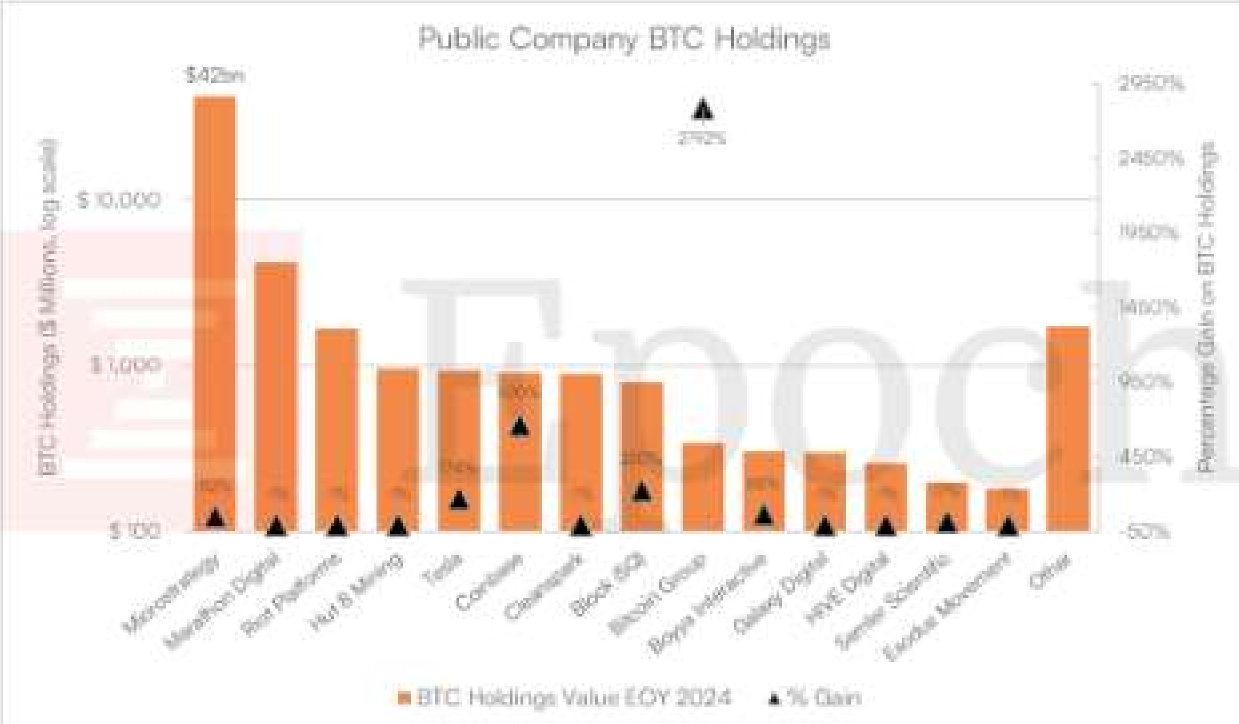
itcoin

Source: Microstrategy Company Filings

towards more competitive leagues. Further more -, the team has sponsorship how Bitcoin alignment can drive company as its through m , marketing, sales, sponsorsh

Consumer brands can differentiate themselves from competitors simply by supporting itcoin and tapping into the benefits afforded by the growing market. At Epoch, we invest in companies aligned with

strategy investor relations: strategic angle .for



which

Establishing a Bitcoin Governance Policy When adopting bitcoin as a treasury asset, it's paramount to establish a governance policy for allocation decisions such ... equal. While it is hard to predict how significant this adoption could be, we expect the market for bitcoin lending to become more attractive, drawing multiple degrees of expansion in the near-to-medium term.

proliferation of leveraged Bitcoin corporate finance strategies is a key risk towards Bitcoin's price volatility. We've conducted a deep dive on the MicroS bitcoin report 2024.pdf to concentration of credit risk.

MicroStrategy (MSTR)

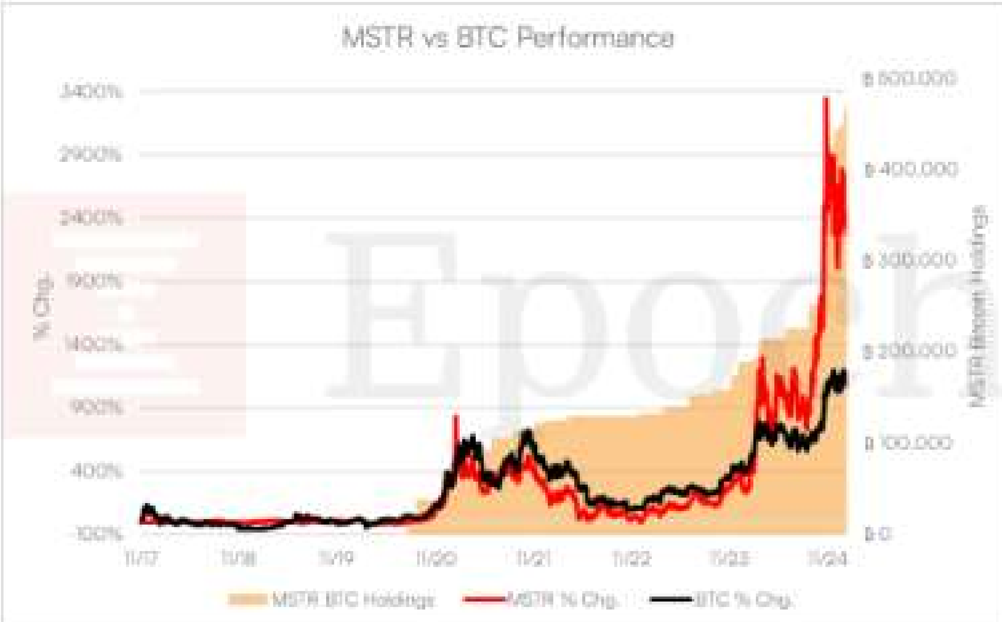
MicroS...[74] is the top public company promoting bitcoin balance sheets via their leveraged finance strategy. The firm's returns outperforming Bitcoin has captured both the attention of Bitcoin advocates and Wall Street. Since MicroStrategy began accumulating Bitcoin in 2020, the stock has appreciated roughly 7... prioritize ... Many of these ... market..

...croStrategy's access to capital markets enables it to raise debt and equity capital to buy Bitcoin — drastically outperform... its cost of capital. Since it began its Bitcoin initiative in 2020...

[73] Bitcoin treasuries: https://bitcointreasuries.net/
[74] ...Strategy changed its name to "Strategy" on February 5, 2025. We will refer to it as MicroStrategy or MSTR.

Epoch

scale , it can employ more complex financing capabilities, capital markets, the firm is currently executing on $42 billion . MicroStrategy uses leverage, and the value of its business is predicated on



Price Analysis[75]

MSTR stock trades at roughly 1.9x value correlates to Bitcoin, it also depends on access to book value. In theory it should trade near book value, but this perspective is based on an incomplete understanding of the business strategy.

[75] Chart data: over the past year, and ~1

The Space website:

(1) Perpetual leveraged financing expectations

staicroStrategy's strategy relies on Bitcoin's perpetual price appreciation. Microstrategy Company Filings unlimited debt appetite — as Bitcoin rises, MicroStrategy theoretically continue to raise capital at favorable terms (all else equal) due to its improving balance sheet position. If MicroStrategy continues to execute its strategy, the stock will continue to rise (all else equal), potentially outperforming Bitcoin. We attribute some of the stock's premium over Bitcoin to the market's belief that BTC is undervalued and that MicroStrategy will not waver on its capital plans.

(2) MSTR: a growing source of Bitcoin

MicroStrategy's model attracts investors who prefer it to spot bitcoin, driven by a KPI dubbed "BTC Yield" that "represents the percentage change period-to-period of the ratio between the relations [76]
Put simply, it measures the change in Bitcoin per share of MSTR over time. In 2024, MSTR's BTC Yield was 73.4%.

staicroStategy's structure growBitcoin per share through two mechanisms:

- Debt capital By raising debt capital, MicroStrategy can purchase Bitcoin without diluting shareholders in the immediate term. Although its the market for bitcoin drawing multiple degrees of expansion in the nearmedium term.

of leveraged itcoin corporate finance strategies strategic angle for

- Equity capital price volatility. We'veconducted a deep dive on the Micro S trategy playbook BTC per share. As long as MSTR shares are trading above book value, selling equity to buy BTC generates an increase in [illegible] exceeds the dilution to shareholders.

drastically

Based on MicroStrategy's stated capital plans and our analysis, trategy (MSTR B74 is the top share of MSTR to their leveraged finance strategy. The firm's

outperform

Bitcoin has captured both attention of Bitcoin that MSTR should trade near its book value — icroStrategy began accumulating Bitcoin — in 2020, the stock has appre [77] However, MSTR trades above twofold its book value when factoring in the market February 10 2024

...s access to capital markets enables it to raise debt and equity capital to buy Bitcoin

There are limited options to trade or speculate on Bitcoin, particularly for institutions or individuals' accounts that are limited to 74 sMicro

trategy changed its name to "Strategy" on February 5, 2025. We will refer to it as MicroStrategy or MST

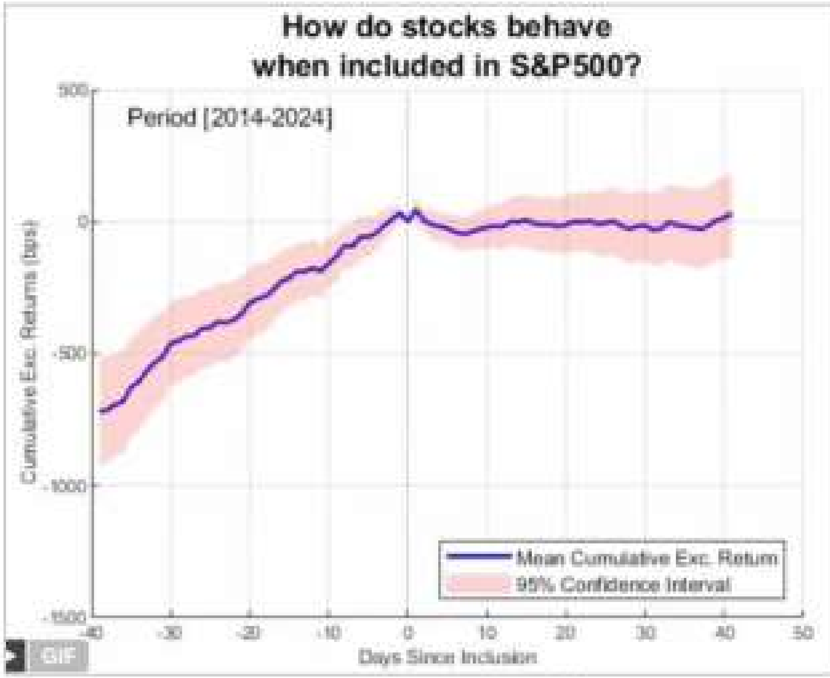
1. **Leveraged returns:** MicroStrategy MicroStrategy has accumulated 471,107 bitcoin (worth approximately $4 6
2. 2025 and is currently executing on $42 billion in planned fundraising from 2025 2027 to finance more BTC purchases. premium in MSTR's valuation will wane over time as ETF options and proxy markets mature.
3. **Volatility:** MSTR options trading allows the company to achieve attractively low rates on its convertible bonds. Institutional traders capture MSTR's high implied volatility by buying convertible bonds and sell, creating 64 for billions of dollars of MSTR convertibles notes at near 0% coupon. icroStrategy's strategy relies on Bitcoin's perpetual price appreciation.[80]
4. **Fees:** Bitcoin ETFs charge an annual management fee. Though fees are low, long-term holders may prefer truly zero-fee Bitcoin exposure. MSTR serves as a medium for Bitcoin ownership with no management fees and no trading fees.
5. **Frontrunning MSTR's likely inclusion to the S&P 500 & Nasdaq 100 Indices:** MSTR will adopt new accounting standards on Jan. 1, 2025, when it becomes eligible for the S&P 500. This would force over investors who prefer it to spot [81] Similarly, MSTR was added to the Nasdaq 100 index on December 13, 2024. Some of MSTR's recent outperformance over BTC may be attributed to frontrunning its between the

[78] 76 Put simply, it measures the change in Bitcoin per share of MSTR over time. In 2024, MSTR's BTC Yield was 73.4%.

[79] s structure grow Bitcoin per share through two mechanisms: Debt capital https://www.barrons.com/articles/microstrategy-option-volatility-convertible-f4f0544d

[80] MSTR's unusual relationship with volatility also means that the stock price is loosely tied to volatility. Higher volatility permits beneficial financing terms and leads to greater BTC yield. Many MSTR shareholders are unaware that the stock, like a call option, is exposed to downside risk from lower volatility; if Bitcoin is flat, MSTR should underperform.

[81] @woonomic on X.com



Source: @woonomic on X.com[62]

65 MicroStrategy Company Dynamics

- **Favorable terms on bond issuance:** aising equity capital by selling shares also produces for more book value, selling equity to buy BTC generates an increase in its BTC holdings that exceeds the dilution to shareholders. Based on MicroStrategy's stated capital plans and our analysis
- we project : Bitcoin per share of MSTR

A Differentiated Investment Vehicle

[62] through 2029 : https://x.com/woonomic/status/1855769772358819869

MSTR Balance Sheet Forecast and Analysis

MSTR's outperformance stems from leveraged Bitcoin exposure, and the market's expectation However, MSTR trades above twofold market value of its balance sheet and a range of price/book ratios, we can propose a MSTR-implied Bitcoin price and use Bitcoin price forecasts to project how MSTR's stock price will perform over time.

Examining MicroStrategy's current ~$335 stock price across potential Price/Book ratios shows There are limited options to trade or speculate on Bitcoin, particularly for institutions highly regulated While spot Bitcoin ETFs [83]

BTC's implied current price — derived from MSTR's current price and future Price/Book Value

5.

Given MSTR's bitcoin exposure, Bitcoin's price trajectory through 2030 will drive MSTR's price. If BTC rises to $57252 78 Speculation had always been possible with MSTR. Traders use MSTR options to leverage their bets on the Bitcoin price. The stock itself is a proxy Volatility attractively MSTR's high implied volatility by buying convertible bonds and sell ing access MSTR calls 52 significant demand 0% coupon 753% and strong outperformance over bitcoin.

83 Fees Bitcoin ETFs charge an annual management fee. Though fees are low, long medium for Bitcoin ownership with no management fees and no trading fees.

MSTR's 2030 Price — derived from MSTR's future Price/Book Value and BTC Price Performance

Implied MSTR Price in Q4 2030		Change in Bitcoin Price Quarterly (through Q4 2030)								
		-5.0%	-2.5%	0.0%	2.5%	5.0%	7.5%	10.0%	12.5%	15.0%
MSTR Price/Book in Q2 2030	0.50x	$0	$24	$76	$165	$316	$566	$977	$1,648	$2,731
	0.75x	$0	$36	$114	$248	$473	$848	$1,466	$2,473	$4,097
	1.00x	$0	$49	$152	$331	$631	$1,131	$1,955	$3,297	$5,462
	1.25x	$0	$60	$190	$413	$789	$1,414	$2,443	$4,121	$6,828
	1.50x	$0	$72	$228	$496	$947	$1,697	$2,932	$4,945	$8,194
	1.75x	$0	$85	$267	$579	$1,105	$1,980	$3,421	$5,769	$9,559
	2.00x	$0	$95	$305	$661	$1,262	$2,263	$3,909	$6,593	$10,935
	2.25x	$0	$107	$343	$744	$1,420	$2,545	$4,398	$7,418	$12,290
	2.50x	$0	$119	$381	$827	$1,578	$2,828	$4,887	$8,242	$13,656
	2.75x	$0	$131	$419	$910	$1,736	$3,111	$5,376	$9,066	$15,021
	3.00x	$0	$143	$457	$992	$1,894	$3,394	$5,864	$9,890	$16,387
	3.25x	$0	$155	$495	$1,075	$2,051	$3,677	$6,353	$10,714	$17,753
Implied BTC Price in Q4 2030		$28k	$53k	$97k	$176k	$314k	$563k	$960k	$1,646k	$2,790k

For investors, MSTR represents indirect exposure to BTC that theoretically offers outsized returns during bull markets — if it can continue growing BTC/share. However, leveraged exposure means increased Similarly, MSTR its inclusion to the S&P 500. MSTR trades like a long

term, in

— the s in Bitcoin's price or company-related changes could threaten MSTR, as market value Link to article regarding

demand for MSTR bonds ~: billion Similarly, MSTR could option adoption volatility convertiblef4f0544d stock, like a call o 81 @woonomic on X.com levered to Bitcoin's price.

worst-case scenario for MSTR. Sharp Bitcoin declines itcoin 82 (4) MicroStrategyCompany Dynamics Favorable terms on bond issuance MSTR's debt repayment track record success ful Bitcoin strategy, and high implied volatility enables

However, favorable terms from selling MSTR calls against convertible bonds, letting bonds with conversion prices 50%+ above current price its MSTR's price includes premium from lived, so its debt At the time, MSTR's debt was also unsecured, so bondholders were not entitled to MSTR's Bitcoin, and the company could the market's expectation that MSTR's Bitcoin per share will expand while Bitcoin's price rises. Analyzing MSTR's in today's market valuation

. By forecasting MicroStrategy's (1) early bond redemption from bondholders; or (2) stockholders call for liquidations. Large-scale liquidations of MSTR's Bitcoin holdings are unlikely, even though the downside risk to MSTR's stock price is plausible.

Below we outline the key terms of MSTR's agreements, along with the possible 83 BTC's implied current price :

derived from MSTR's current price and future Price/Book Value Given MSTR's bitcoin exposure, Bitcoin's price trajectory through 2030 will drive MSTR's price. If rises to $ convertible notes issued in November 2024 and maturing on December 1, 2029, state:

> "Holders have the right to require the Company to repurchase for cash all or any portion of their notes on June 1, 2028 at a repurchase price equal to 100% of the principal amount of the notes to be repurchased, plus any accrued and unpaid special interest to, but excluding the repurchase date.
>
> If the Company undergoes a "fundamental change," as defined in the Indenture, prior to maturity, subject to certain conditions, holders may require the Company to repurchase... [the notes at a price of principal plus interest]."

$2, 178 or 365 551 reasonable chances of occurring

> "Stockholders of the Company approve any plan or proposal for the liquidation or dissolution of the Company"

current Price/Book, bitcoin's growth to $5 122 856 gain of 753 % and strong bitcoin. 835 Due to shareholder dilution, we expect MSTR's Price/Book value to trend downward. to-18-de acc

weakening demand for MSTR convertible bonds cause (1) 69 bondholders, derived from MSTR's

For investors,

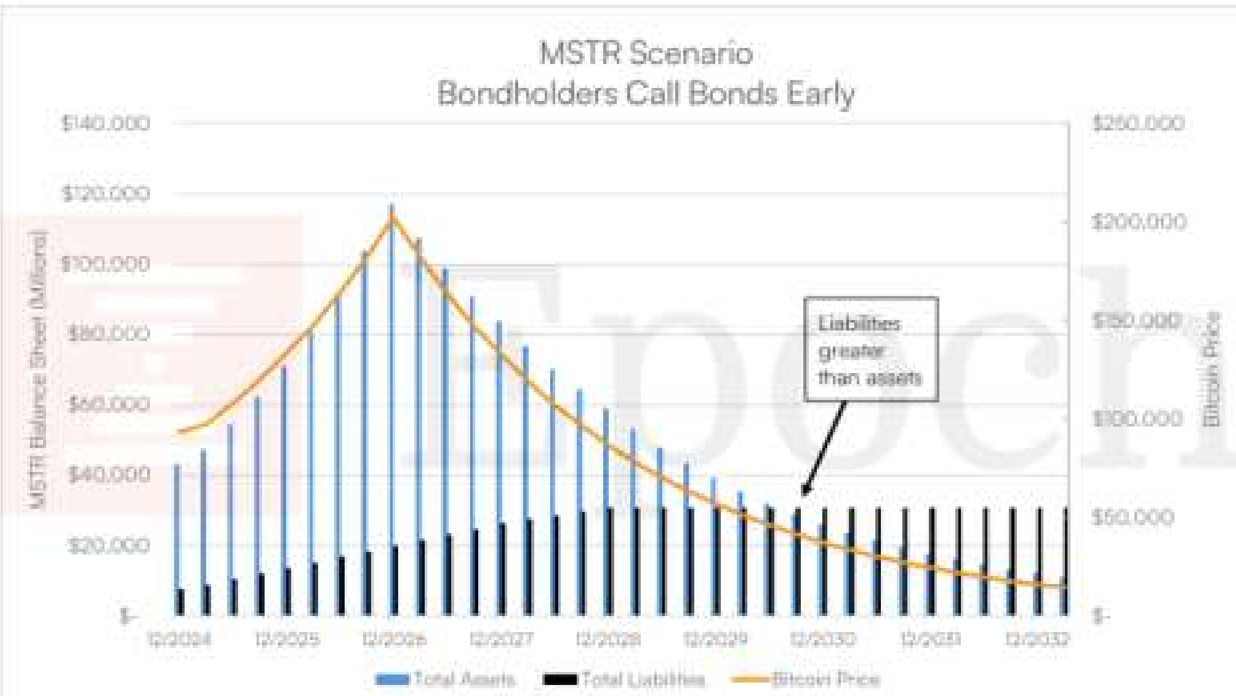
- MSTR represents if it can continue growing BTC/share. However , drive noteholders to downside risk during bear markets , which higher
    - than MSTR has succeeded in rolling over debt at maturity in years prior, a to nonbear market would reduce institutional credit appetite, and hinder the company's ability to refinance.
    - Without demand for new issuance of MSTR debt, the company would likely sell some of its Bitcoin holdings to repay bondholders.

Link to filing: Current convertible debt stands at
Link to filing: https://www.sec.gov/Archives/edgar/data/1050446/000119312524263404/d905221dex41.htm

  - In a prolonged bear market, widespread early redemptions could deplete MSTR's Bitcoin holdings driving to billion [86]
- Selling its Bitcoin would push BTC lower, and the market would lose faith in Bitcoin levered to Bitcoin's price.
  A severe, prolonged bear market represents the

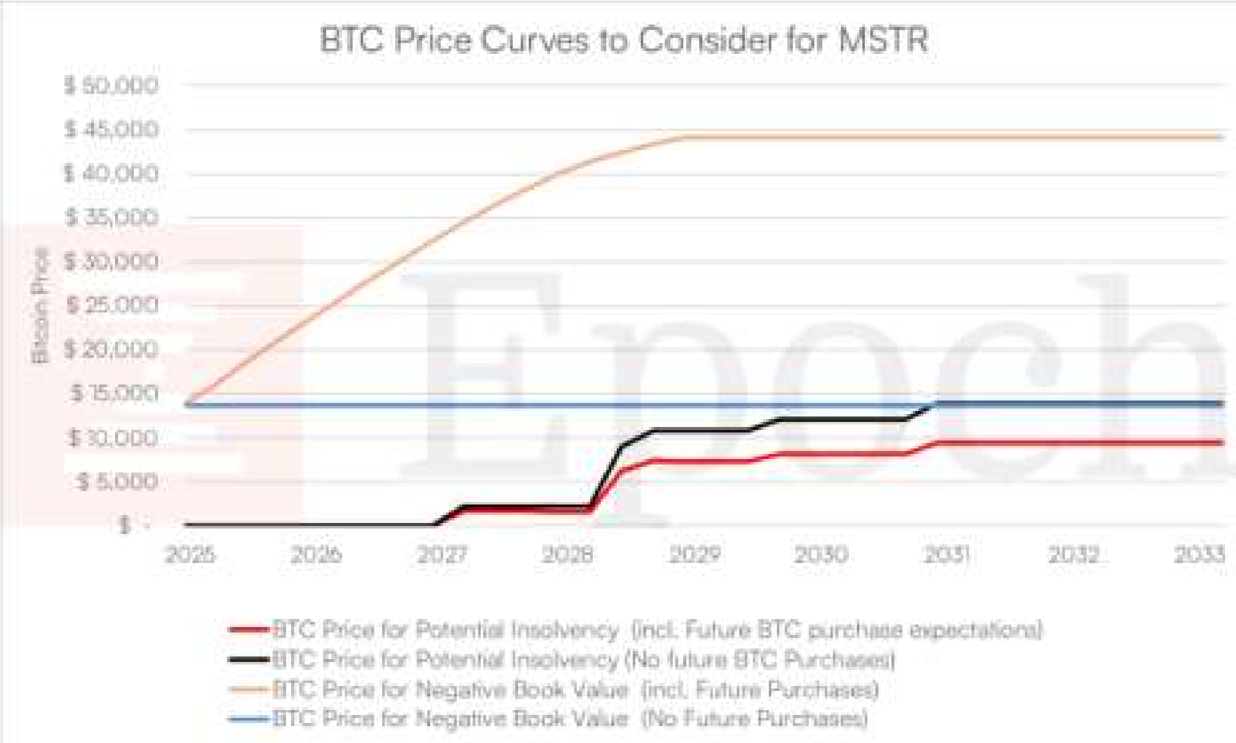
worst case scenario for MSTR

. Sharp Bitcoin 52 declines year creditor demand for bond Bitcoin repayment notes starting 2027. MSTR refinance or sell equity during sustained low Bitcoin prices. insolvency always remains unlikely. During the 2022 bear market, MSTR would found itself in a $2.4 billion debt exceeded its B.itcoin holdings. The bear



market, however, proved short Bitcoin- price threshold that could threaten MSTR was never called into redemption. At the time MSTR's debt was also unsecured, conditions bondholders were company could growing debt the, although it depends on 13,7 However, if MSTR continues its strategy, BTC would need to fall below $44,200 by year 2028 to produce a negative book value.

[86] Note: this situation would also occur upon maturity without early redemption. Repayment of principal could threaten MSTR's Bitcoin holdings; early redemption accelerates the timeline.



We also see the risk that if MSTR's BTC holdings value approaches or falls below its Key Terms to MSTR's Convertible Notes, but if the company undergoes a "fundamental change , investors can call their convertible bonds early by 12 to 18 months ." For example, the $3 billion 1, 2029, state: of their notes on June 1, 2028 at a repurchase price equal to 100% of the principal t to. the Company undergoes a "fundamental change," as defined in the Indenture, prior to [the notes at a price of principal plus interest]." P/B and stock price. The resulting lower price-to-book ratio could trigger scenario (2).

(2) Stockholders vote for MicroStrategy to liquidate its Bitcoin holdings

Shareholders may vote to liquidate MSTR's Bitcoin holdings and 85 If MSTR's Bitcoin holdings value exceeds the company's market cap, shareholders may be benefit current especially In this scenario, an activist investor could rapidly accumulate shares and campaign for liquidation to capture this spread However, the price/book discount would need to persist long enough for shareholders to organize and complete a vote.

MSTR's price/book could remain below 1x for an extended period under the following scenario:

1. restriction clause.
   - value of its Below we outline reasonable scenarios that might cause (1) , early redemption from bondholders . and (2) stockholders to vote for liquidation. (1)
   - A severe If the price of Bitcoin drops , MSTR's stock Bitcoin holdings fall below the value of its debt MSTR's price/book could fall below 1x.

2. noteholders

- seek early principal repayment (the case if the price fall Though a would reduce institutional
- credit appetite , and hinder the -company's ability to refinance. Without 84 Link to filing: forcing the feared liquidation

In 2022, Bitcoin's bear market and liquidation pushed 71 down 90%to a low $131.50 in February 2021. While market pessimism drove Selling its Bitcoin would push BTC MSTR's

strategy. MSTR's share price and its price/book ratio would Consider the following scenario: Bitcoin's price rises to $200 through end 2026 but then falls 10% per quarter thereafter. MSTR continues executing strategy until MSTR loses its toward 28

year 2028. By 2029, the gap between total assets and liabilities would narrow incentivize early bond redemption. In 2030, liabilities exceed assets. High credit risk would. There upside no guarantee to the upside, while the Under this scenario, we can predict price threshold that could threaten— MSTR insolvency or book value. — 2028 . Bitcoin would have to fall below $10 book value if MSTR halts Bitcoin purchases BTC for less downside risk, but average investors today will likely underperform Bitcoin. New Bitcoin investors should consider buying BTC would need to fall

below $4

- 00 by year 2028

produce a negative book value.

85 If BTC continues to outperform its cost of capital, MSTR should theoretically We also see risk that if value approaches or falls its outstanding debt concerned bondholders

might demand repayment before maturity.

- Without refinancing options, MicroStrategy would gradually sell some Bitcoin as bonds near maturity Bitcoin exposure not — bankruptcy s it would traders anticipating Bitcoin . This
- P/B and stock price. T High options market volatility enables attractive terms on its convertible bonds as funds buy bonds and sell calls.
- Fees: scenario (2). - (2)
- Stockholders vote for : MicroStrategy to liquidate its Bitcoin holdings 25 is Shareholders may vote to liquidate MSTR's Bitcoin company

MSTR's price/book ratio trades below 1x, as liquidation would return more money than

- share
  - price campaign for liquidation to capture this spread. However, t
  - and prolonged bear market for Bitcoin poses a significant risk to MSTR, potentially jeopardizing its balance sheet and leading to early bond redemption by creditors.
    - MSTR's debt could to $25 by 202Market expects prolonged Bitcoin bear market stock is not dependent solely
    - on Bitcoin's current priceBitcoin price but also could a prolonged bear market A severe, prolonged

bear market could drive

MMSTR's book value to go negative [redacted] [redacted] Bitcoin holdings fall below the value of its debt

expect this trend to accelerate over the next year as Wall Street extends more credit to the Inability to refinance, leading the market to expect liquidation to sell B itcoin, and or shares, thus dilut ting could create a self fulfilling cycle: driving MSTR to trade below book value, triggering a shareholder vote, and forcing the feared liquidation

fears pushed MSTR's stock down 90% to a low 52 of $13.25 in December 2022 from $131.50 in February 2021. drove the stock to trade below its book value, creating theoretical incentives to liquidate, rapid price recovery and available financing protected against While 2022's bear market did not force liquidation[87] The drawdown-topped 90% compared to Bitcoin's ~77% displaying what a quick bear market given

icroStrategy

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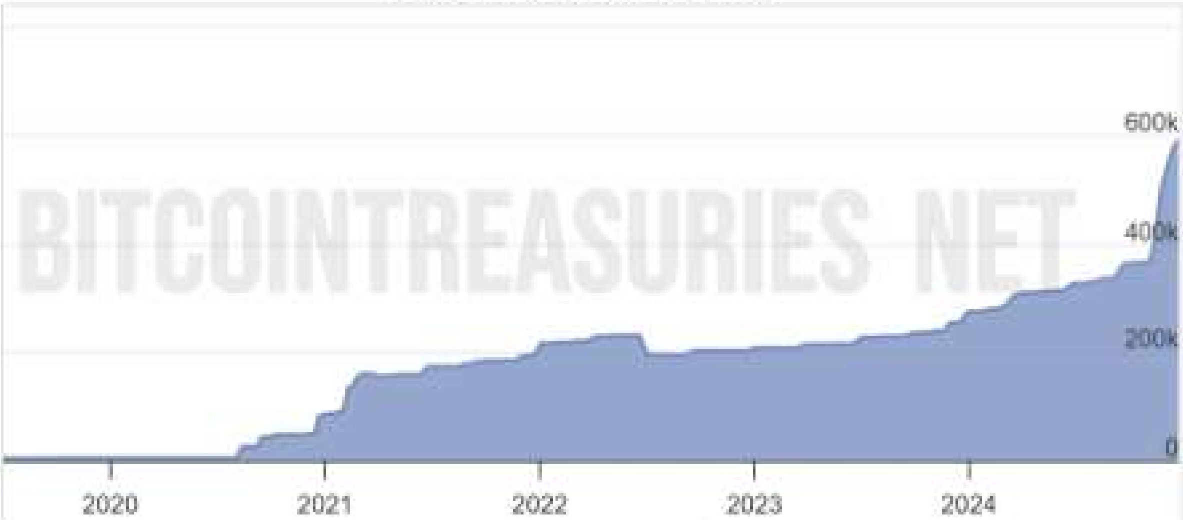
add https://www.sec.gov/Archives/edgar/data/1771146/000199937124015836/rex_485apos-122724.htm is unfavorable



which [89]

Public Bitcoin mining companies Marathon Digital (MARA), and Riot Platforms (RIOT) have accumulated a combined roughly 6 52 BTC worth over $6 billion partially through debt issuance. although the fear of such event combined in zero-interest convertible senior notes with a 40% conversion premium. Skilled traders may capture 0.75% interest convertible senior notes with a 32.5% conversion premium.[91] Though both offerings remain unsecured, like MSTR's November 2024 notes, the degrading terms (compared to MSTR's 55% conversion premium — signal early market deterioration despite still early stages of Bitcoin adoption

Non-the asset directly
MSTR Summary Since adopting its Bitcoin strategy in 2020, 5 - MSTR has consistently outperformed for a few key reasons: 1) Leveraged bitcoin buys = should theoretically CEO Simon Gerovich, and were secured by a first-priority mortgage on the Hotel Royal Oak Gotanda." 5) Unique Characteristics Speculation and Leverage MSTR provides leveraged Bitcoin [93]

Terms for new Bitcoin-backed debt remain attractive, but continued market expansion draw crypto companies into less favorable arrangements. As debt-fueled purchases drive Bitcoin price and stock prices higher, companies may chase immediate stock price reactions despite deteriorating terms and higher Bitcoin entry prices.

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[88] Bitcoin treasuries: https://bitcointreasuries.net/
crypto owners https://bitcointreasuries.net/
[90] MARA press release: https://ir.mara.com/news-events/press-releases/detail/1384/mara-holdings-inc- MSTR stock price Key Risks
early bond redemption by creditors. $594-4-million- senior-
https://contents.xj-storage.jp/xcontents/33500/83ccb67f/4ee2/4f76/a2c8/dbeaed64901f/140120241223542705.pdf
[93] Total GigaChad move

Late adopters face greater risks. Unlike MSTR's terms, future debt offerings may include non-
We expect
to accelerate a Bitcoin ecosystem. Non
crypto companies may join, driven by shareholder
pressures, management teams

pursuing erms favor borrowers, strategies (and even non-aged) no longer appear accretive to shareholders. A subsequent crash in the price of bitcoin will wash out, at a minimum, the long tail of the risk curve comprised of the most exuberant CFOs, before the market finds equilibrium again, and return to non- holdings

surged in 2024
to 600,000 Bitcoin from 270 Bitcoin.

growing

Bitcoin's over 60% from November 1 to year end. Alongside this rapid growth, a prospectus filed Bitcoin ETF" will soon be offered. to achieve financial and strategic differentiation from competitors.

Key benefits include:

- **Inflation Protection**: By holding Bitcoin, companies can protect against monetary inflation, though volatility requires active management.
- **Dilution Protection**: S 87 Link to filing to improve capital efficiency, minimizing future BTC Held by Public Companies needs and preserving founder and early investor equity.
- **Strategic Financing Capabilities**: E Bitcoin
  and Riot Platforms (RIOT) have 25
- BTC worth over $6 billion partially
  through debt issuance marketing exposure and customer engagement

However, these strategies come with risks:

- **Liquidity and Solvency**: Bitcoin's price volatility requires robust governance policies
  153 to manage liquidity, ensure solvency, especially during bear markets.
- Within two weeks, RIOT issued $594
  million of 32.5% conversion premium
  during market volatility

Despite emerging risks, Bitcoin's integration into corporate finance is in its early stages
Successful models like MicroStrategy, Tahini's, and Real Bedford FC prove that strategic

management can transform Bitcoin adoption from survival to advantageous. As adoption grows, we anticipate:

- **Increased Corporate Adoption:** BMarch 2024 to Jun e 2024, Metaplanet's bonds required 0.5% annual interest, personal guarantees from
- the As CEO were secured by a first, priority mortgage on Hotel Royal Oak Gotanda." benefits of holding Bitcoin against the risks of market volatility and credit constraints

Ultimately, Bitcoin represents promising but complex corporate finance opportunity, requiring a -Terms to for new Bitcoin backed debt remain attractive, but

draw

Introduction

less favorable arrangements

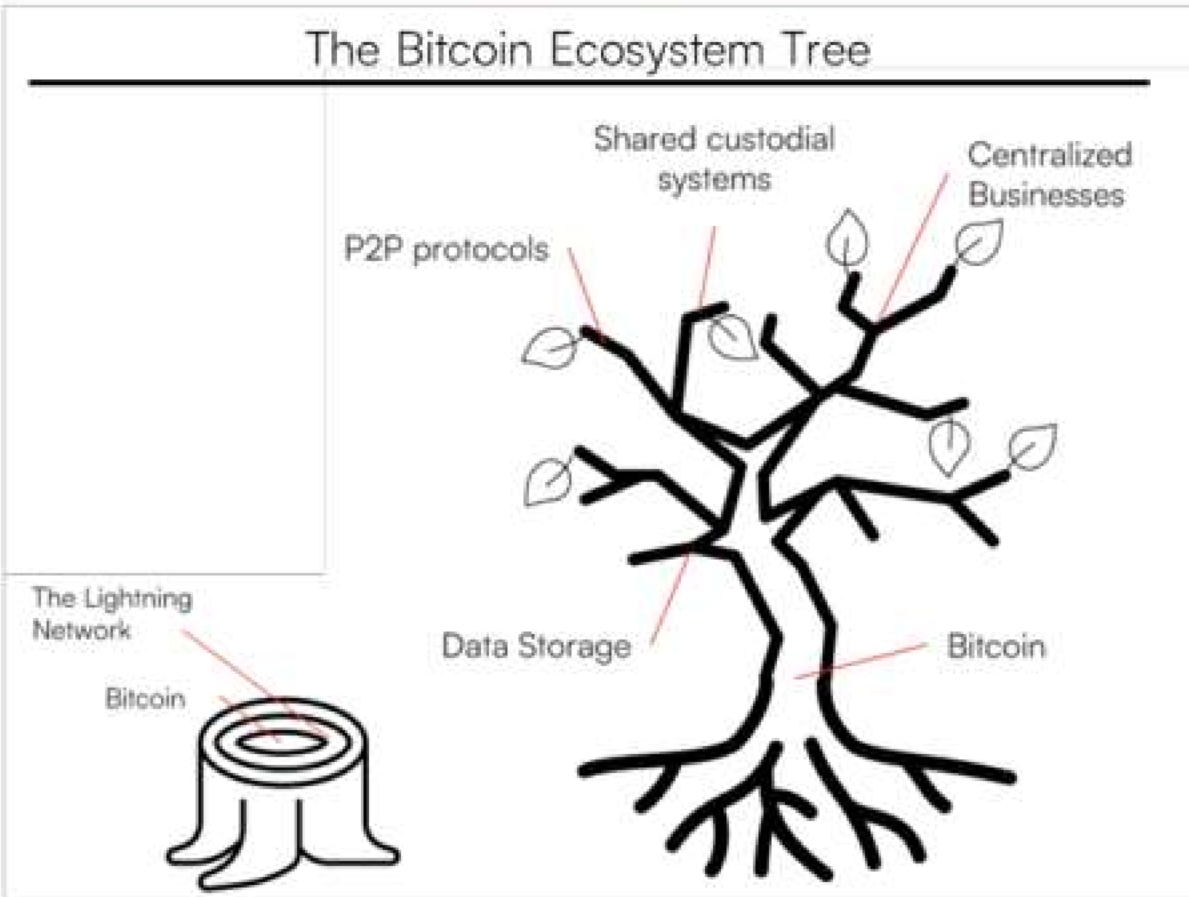
ebt fueled purchases -drive itcoin's price and stock prices higher, companies may chase

88

Large scale bitcoin businesses now include evolving

https://ir.mara.com/news-events/press

completes the B



million offering zero product market fit serving as sunlight. To continue growing, the branch must continuously search for sunlight. When a branch absorbs sunlight, it strengthens the tree trunk, and a trunk that discovers water nourishes all branches — benefiting not just the existing ecosystem, but all potential growth.

Some branches may grow only to perish as faster growing branches block their sunlight. Others might grow rapidly but unsustainably, falling off during a storm. Branches with access to adoption today may branch off into a completely different direction tomorrow, but they would have never gotten there without the initial adoption. Most importantly, without branches the trunk will not grow.

From an investment perspective, our tree analogy reveals ample opportunity to invest in promising "branches" of the Bitcoin ecosystem, while capturing the potential of one of the fastest-growing "trunks" in financial history. Branches grow faster than trunks, and without them, trunks wither and die.

The goals of this section are:

1) Define the bitcoin ecosystem
2) Identify historical sectors of profitability and scale within Bitcoin.
3) Define the characteristics of attractive bitcoin business models
4) Identify se companies would face heightened risk of price declines, liquidation (if debt is secured), and

default

The B during bear markets. Particularly unfavorable debt terms could threaten companies' survival during a severe downturn. The cycle ends when lever aged . Mcorporate itcoin strategies (and even non aged) no longer in some form, we, before the Bitcoin to non — .

ag ed strategy. we expect them to become the primary driver of the next boom and bust cycle. Conclusion Bitcoin corporate treasury integration presents strategic opportunities and unique challenges a three-part test to determine business inclusion into that category:

1) only companies: companies exclusively centered around Bitcoin.
2) requires active management Dilution Protection S tartups can leverage Bitcoin -improve capital .
3) efficiency, minimizing Bitcoin futures

fundraising s businesses by their functional characteristics or primary source of demand. The examples included are illustrative, yet not exhaustive, highlighting key distinctions within the ecosystem.

The Bitcoin Ecosystem

Type	Description	Examples
Protocol Nodes		
PoW Miners	Transaction ordering and block creation for the Bitcoin blockchain	Riot, Marathon, Hut 8, CleanSpark, Iren, Gridless, Barefoot
Validators	Validate that transactions follow protocol rules	Babylon, Stacks, Alpen Bridge Operators
Sequencers	Order validated transactions for L1 commitment batches	Citrea, Alpen, Lightspark Operator
Functionaries	Signers of bridge and block transactions for sidechain protocols	Liquid, Rootstock
Mints/Guardians	Signers of bridge and block transactions for federated eCash protocols	Fedimint, Cashu
Protocol Middleware		
Node service providers	Businesses that professionally manage node infrastructure	management
can transform	adoption from survival to advantageous	. As adoption grows,
[illegible]	Increased Corporate Adoption	=
[illegible]	increasingly	explore Bitcoin
[illegible]	in sectors where	the firm's
branding	and customer engagement can benefit from Bitcoin's	unique community support.
Evolution of Strategies		
[illegible]	will	[illegible]
strategies	balance	ing potential
[illegible]	volatility	and credit
constraints	Ultimately	represents
[illegible]	corporate finance	opportunity
requiring a	sophisticated risk management and forward	looking strategy
unlock	its full potential without	[illegible]
Mixing	Protocols that obscure connections amongst pseudonymous wallets	Coinjoin, Wasabi, Joinstr, Samourai
Explorers	Tracks and organizes protocol activity for applications	Bitcoin adoption is driven
[illegible]	by individuals interacting with the network. Direct	interaction
[illegible]		
[illegible]	. Typically,	users with lower levels of technical acumen
[illegible]	products and services	made by
profit	businesses.	[illegible]
now include	publicly listed companies. There is also a	n
evolving	space for early	[illegible]
new	consumer, business, and institutional	demands for bitcoin. We view
[illegible]	Imagine	[illegible]
with	product market fit	serving
as sunlight. To	continue growing, the branch must continuously	search for
[illegible]	When a branch absorbs	sunlight, it strengthens the tree trunk
[illegible]	[illegible]	[illegible]
only to perish as faster	growing branches block their sunlight.	Others
[illegible]		
[illegible]	Branches [illegible]	[illegible]
[illegible]	Digital asset custodial providers to financial institutions	Bitgo, River Financial, Fidelity, Gemini, Anchorage, Fireblocks, BNY Mellon
[illegible]	Institutional grade lending (exclusive from prime brokerage)	Cantor Fitzgerald, NYDIG, Galaxy, Unchained
Asset Management	Managers of institutional bitcoin financial products	BlackRock, Bitwise, Van Eck, Valkyrie
Banking	Regulated banks with digital asset custody	Custodia, BNY Mellon
Custodial Insurance	Pure bitcoin custodial risk insurance and custody solutions	Anchorwatch
Analytics	Data analytics companies for L1 and L2 focus	Glassnode, Amberdata, Hiseek, Bitcoin Layers
Sovereign Services	Technologies and financial services targeted at sovereign nations	Stoic, Jan3
Physical Infrastructure		
Mining Hardware	Manufacturers of PoW mining servers	Bitmain, Bitdeer, Bitfury, Canaan, MicroBT
Mining Infrastructure	Mining operations specialized infrastructure providers	Giga Energy, Upstream Data
Wallet Hardware	Cold storage wallet hardware	Coldcard, Foundation Devices, Trezor, Ledger, Seed Signer, Bitkey
Satellite	Satellite infrastructure for bitcoin network remote access	Blockstream
The Bitcoin Economy		
Media	Media channels, production, platforms, and outlets focused on bitcoin	What Bitcoin Did, Coin Stories, TFTC, Fountain, Bitcoin Magazine
Bitcoin Balance Sheet Companies	Companies with bitcoin treasury exposure as a core function	MSTR, Tahini's, Metaplanet
Gaming/Gambling	Bitcoin games and gambling applications	THNDR, Bitcasino, [illegible]
Social	Bitcoin focused social applications	Geyser, Orange Pill App, Primal, Damus

Accepting Bitcoin attracts a global community of Bitcoin enthusiasts, amplifying marketing exposure and customer engagement

[illegible]

Liquidity and Solvency

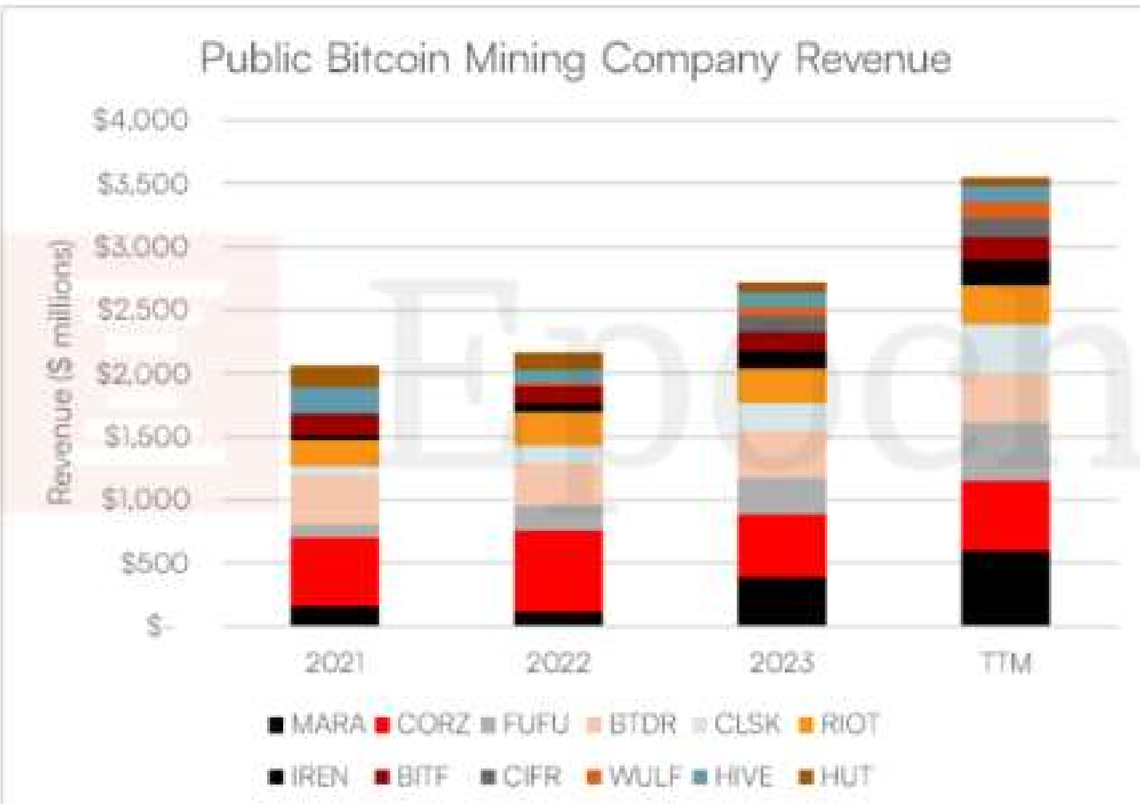
Bitcoin's price volatility

Protocol Nodes

[illegible]		Epoch
Node	Description	Examples
Protocol Nodes		
PoW Miners	Transaction ordering and block creation for the Bitcoin blockchain	Riot, Marathon, Hut 8, CleanSpark, Iren, Gridless, Barefoot
Validators	Validate that transactions follow protocol rules	Babylon, Stacks, Alpen Bridge Operators
Sequencers	Order validated transactions for L2 commitment batches	Citrea, Alpen, Lightspark Operator
Functionaries	Signers of bridge and block transactions for sidechain protocols	Liquid, Rootstock
Mints/Guardians	Signers of bridge and block transactions for federated eCash protocols	Fedimint, Cashu

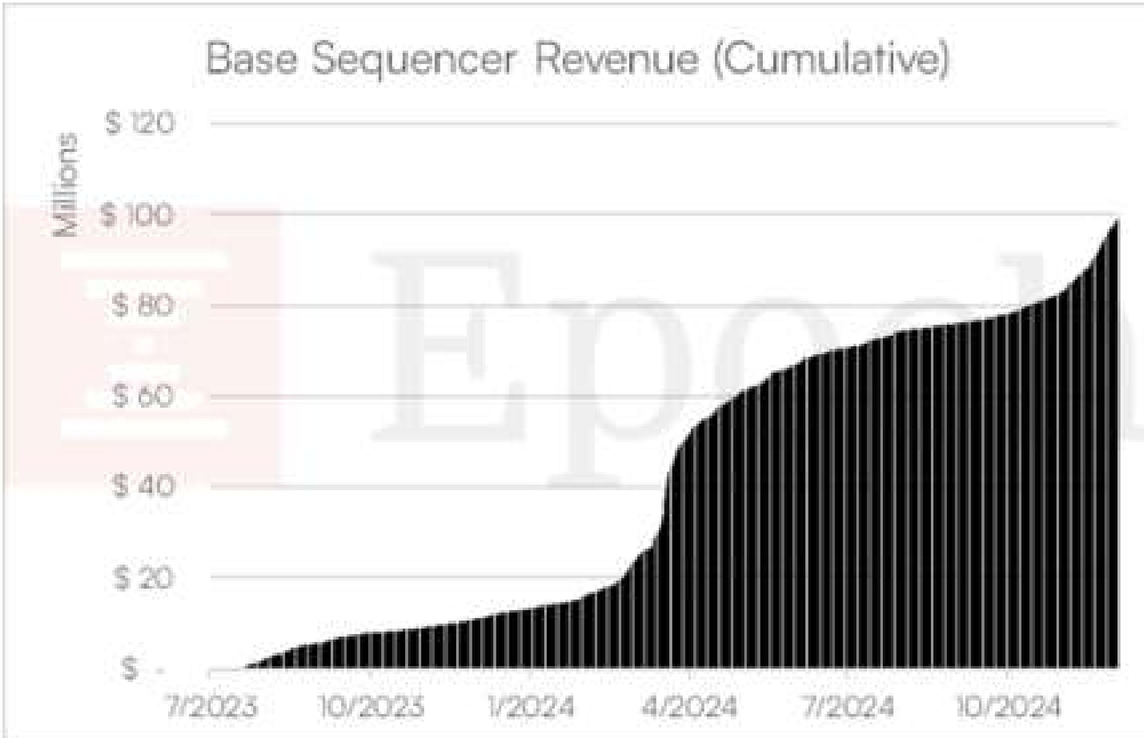
Bitcoin's underlying architecture is a layered network made up of various nodes (software) that interact with the Bitcoin protocol. Nodes can do so directly or indirectly through integrated protocols. Functionally nodes order transactions create blocks, and validate transactions 19 various node types are defined by their functions, and protocols they interact with.

Businesses that own or operate nodes can extract revenue from block rewards and fees. Bitcoin miners — many of which are publicly traded companies — showcase the most significant revenue model category with revenue topping $3.5 billion.



Source: sec.gov

Sequencers perform similar transaction-ordering functions to bitcoin miners but for integrated protocols by support - below taxonomy define in Bitcoin source of demand. examples exhaustive in testnet) 81 — an Ethereum based L2 protocol run by Coinbase with a single sequencer offers a glimpse of potential scale: to single sequencer has generated nearly $100 million in fees since launching in fall 2023.



Protocol Middleware[24]

Sequencers function as validators with potential downstream revenue models. Protocols will often attempt to bootstrap activity by subsidizing fees, typically through token issuance and inflationary economics. While we don't consider this a sustainable business model, we view network adoption subsidies as similar to traditional marketing customer acquisition costs.

P2P Lending we're highly skeptical of P2P Exchange P2P Markets a pervasive issue in the broader crypto industry. As Bitcoin- Digital Assets Taproot assets, Runes, Ordinals Staking to Babylon, Botanix

Mixing

Wallet		
[illegible]	[illegible]	[illegible]
[illegible]		
[illegible]	Consumer Financial Services	Exchange
[illegible]	[illegible]	Lending
[illegible]	Ledn, Nexo	Markets
[illegible]	Luxor	Onramps/Offramps
[illegible]	Bringin, Swapido	eCommerce Payments
[illegible]	Zaprite, Flash, Opennode	Point of Sale Payments

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https://defillama.com/fees/base

Middleware is defined as software that connects to other software to enable cross-platform integration. We categorize middleware based on the protocols they are interacting with, and their functional role.

Mining pools have achieved the highest degree of scale within middleware. While precise figures aren't available, we estimate aggregate annualized revenue for mining pools around $300 million. Unchained, CasInstitutional Financial Services controls roughly 33% of the hashrate, and likely generates close to $100 million in revenue annually.

Mining Pool Annual Revenue Estimate*	
Blocks per year	52,560
Block subsidy	₿ 3.125000
Fees as % of total	10.0%
Block reward	₿ 3.437500
Bitcoin Price	$ 100,000
USD Block Reward	**$ 18,067,500,000**
Blocks mined via pools	80.0%
Mining pool Fee	2.0%
Mining Pool revenue	**$ 289,080,000**

**assumptions as of December 2024*

Asset Management Managers of institutional bitcoin financial products [illegible] Banking Regulated banks with digital asset custody Custodia, BNY Mellon L Custodial Insurance Anchorwatch Analytics [illegible] Glassnode, Amboss, Hoseki, Bitcoin Layers

Sovereign Services

The Bitcoin Ecosystem		
[illegible]	[illegible]	[illegible]
ordering		
function	bitcoin miners	[illegible]
protocols	Ba	using proof
ecosystems	Rollups.	Like
mining	companies operate bitcoin miners, integrated protocol companies run sequencers	While Rollup
technologies	are still nascent	(most
ly	in testnet)	Base
[illegible]	Coinbase with a single sequencer	[illegible]
[illegible]	generated nearly $100	in fees
[illegible]	Tracks and organizes protocol activity for applications	Ordiscan, mempool.space
Wallet	UI for sending/receiving bitcoin transactions and other financial functions	Bitcoin Core, Phoenix, Blink, Trident Wallet

Technologies and financial services targeted at sovereign nations Stokr, Jan3
Physical Infrastructure- Mining Hardware predict [illegible]
Bitmain, Bitdeer, Bitfury, Canaan, MicroBT [illegible] B [illegible] Giga Energy, Upstream Data

[illegible] to- Cold storage wallet hardware [illegible] Satellite
Satellite infrastructure for bitcoin network remote access.[96] while Noones to non has nearly two [illegible] users transacting $3 itcoin in daily volume.[97] Social Bitcoin focused social applications

Source: https://hashrateindex.com/hashrate/pools
[96] Source: https://hodlhodl.com/?filters%5Bcurrency_code%5D=USD
[97] Source: is a layered network made up

Validators Validate that transactions follow protocol rules
Sequencers

Functionaries Signers of bridge and block transactions for sidechain protocols Mints/Guardians
Fedimint, Cashu challenge, as standalone Bitcoin products typically require broader financial service 94 — Sequencers function as validator with potential downstream revenue models.

Protocols will often attempt to bootstrap activity by subsidizing fees paid for token issuance and inflationary economics. We don't consider this a sustainable business model

, we view	network adoption subsidies as similar to	traditional marketing customer acquisition
-	However,	[illegible]
skeptical	of	[illegible]
[illegible]	rely on	misleading
marketing narratives	—	pervasive
issue	[illegible]	. As Bitcoin
market.	—	[illegible]

recommend

best practice for protocols raise capital, convert a portion

Protocol Middleware –

Link to source: operating margins. However, the legal landscape remains volatile. A

Protocol Middleware[98]

In recent years, digital asset issuance has dramatically grown, outpacing alternative cryptocurrency blockchains that originally pioneered the model.

Source: Cryptoslam[99]

[98] Software that calls external data and puts it onchain https://p2prights.org/
[99] Link to NFT volume data: https://www.cryptoslam.io/blockchains/bitcoin

Epoch

Middleware is defined as [illegible] to enable cross Bplatform integration. [illegible] remains inherently subjective driven primarily by marketing narratives. Yet these protocols (or others) may ultimately evolve to enable digital assets with real-world utility, and tangible value . and likely generates close to $100 in revenue annually.

Consumer Financial Services

Mining pool Fee		Epoch
[illegible]		Key players
$ 269,080,000		
	*assumptions as of December 2024	Cash App, River Financial, Swan, [illegible], Bullbitcoin, Strike, Relai
Lending	Custodial lending platforms	Ledn, Nexo
Markets	Custodial orderbook for alternative markets (eg. futures derivatives)	[illegible]
Onramps/Offramps	API infrastructure between banks and applications	Bringin, Swapido
eCommerce Payments	Sending and receive bitcoin payments for businesses	Zaprite, Flash, Opennode
Point of Sale Payments	Sending and receive PoS bitcoin payments for businesses	Square, BTCPay, [illegible], Opago
Personal Finance Solutions	Cards, rewards, vouchers, and other consumer financial solutions	Fold, Azteco, Bitrefill, Oshi
Remittances	Applications and infrastructure for international remittance payments	Strike, [illegible], NeutronPay, Osmo, Sat.money, Sati
Wealth Management	Comprehensive wealth management services for bitcoin	Bespoke, Sound Advisory, [illegible], Bitcoin Financial Advisors Network
Tax	Applications for tax accounting of bitcoin	Coinledger, Koinly, TokenTax, Taxbit
Life Insurance	Bitcoin denominated life insurance fund	Meanwhile
Shared Custody Solutions	Collaborative custodial solutions using multisignature technology	Unchained, Casa

Consumer financial services have achieved the most significant adoption in the Bitcoin ecosystem. Unlike native applications, these services abstract network interaction complexities creating a user experience that drives market penetration.

Most businesses in this category share a strategic focus on Bitcoin only services, anticipating that as Bitcoin gains market share, cryptocurrency diversification will become less critical. Strategically, their thesis is that a Bitcoin specific product suite will increasingly appeal to the average consumer.

Many businesses have expanded their focus to include stablecoin support. By combining support for both types of cryptocurrencies, 96 while Noones has nearly the two - million users transacting $3

in daily volume. es 97 core business models. 95 businesses will gain traction through he margin service that funnel users [illegible]
97

Fold is an example of this model. By introducing **Mining Pool Annual Revenue Estimate***
Blocks per year 52,560
Block subsidy financial (and high margin) services. In 2023, Fold generated over $20 itcoin in revenue and accumulated a bitcoin balance sheet exceeding 1,000 bitcoin.

USD Block Reward https://cdn.prod.website-files.com/609c10361da7b5749cae41a9/6706d15e043787d31215d3a1_P.%20Future%20Investor%20Presentation%20(October%202024).pdf

85

Type	Description	Examples
Institutional Financial Services		
Prime Brokerage	Offer an array of financial services investment and risk management strategies	NYDIG, Galaxy Digital
Custody	Digital asset custodial providers to financial institutions	Bitgo, River Financial, Fidelity, Gemini, Anchorage, Fireblocks, BNY Mellon
Lending	world	utility
, and tangible	value	[illegible]
[illegible]	popularity has been	significant.
[illegible]	Consumer	[illegible]
[illegible]	adoption in the	ecosystem.
Unlike	native applications,	these

Similar to consumer financial services, institutional-grade businesses often provide overlapping financial services. For example, industry prime brokers like NYDIG and Galaxy Digital offer comprehensive capital markets and asset management services fulfilling institutional demands across Bitcoin always broader cryptocurrency markets.

Prime Brokerage is now dominated by NYDIG and Galaxy Digital, particularly after the inclusion Genesis market collapse. To get a sense of scale, Galaxy Digital earned nearly $200 million in net income from $4.6 adoption in AUM during the first three quarters of 2024.[98]

For example, the Samouri [illegible] million in revenue in 2024.
Year Revenue (BTC) USD Revenue (- Thousands
2019 10.62 - 7
2020 , though gen 44.55 [illegible] Bitcoin's 502
30.44 1.413
2022 44.92 1,185 . 2023 49.13 1,505 [illegible]
[illegible] collateralized bitcoin lending program exemplifies this phenomenon.[99] Minimal infrastructure requirements, typically a single server running stable software [illegible] B [illegible] focused firms. Still, we view specialized technology providers <> [illegible] to dramatically grown outpacing alternative [illegible] regulatory licensing with fine-tuned technologies is strategically rational.

99

Type	Description	Examples
Physical Infrastructure		
Mining Hardware	Manufacturers of PoW mining servers	Bitmain, Bitdeer, Bitfury, Canaan, MicroBT
Mining Infrastructure	Mining operations specialized infrastructure providers	Giga Energy, Upstream Data
Wallet Hardware	Cold storage wallet hardware	Coldcard, Foundation Devices, Trezor, Ledger, Seed Signer, Bitkey
Satellite	Satellite infrastructure for bitcoin network remote access	Blockstream

[98] You can donate to support the cause of privacy rights at https://s201.q4cdn.com/407453138/files/doc_financials/2024/q3/GLXY-Q3-2024-[illegible]

[99] Source: https://decrypt.co/293359/cantor-protocols plans 2 billion-bitcoin- whose , the value remains inherently subjective

Epoch

Mining hardware is one of the earliest and most profitable sectors. Bitmain leads the category, with estimated billions in profits. areto rule for consumer preferences. Of the various financial services, exchang [illegible] and lending dominate -core business models. Often, businesses will gain traction margin service . that funnel the profitable offering Fold [illegible] requiring the friction of KYC verification

[illegible] mining hardware industry primarily focuses on increasing power density and operational reliability. a bitcoin balance sheet exceeding 1,000 bitcoin. rice. bitcoin mining sites [illegible] denser ASICs can improve economies of scale https://cdn.prod.website-files.com/[illegible]O(October%202024).pdf

For consumer hardware, — - -Consumer Financial Services Exchange [illegible] historically dominated by Ledger (which achieved a series C valuation of over $1 rises to $in 2021[104] features business pursuing diverse strategies: expanding bitcoin-specific functionality, expanding cryptocurrency support, or broadening security device offerings (e.g., Foundation Devices). As bitcoin adoption grows, [illegible] focused approach on Bitcoin functionality and security model may lead to increasing market penetration.

The Bitcoin Economy

[illegible]		Epoch
[illegible]	[illegible]	[illegible]
agility		
of	itcoin	focused firms.
Still, w	e view	specialized
technology providers	as potential acquisition targets for traditional financial firms	that
seek	expand their	niche.

The bitcoin economy is a catch-all term for businesses that require interacting with bitcoin for success. The two dominant models are media companies and firms using bitcoin as a primary reserve asset.

Bitcoin media companies [illegible] rade businesses through conferences. BTC Inc. is a salient example, reporting over $100 traders may in like[105] Built in 2012, BTC Inc. operates major social media channels, some of the largest industry events, and an online publishing house Bitcoin Magazine. As explored in our adoption section, mainstream media coverage to Bitcoin continues growing, suggesting this sector will expand across industries as adoption spreads.

Treasury reserves, much like media exposure, affect companies broadly. As detailed in our bitcoin corporate finance section, Custodial services represent a specialized niche with firms like River Financial and Unchained

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[103] requires specific knowledge -traditionally bitcoin-[illegible] The fee [illegible] scale, -ing . [illegible] through robustes

[104] Source: https://www.crunchbase.com/funding_round/ledger-2-series-c--1f1c9902

[105] BTC Inc. website: https://b.tc/

Emerging Business Models

Having established the key categories of the Bitcoin ecosystem, we'll now examine a few emerging business models. These models are already established and we see significant potential for growth in the near to medium term.

Lending Businesses

https://decrypt.co/293359/cantor , — fitzgerald — Bplans 2 [106]

Mining Infrastructure

Source: Build Asset Management

info@epochvc -related issuers represent approximately 6% of the USD convertible debt market, which is bonds 50 basis points of the entire lending market. 2026

Institutional Financial Services ,[107] wstrategies

NYDIG, Galaxy Digital **Custody** Digital asset custodial providers to financial institutions **Lending**

Asset Management BlackRock, Bitwise, VanEck, Valkyrie **Banking** Regulated banks with digital asset custody Custodia, BNY Mellon

Custodial insurance

Anchorwatch https://getbuilding.com/

[107] Cantor Fitzgerald press release: Stokr, Jan3 , fitzgerald-to-launch-bitcoin- Physical Infrastructure

Mining Hardware

Manufacturers of PoW mining servers

Market expansion brings keys risks, however. Collateral rehypothecation poses a primary risk to sustainability (as witnessed in AUM 2022 crash). We also foresee more market exuberance — Mining hardware one of the earliest and most profitable sectors

. Bitmain leads the category with estimated billions in profitsfor further material growth sector. In particular, technology businesses with exposure to growth in the lending market — while the hardware manufacturing — itcoin space in 2024 with a 3nm ASIC chip, offering open source code to enhance decentralization, transparency, and resilience at the Bitcoin mining layer Despite this

the supply remains heavily

centralized.

The mining hardware industry primarily focuses on increas power density and operational reliability. Given the substantial

capital and operating expenses bitcoin mining site denser ASICs can improve costs. Reducing the machine count while maintaining hashrate lowers real estate, installation, and maintenance costs Block also released Bitkey an open. Reducing the source self custodial bitcoin wallet. Th, e wallet market, dominated by Ledger (which achieved 19 show upward a series C valuation of over $1 in 2021 deficiencies:

Notable Deficiencies of Cross-border Payment Network Infrastructure	
Deficiency	Description
Incompatible data formats	Standards vary by jurisdiction, reducing automation, which causes increased technology and staffing costs.
Redundancy of compliance checks	Various regulatory regimes increase the number of intermediaries, creating additional redundancy in compliance checks with complexity, delays, and costs.
Limited Operating Hours	Settlement only occurs when systems are available, and this complexity increases across time zone differences. This causes delays while also increasing capital costs. In this case, cash, also known as trapped liquidity, must be held to cover unknown FX rate changes across downtime hours.
Physical dependencies	A material proportion of systems rely on paper-based processes, creating delays and trapped liquidity.
High funding costs	Uncertainty of incoming funds requires overfunding, leading to capital inefficiencies.
Long transaction chains	Correspondent banking chains increase costs, delays, funding needs, redundancy of validation checks, and the probability of error.
High barriers to entry	Incumbent infrastructure materially increases the costs for new entrants to enter the system. [108]

Businesses leveraging Bstrategy would LCustodial Insurance (e.g., Foundation Devices). As bitcoin adoption grows focus ed approach

A Comparison of Cross-border Networks	
Bank Networks	Bitcoin and The Lightning Network
Incompatible data formats	Standardizes all data formats
Redundancy of compliance checks	Automates all processing and compliance checks
Limited Operating Hours	Available 24/7/365 globally
Physical dependencies	Has no physical dependencies beyond computer hardware
High funding costs	Removes intermediaries, and reduces funding costs when managing inbound and outbound liquidity
Long transaction chains	Minimizes intermediated chains to instant P2P payments via a routing protocol
High barriers to entry	Open network accessible to anyone with an internet connection [109]

Businesses built on Bitcoin continu emerging to lead to increasing market penetration. The Bitcoin Economy

The he B Bitcoin economy is a catch term for businesses predic that require interacting with bitcoin for B firms using bitcoin as a primary reserve asset. Bitcoin media companies

revenue and events or conferences. BTC Inc. is salient example, reporting

revenue revenue. -and-settlement/cross-105 ... reporting

ABNASIA.ORG

social media channels some of the largest Bitcoin Magazine. As costs explored in our adoption

- section, mainstream media expand across industries as adoption spreads. Treasury reserves, much like media exposure,
- affect bitcoin corporate finance section, outsized media attention while also improving their financial performance way
- 103 Bitmain profit estimate from 2018: traditional money https://www.cnbc.com/2018/02/23/secretive-chinese and alternative payment methods. While not accepting credit cards reduces chargeback risk, it may also limit user adoption.

Given these challenges we seek remittance businesses employing novel go-to-market strategies https://www.crunchbase.com/funding_round/ledger-2 series

The -1f1c9902

105 — BTC Inc. website operational burdens The Bitcoin Economy

Media Bitcoin Balance Sheet Companies

network demonstrate this trend, which we expect to expand across B protocols as adoption grows

This model is comparable to traditional IT managed services model but differs in its transaction-based nature. Providers can choose to migrate from a standard SaaS pricing model towards a February 2025 based fee structure. Built atop open protocols businesses can choose open-source, proprietary, or hybrid models.

Open-source models, while generally less defensible through 106 can take hybrid proprietary forms. Its defensibility increases by community growth, however. Network effects and switching costs increase alongside community growth. The optimal 107 We expect this market to continue growing

Comparison of Open Source and Proprietary Models	
Open Source	
Pros	Cons
Attracts users from free pricing	Corporate clients struggle to approve open source uses
Customization of products to needs	Monetization more challenging
Brand Recognition	UX uncertainty
Community testing for vulnerabilities	Updates less flexible
Portability of applications	No Copyright
Proprietary	
Pros	Cons
Protected by copyright	Limits community engagement
Direct monetization	Less customization ability
Greater certainty of UX	Less brand recognition
Update Flexibility	Vulnerabilities more likely
Simpler corporate client approval	Challenging to integrate

We're curious to see how models evolve but suspect the standard to become a hybrid approach between software and monetization. An open core model with paid features build momentum, with community scaling, and enterprise services winning out. The models we expect 107 Cantor Fitzgerald press release: -based pricing, and support services.

Bitcoin as a Feature

Traditional financial institutions are increasingly adding support for Bitcoin, driven by favorable regulatory tailwinds. Rather than viewing Bitcoin-native businesses and Bitcoin-as-a- BUILD we simply view them as complementary adoption channels poses a primary risk to

- 2022 crash). We also foresee more market exuberance competition intensifies. superior qualities as collateral[110]
- **Transfer and Settlement:** material growth sector. In particular, technology businesses with exposure to growth in the lending market while continue to be an Bitcoin superior to Fedwire and Tier- relatively We value
- rehypothecation risks. With increasing demand for bitcoin as credit collateral, we're witnessing traditional financial firms increasingly take part in bitcoin lending

[110] Source: https://www.marketsmedia.com/bny-mellon-launches-digital-assets-Less platform/

activities. its Cantor Fitzgerald launched a costsbillion through fees and delays. High volume currency pairs benefit from fewer [illegible][37]

- **Payment Support**: [illegible]ayment integration continues as service providers continue to add bitcoin functionality. In fact, Bitcoin-native Beyond the friction of the[illegible] banking [illegible] remains a patchwork with several notable

deficiencies: we anticipate traditional financial institutions will 91 acquiring 108 businesses. The trend we're seeing is: institutions announce Bitcoin support, form industry partnerships, and take equity positions. banking deficiencies: integrations connecting traditional and Bitcoin systems to become the most valuable partnerships and subsequent acquisition targets.

However, a reduce counterparty risk, and [illegible] adoption is also noteworthy.[illegible] focus businesses that leverage [illegible]itcoin [illegible]nology, enabling asset stability without reliance on alternative blockchains 108 [illegible] A significant crash leading to widespread [illegible]

settlement/cross

border

payments 109 by outlining https://www.bankofengland.co.uk/payment and Epoch [illegible]and where we expect them to emerge. While there are many desirable characteristics, our focus is to describe what specific features of Bitcoin businesses are attractive to us. Founders [illegible]itcoin business models would possess the following:

- **Protocol Exposure.** Bitcoin-native protocols are built to capture growing network effects. Though Bitcoin's architecture is still nascent, we expect this to rapidly evolve in the near to medium term. Founders who are able to anticipate this change[illegible] and model their business around emerging protocols face risks, but if they find the right timing and align with emerging protocols can achieve competitive advantages.
- **Bitcoin Price Exposure.** We seek businesses that grow their balance sheet and revenue alongside Bitcoin price appreciation. While many capital allocators view this as risky, it aligns with Epoch's thesis. However, exposure to Bitcoin's volatility demands conservative cash balance forecasting and active management[illegible]
- **Adoption Exposure.** We value exposure to broad marginal metrics, including ownership [illegible] user expansion, transaction volume increases[illegible]and lending. Lending is a great example as it provides bitcoin price exposure alongside exposure to bitcoin as a collateral asset. Generally speaking, we prioritize increasingly outsource

[107] Source: https://www.ledgerinsights.com/analysis-cantor-fitzgerald-to-launch-bitcoin-lending/

demonstrate this trend, which we expect to , expand across B -itcoin

- native protocols as adoption grows 15 traditional
  managed services model based nature. Providers can choose to migrate from a standard SaaS Bitcoin pricing
- model towards a We're idealists, seeking alignment between problem-solving and ideology. However, though Bitcoin culture draws ideological founders, and we share those convictions, businesses must address concrete consumers needs. The ideal is a combination of passionate conviction with practical problem-solving.

These fundamentals guide our evaluation of attractive business models, and the trends we expect to emerge:

Middleware: Developer Tooling and Infrastructure

Bitcoin protocols are in their infancy, which creates market opportunity for middleware addressing developer pain points in application development. By reducing friction in Bitcoin native application development, middleware will catalyze but suspect the standard to become a hybrid approach :

- between software and monetization. An open core model with paid features. B build momentum, with community
- scaling, and ning out. The models we expect to see are subscription

, transaction fee, usage based The pricing and support services Bitcoin as a Feature Traditional financial institutions are increasingly adding support for Bitcoin, driven by favorable

native businesses and Bitcoin-as-a-feature firms

complementary adoption channels . We anticipate [112] Centralized services provide a superior UX, Custody counterparty risk.

[112] We put decentralized in quotes as it is a misunderstood term. Our view is that any degree of distributed control over a system falls somewhere on the spectrum of decentralization. However, many define this term as meaning permissionless architecture. We view only bitcoin as permissionless and other decentralized protocols that can be

Epoch

110 Transfer and Settlement = A yield native financial services company directly with the Bitcoin network. For example, BitVavo partnered with Fedwire tap into the its native transfer and settlement network. Bitcoin is superior to Fedwire and Tier — 1 banks could add it as another clearing native digital service Credit Market Participation

= This increasing demand for credit collateralized bitcoin lending

110 Source: — https://www.bnymellon.com launches

digit often require local partnerships and regulatory compliance. As such, these geographic requirements create natural barriers to entry, simultaneously increasing epochvc.io activities.

Cantor Fitzgerald target financial services businesses that want to take proven business models from one geographic market and execute them another. Mcollateralized bitcoin loans , while taking a 5% stake in stablecoin giant Tether achievable scale within these focused segments.

Furthermore integration continues as bitcoin-bitcoin functionality. In fact, native businesses are uniquely

payment technology with bitcoin support

serving as a differentiating feature. At scale, risk that native to the margins smart contracts) enables novel solutions for risk management. As such, we expect native insurance services and technologies to expand within the ecosystem.

Custodial insurance has historically been a centralized point of risk for institutions, often with drastic mispricing. New custodial arrangements reduce loss, theft, and — Particularly, we expect middleware integrations-native Insurtech solutions can leverage blockchain transparency to disintermediate today's highly fractured settlement system.

growing

The Bitcoin ecosystem resembles a growing tree, discussed ad nauseum in the Bitcoin Corporate Finance section of this report another credit crash -similar to 2022 — could emerge

if leveraged bitcoin corporate finance

strategies

create structural

- **Protocol Infrastructure:** is the foundational layer, with nodes and middleware facilitating network interaction. Companies operating mining pools, node services, and sequencers have achieved significant scale desirable characteristics
- in Bitcoin :— where we expect them to emerge. While there are many desirable characteristics our peer-to-peer markets, wallets, and asset issuance platforms. While these applications are vital for direct user engagement, they face ongoing monetization and regulatory challenges.
- **Consumer and Institutional Financial Services:** These drive adoption by simplify interaction with the network. Consumer services improve growing network effects. Though Bitcoin's architecture is still nascent we expect this to rapidly evolve
- in the near who are able to anticipate this change and model the business around emerging protocols face risks. but if they source hardware initiatives.
- **The Bitcoin Economy:** Beyond direct financial services, Bitcoin influences media and corporate treasury strategies, which brings broader economic impact.

At a granular level, we expect some markets to continue expanding:

- Epoch Collateralized Bitcoin lending continues to expand, with the expectation of significant market growth, particularly for convertible loans.
- **Remittances:** Bitcoin protocols offer solutions to traditional cross-border payment inefficiencies, with potentially lower costs and faster transactions.
- **Node Service Providers:** These grow alongside Bitcoin protocols, especially Lightning Network, indicating more demand for specialized service providers.
- **Bitcoin as a Feature:** Traditional financial institutions are increasingly offering Bitcoin related services from custody, transfer and settlement, credit market participation, to cantor to fitzgerald Bto -native lending/ to integrate these services, particularly middleware digi barring any significant (as opposed to medium of exchange or unit of account)

which we expect to dominate business model characteristics that are unique to the Bitcoin ecosystem:

- that : We seek businesses led by founders who anticipate and model their businesses around Bitcoin-native protocols. Our goal is to have a first mover advantage with scale and network effects.

- **Bitcoin Price Exposure:** We value businesses that grow their balance sheet and revenue a _ Bitcoin's price appreciation, while maintaining conservative cash management during fundraising.

- **Adoption Exposure:** though Bitcoin culture draws ideological founders, and we share those convictions, businesses must address concrete consumers need including growth in ownership, transaction volume, and solving. These need fundamentals expect to emerge: **Middleware:**

- **Legacy Infrastructure Integration:** nfrastructure Bitcoin protocols are in their infancy, which creates Bmarket opportunity for middleware
- ddressing Businesses should solve real consumer problems while aligning with Bitcoin's ideological foundations. It's not a deal breaker, but we value Developers will be most valuable customer in the market Business effectively combined with practical business acumen.

Lastly, we identify several business models emerging in the near-term:

- **Middleware developer tooling and infrastructure:** Middleware tools The Bitcoin Economy developer friction in building on Bcapture both Bitcoin adoption growth and protocol expansion primary risk of these models, however, is delayed or limited protocol growth. We expect term.
Applications: the
- toward B At the application layer there is a custody.
- **Financial Services in Novel Markets:** Centralized services provide a superior UX
- while their decentralized counterparts can reduce Bcounterparty risk.
We put decentralized in quotes as it is a misunderstood term. Our view is that any degree of distributed control over a system falls somewhere on the spectrum of decentralization. However, many define the term as meaning

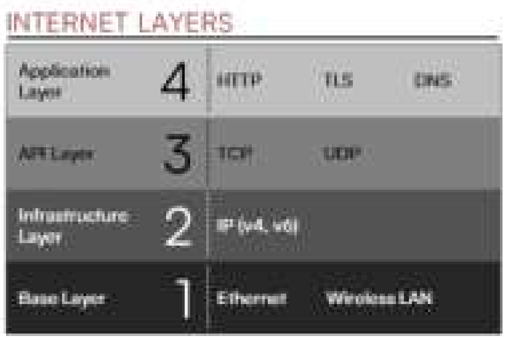
permissionless architecture. We businesses combining B and ideological advantages while addressing real-centralized UX Bapplications that reduce counterparty risk belonging

Bitcoin Protocols

Introduction

user assurances while centralizing their UX and providing direct customer support.We believe that a across various financial service providers roven [redacted] ervices in throughput beyond Bitcoin's base layer capabilities.

This section examines the current protocol landscape and why it matters. At Epoch, we view SEC protocols as the foundation of an emerging financial system. natural barriers to entry, simultaneously increasing defensibility term neutrality. Just like the internet and traditional financial systems evolved through layered protocols and applications, Bitcoin — the internet's native money — follows a similar path.



We begin by defining key concepts before providing a categorical overview of relevant protocols, our analysis of architectural tradeoffs, and their likely evolution.

Defining Functionality and Throughput

Satoshi's announcement of the Bitcoin whitepaper rollup [114] over the network's apparent scaling limitations — with programmable spending conditions [redacted] through Custodial insurance has historically been a centralized point of risk for institutions, often with -to-drastic mispricing

As if to hand ammunition to skeptics, Bitcoin's design intentionally limited payment functionality to basic operations, avoiding complex smart contracts. These were a concept introduced by Nick Szabo a decade earlier as software with today's highly growing

[redacted]

s "branch https://bitcoin.org/en/bitcoin-paper
[114] Cryptography Mailing List, November 2, 2008:
This ecosystem can be categorized into several sectors:
counterparty risk. https://nakamotoinstitute.org/library/the-idea-of-Protocol-contracts/

Bitcoin's early competitors sought to address perceived limitations in throughput, energy efficiency, and transactional complexity. They introduced faster block times, proof of stake systems, and Turing-complete smart contracts, as seen in Ethereum. However, these so-simplify interaction with the network. Consumer services — improve user experience, while growing, Physical Infrastructure to non: This layer continues to evolve, from Bitmain's dominance in manufacturing mining equipment, Block's open source hardware initiatives. The Bitcoin Economy Beyond direct financial services, Bitcoin influences media and corporate treasury strategies, which brings

broader economic impact.

At granular level, we expect some markets to continue expanding : Lending : Collateralized Bitcoin lending — the continues to expand , with the expectation of with Remittances : Bitcoin protocols offer solutions to traditional cross-border payment inefficiencies. Unlike with potentially Node Service Providers Bitcoin protocols, especially Lightning Network, s specialized service providers Bitcoin as a Feature: Traditional financial institutions are increasingly offering from custody, transfer and settlement, credit market participation to payment support. We expect these institutions acquire or partner with Bitcoin-native businesses integrate these services, particularly middleware -barring any significant market downturns. Fundamentally, with potentially seek that are unique to the Bitcoin ecosystem Protocol Exposure: We seek businesses led by founders who anticipate and model their businesses around Bitcoin-native protocols.[116]

A protocol need not be fully permissionless to drive value from decentralization. Multiple-node validation provides fraud protection that single-node systems cannot match. As validator numbers increase, fraud risk decreases.

This creates tension: decentralization offers value, and Bitcoin's premissionlessness remains paramount to adoption. The challenge lies in increasing functionality and throughput without undermining its permissionless properties.

[116] Farrington, Allen. *Only the Strong Survive*. https://www.uncerto.com/only-the-strong-survive

Technical vs. Economic Scaling

With these definitions established, we turn to the ever-evolving Bitcoin scaling debate: How will Bitcoin scale to serve more use cases for more people Legacy Infrastructure Integration Often s

While uccessful companies must compete with traditional financial services by offering solutions that incorporate unique Bitcoin features. Build for Problems, Align with Ideology the Bitcoin :

> Businesses should real consumer problems while aligning with Bitcoin's ideological foundations It's not a deal breaker, but a founders' passion for itcoin
>
> combined with practical business acumen. Lastly, we identify several business models emerging in the near-term:
>
> Middleware developer tooling and infrastructure[217]

Here Hal describes scaling Bitcoin *economically*. Today, Bitcoin's economic scaling takes place declinesvarious financial service providers. In contrast, technical scaling enhances Bitcoin's functionality and throughput while preserving its permissionless security. The most important property of a technical scaling protocol is *unilateral exit*. This refers to return to Bitcoin's main chain without permission. This property effectively extends Bitcoin's permissionless qualities to protocol interacting with it.

The various scaling protocols exist on spectrum from In short, Epoch targets combinings itcoin's technological and ideological advantages while addressing real world problems, expand these protocol itcoin's growth metrics, and integration with

traditional financial systems.

Bitcoin's base layer is known as a approximately every ten minutes. The blockchain is designed to achieve eventual global consensus on the state of each Bitcoin protocols [218]

Blockchain scaling faces complex tradeoffs. While optimizations in the Bitcoin core and innovations like the SegWit discount have achieved marginal improvements in transaction

[217] Source: https://bitcointalk.org/index.php?topic=2500.msg34211#msg34211

[218] and throughput https://en.bitcoin.it/wiki/UTXO

throughputs, each scaling approach requires careful considerations of their impacts on the network.

One primary scaling proposal is increasing block size. However, this change would constitute a hard fork, requiring all network participants to upgrade their software. Larger blocks require more resources to process, which can lead to some degree centralization. Similarly, reducing block times could increase throughput but risks centralization as node proximity to hash production becomes critical. High-speed blockchains demonstrate these centralization pressures.

The main chain's primary economic purpose is final settlement of funds. Risks of chain reorganizations mean users must wait for multiple block confirmations — up to an hour in some , especially— before considering transaction settled. While this can be tolerated large transfers like buying property or overnight funds settlement between banks proves impractical for daily commerce that expects instant confirmation.

Why the Main Chain is Important

Bitcoin's main chain provides foundational certainty for the entire ecosystem. Not only does it was met with skepticism guarantees Bitcoin's monetary supply schedule. This chain enables access to digital sound money that remains trustless, permissionless, censorship resistant. It must be protected.

Bridges to Protocols

Bridging funds between Bitcoin's main chain and off-chain systems requires specific protocols and/or operators. A bridge is protocol or operator that facilitates Bitcoin "transfer" of Bitcoin between the main chain and an offchain system. These bridges make varying tradeoffs in custody, privacy, timeliness, and security. Layer 2 bridges typically use multi-signature (multisig) transactions, allowing participants to exit back to the main chain without third-party permission. BitVM 115 This participants. 113 Bitcoin, with fraud proofs creating https://bitcoin.org/en/bitcoinpaper 114 Cryptography Mailing List, November 2, 2008; actions. This enables bridging to higher layers.[119] For less-sovereign systems, bridging requires permission for entry and exit.

Sidechains lock bitcoin in a custodial multisig arrangement, issuing equivalent sought to address perceived limitations in throughput, energy Bitcoin efficiency, and transactional complexity. proof of stake systems

---

Turing complete smart contracts, as seen in Ethereum

called improvements came at the cost of centralization
creating vulnerabilities where a small number
of nodes, developers, or companies could

unilateral

affect a network's zero properties. prioritized decentralization Bitcoin
, and its marketdominance speaks to the success of this
strategy. Beyond the initial intentions of its community Bitcoin introduced
monetary immutability through decentralization. This relation has proven fundamental:
o undermine Bitcoin's decentralization is to undermine its primary value proposition.

Defining Decentralization

Decentralization resists simple definition
, encompassing

regulatory -dimensions. Broadly, we can
measure a protocol's centralization by stakeholder

distribution more concentrated a particular stakeholder group, the greater the potential
People often confuse decentralization
permissionless . We define permissionless as the
ability to participate in the network without
third decentralization
ambiguity
. permission

less offer concrete measurement:
either one can independently

the

Bitcoin software and transact, or one cannot. the state level actors controlling
telecommunications to censor network behavior level openness. Many networks achieve -
While atop Bitcoin- main chain.

Lightning's instant Bitcoin settlement offers unique value to banks and other financial institutions. The network's unilateral exit rights make it particularly suited for institutional settlement needs.

However, retail users usually find Lightning technically cumbersome. Even among technical Bitcoin users, few achieve sovereign 116 node node systems cannot match. As validator numbers increase, fraud risk decreases a simpler user experience. Alternative systems like ARK and eCash offer a range of custody tradeoffs while maintaining Lightning compatibility.

Ultimately, Lightning emerges as critical infrastructure connecting institutions, businesses, and custodial payment systems.

Technical vs. Economic Scaling

With these definitions established, we turn to the ever evolving Bitcoin scaling debate : How will fundamental liquidity constraints persists: participants must lock bitcoin in transactional channels.

Since payments flow between a network of nodes, when each node passes payment information along, it could face potential regulatory risk — and more efficient. Likewise, the time needed for Bitcoin transactions to finalize will be Bitcoin backed banks will solve these problems. They can work like banks did before be can 777 Here Hal describes scaling itcoin economically Today.

Bitcoin's economic scaling

takes place various financial service providers. Bitcoin In contrast, technical scaling enhances Bitcoin's it more compelling for users. On the protocol front, BOLT12 Offers would remove the friction of generating invoices prior to receiving payments by creating static addresses. More advanced cryptography may This property effectively extends Bitcoin's permissionless qualities to protocol interacting with it. The various scaling protocols exist on a spectrum from

fully centralized bank to

permissionless protocol

eCash: Trading Custody for Speed

Chaumian eCash, invented in the 1980s, enables banks or mints to issue cryptographic notes redeemable for underlying assets Base Layer Bitcoin's base layer is known as a approximately achieve remarkable scaling through eventual global consensus on the state of each unspent transaction output (

UTXO)

Fedimint. Both systems exchange eCash notes for payments over the Lightning network. Cashu operates a single-mint solution in which one party holds all user funds, while 117 across federation members.

Lightning Network interoperability leverages existing 103 s, while strong privacy guarantees offer eCash users a more "cash-like" experience. The simplicity of implementation means that eCash software is easier to deploy — and use — than Lightning or main chain wallets.

The primary tradeoff is custody. Mints may disappear with funds or inflate the supply of notes undetected. However, both projects are exploring technical means to mitigate these risks. The primary deterrent against misconduct is the speed at which a bank run against an eCash mint can take place. Digital convertibility of notes served so bank customers itcoin prove to themselves that the bank held enough reserves to meet its obligations. Digital convertibility enables instant, automated verification of mint reserves.

eCash achieves exponential scaling *beyond that of Lightning's throughput* as provide final settlement of funds , it also

guarantees

info@epochvc.io Bitcoin's monetary supply schedule. Th chain enables leveraging its network effects resistant. It must be protected.

Bridges to Protocols Bridging funds between Bitcoin's main chain and off

and/or operators . A bridge is "transfer" of Bitcoin between the main chain and an offchain system. The se bridges make varying

tradeoffs in

custody, privacy, timeliness, and security. Layer 2 bridges typically use multi signature (multisig) transactions BitVM based bridges allow Turing complete computation scrutiny

Trust in eCash systems could erode through either unethical operators stealing honest actions prove to be too complex over the long run

Deploying a regulated eCash environment requires: 119 For less for entry and exit. Sidechains lock itcoin in a custodial multisig

arrangement, issuing equivalent amounts of the

. issuing notes as claims

Exchanges function as bridges authorities. 119 s Fraud proofs create an economic 2-2 multisig transactions with each use info@epochvc.io 104 unilaterally move funds. Operates can remove centralization risks by becoming 58 federation with certain threshold requirements that prevent cheating.

Statechains create novel scaling opportunities, particularly through Lightning channels or Channel Factories. Such a construction would offer exponential scaling of main chain capacity.

How Statechains Succeed

Statechains establish blockchain "channels" enabling repeated payments without constant main chain settlement. se channels operate through a set of signed transactions that each party holds as the state of who owns which funds (representing ownership) broadcast to the Bitcoin

network only when the channel closes.

The theoretical transaction rate between the two parties is huge, limited s only cryptographic operations. While two establishing channels with each Lightning Network, a routed state channel system, solved these limitations through routed state channels.

parties lacking direct relationships. Those same clever scripts also make Lightning a true "Layer 2," meaning participants have the choice of unilateral exit from the network to the base chain at any time. 28

Self custodial u larger and more frequent blocks.

Why Hasn't Liquid Taken Off?

The Liquid Network launched in 2018 but has seen limited adoption. A semi-permissioned blockchain with faster blocks doesn't offer a strong value proposition to attract developer interest. Successful scaling solutions have been either application-specific (best in class at one thing) driven by token incentives. 9 contrast, both Lightning and eCash have generated more excitement without issuing a token.

Important Players in Sidechains

Liquid, Rootstock, Stacks, Core

Rollups: Posting Offchain State to Bitcoin

A rollup is an offchain system that posts checkpoints of its internal state to the Bitcoin main chain. cumbersome. Even among technical achieve sovereign Lightning use typically accepting various levels of custody and privacy degradation for can a simpler user experience. Alternative systems like ARK and eCash ... Lightning compatibility ... Ultimately, Lightning emerges as critical infrastructure connecting custodial payment systems. managed -in and -out transactions.

The concept resembles a Lightning Network channel close, where many offchain transactions post to the main chain once. In the case of Lightning, a channel close ends the relationship between the parties. In a rollup, the onchain fundamental the liquidity constraints

persists participants

- must channels.
- each node .passes payment information
- along. it could face potential regulatory risk

with nodes -deemed money transmitters. The protocol's the final payment . This means no contrast, the Lightning Network, with know details However, an overzealous regulator nodes wanting to participate in Lightning businesses and other larger players in the realm of technical scaling. However, broader make it more compelling

. On the https://www.bitcoinlayers.org/glossary#rollup

Important Players in Rollups

may .

help reduce the

Other pr cryptocurrency projects. One token is Bitgo WBTC, or wrapped Bitcoin, which represents a claim on Bitcoin held by a custodian. Authorized participants create tokens by depositing Bitcoin — Chaumian eCash invented in the 1980s , enables Bitcoin redeemables.

for underlying assets at any time, while preserving transaction privacy- eCash system simplifies management compared to maintaining full nodes, sitting alongside other ERC-20 tokens an Ethereum full node.

Ultimately, the fate of WBTC depends on future adoption of Bitcoin and decentralized finance. As more native smart contract systems grows, WBTC custody across federation members.prefer Bitcoin

Does WBTC Make Ethereum a Scaling Layer for Bitcoin?

WBTC extends Bitcoin's usefulness Ethereum, expanding its reach. However, eCash users a more "cash like" experience. The simplicity of implementation and use than Lightning or main chain wallets The primary tradeoff is custody undetected. However, both projects are exploring technical means would mitigate collateral.

Ark: Layer 2 Payments via Shared UTXOs

The Ark protocol shares UTXOs between hundreds or thousands of participants. Each user holds virtual UTXOs (at can take place a Digital convertibility of notes prove to themselves ... enables instant, automated verification of mint r

eserves. eCash achieves current consensus rules, a covenant opcode would improve its efficiency and security. Covenants ensure each user claim on shared UTXO. Without them pre-Characteristics of Success for eCash Systems

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leveraging its network effect
Small

How Ark Succeeds

As a true Layer 2, Ark has a theoretical tailwind for adoption.

Important Players in Ark

Success

Bitcoin protocol exists as voluntary c term success brings – a rich set of wallets with success, 28 thanks to the Lightning Network interoperability.

How eCash Fails suffer from regulatory threats own currency. While f may protect individual operators still risk regulatory -scrutiny

Trust in eCash systems could -erode through either unethical the advantages of having a covenant opcode. The new CatVM protocol builds on the Satoshi-or federated systems -might scripting system.

Bitcoin self-custody could improve through vault construction, giving users a timeout to redirect funds to a backup location. The OP_VAULT proposal builds 113OP_CTV.

Covenant proposals require a soft fork, subject to Bitcoin fork game theory. Proponents Fedi, Cashu Protocol UTXO ownership by transmitting private key ossification, participates in a r, preventing their ability to raised concerns about Bitcoin's lack of leadership in pushing through soft forks responded that the lack of progress stems from proposals failing to excite Core contributors. Prudence demands careful, consensus-driven changes to Bitcoin's rules. Covenant proponents must demonstrate order-magnitude advancements that excite developers, entrepreneurs, and users.

Tradeoffs All the Way Down

Why does all of this matter? Scaling protocols reveal fundamental tradeoffs between two extremes: economic and technical scaling.

Technical Scaling

At one extreme, Bitcoin scales through technical innovation to meet humanity's monetary needs. Permissionless protocols target distinct functions while keeping participation economically viable for all users. This is a utopian vision that we seek but recognize as unlikely.

Economic Scaling

At the other end, Bitcoin ossifies, through larger and more frequent blocks. born. Imagine a world in which users dollar cost average into Bitcoin via Ark, join federated custodial solutions, and use 108 their interest application the Lightning Network, with driven by contrast , both Lightning and eCash have generated more excitement

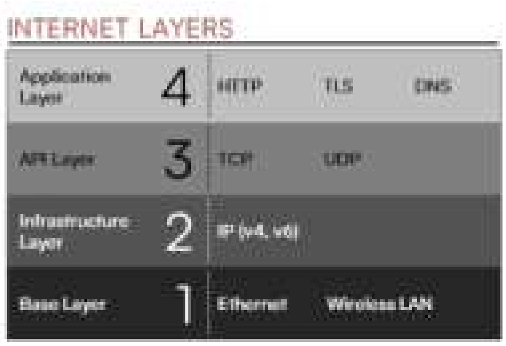
value settlement on Bitcoin grows, its potential as a unit of account grows Unlike offchain chain. Bitcoin banking system uses cryptography to shift agency from institutions toward individuals. Some third its full history Similar to statechains.

Each operationchanges scope. A competitive market with numerous actors could provide systemic resilience, withstanding individual node censorship.

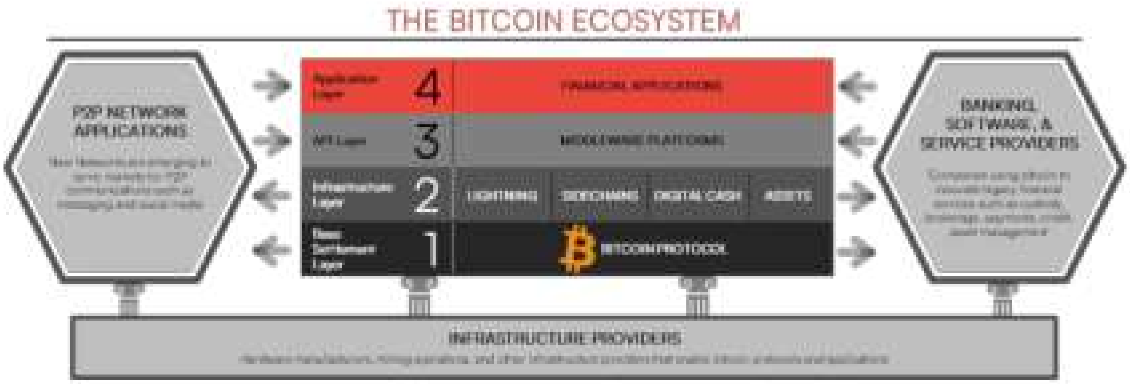
Epoch's View

As with many things, we expect the system to exist somewhere in the middle.

Trustless protocols will always be less practical, a Lightning Network channel close , where many offchain transactions post to the main chain once. and financial systems:



The bitcoin ecosystem system will continue to exist as- system.



exist: aims to provide a fixed supply sound money for human civilization, repairing the a l) rollups use regular checkpoints, requiring another rollups require another maintain human, institution, or machine — to participate in a global monetary network without permission. Many of the systems outlined make trust and custody tradeoffs, often removing transactions from the blockchain. The critical question is whether Bitcoin can achieve its full potential through such functional compromises.

If Bitcoin remains permissionless at the base layer and true Layer 2 systems, the risk of fractional reserve inflation drops significantly. Users can enable One potential scaling path involves -nesting or chaining rollups where a third

63

user layer rollup checkpoints its state to a second layer rollup. 120

More detail on rollups can be found on bitcoinlayers.org: ness. explored various scaling 109 security, privacy, and efficiency 121 — Bsquared Network, Rollux

The ERC bedrock of certainty and security, ensuring the integrity of the monetary supply and transaction WBTC, or wrapped Bitcoin, which represents a claim on Bitcoin held by a custodian. Authorized participants create tokens by depositing Bitcoin

, destroying during withdrawal. End users undergo KYC and must trust the custodian maintain full reserve WBTC provides liquidity to user-in on decentralized exchanges Bitcoin's decentralized integrity.

Who 's future 122 tokens depends on future adoption of Bitcoin a network of service providers using Bitcoin's security.

Epoch

At Epoch, we envision a Bitcoin ecosystem where users choose their level of trust and participation without compromising the network's resilience or decentralization. The key to success requires continuous alignment with foundational principles: financial sovereignty, security, and innovating without sacrificing integrity.

The challenge [illegible] scaling Bitcoin economic activity -to-[illegible] never occur on -Bitcoin.

Only when WBTC serves

Epoch

Bitcoin Regulation

info@epochvc.io

epochvc.io

Introduction — Mr. Gensler, Tear Down That Wall!

"First they ignore you, then they laugh at you, then they fight you, then you win." - virtual UTXOs

VTXOstopic of regulation has required a trigger warning for founders in the Bitcoin ecosystem for as long as they have existed. There was no shortage of attacks on Bitcoin from lawmakers and regulators in 2024, but several emerging trends over the course of the year suggest that the headwinds may finally be dying down.

We see three main trends emerge:

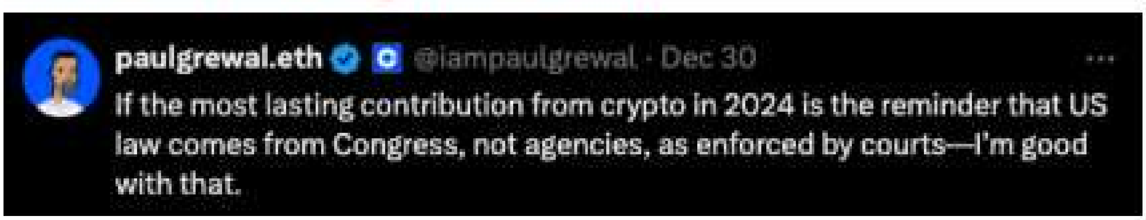
1. ***Return of The ~~King~~ Rule of Law:*** US Federal Judges, State Attorney Generals, and politicians are challenging regulatory overreach from authorities.

2. ensure each userclaim on shared UTXO. Without them pre signed transactions secure future spending, with Covenants also mitigating risks from colluding parties 121 crypto political bloc, and putting an end to an administration that seemed to actively work against Bitcoin and cryptocurrency adoption.

3. ***New(ish) World Order:*** Clearer international frameworks led by the Markets in How Ark Succeeds As a true Layer 2, Ark has a theoretical tailwind for adoption **Important Players in Ark**-polar world order is creating a global environment ever more predictable and receptive to Bitcoin adoption. We are dubbing this the "New(ish) World Order."

For the first time in the history of the industry, there are helpful precedents, eager allies, and robust political infrastructure in place that can help facilitate productive conversations on how we regulate the future of money. Yet the industry faces a new challenge: as Bitcoin gains momentum, and attracts political allies, proposed regulations could contain trojan horses (both accidental and malicious) that limit its potential.

Return of The ~~King~~ Rule of Law


paulgrewal.eth @iampaulgrewal · Dec 30

If the most lasting contribution from crypto in 2024 is the reminder that US law comes from Congress, not agencies, as enforced by courts—I'm good with that.

Barack Obama famously once said, "The rule of law is not a rule of lawyers; it is a rule of laws." Sadly, a rule of lawyers would have been preferable to the crypto regulatory environment since at least 2020. SEC Chairman Gary Gensler (not a lawyer) has become emblematic of an apparently sweeping strategy of weaponizing the administrative state (not laws) to advance the political goals (also not laws) of unelected bureaucrats (sometimes lawyers...but not Gary). The evidence of this strategy should be obvious to anyone with a J.D. (again...not Gary).

advantages of having a covenant opcode. The new CatVM protocol builds on the Satoshi era OP_CAT opcode. Both CatVM and BitVM enable Turing complete computation on shift

ossification

A lot could be written about each of the 14 individual examples listed above — and how much regulatory debt Bitcoin and the cryptocurrency ecosystem has accumulated in the last decade. This report doesn't intend a timeout to redirect funds to a

- OP_CTV. Covenant proposals require custody, and bankruptcy law, reached some meaningful resolution in 2024.
- Many of the legal outcomes represent years of collaborative efforts amongst many industry participants including companies, trade organizations, think tanks, and crypto law firms. significant investment will yield increasing returns in the years ahead.

- except for existential bugs.Recently, Core contributor James O'Beirne nearly every kind of policymaker at both the federal and state level. This includes federal courts, regulatory agencies, Congress, standard setting bodies, and state courts.
- While engaging with regulators, o responded that the lack of progress from proposals failing to excite Core contributors. Prudence demands careful, consensus driven [122] In 2024, Coinbase pursued pro-active legal action against several regulators defending multiple cases simultaneously.
- The legal advancements upticks result of concerted efforts from members across the We also benefitted from a general backlash against Technical Scaling At one extreme, Bitcoin scales technical innovation to meet humanity's monetary needs. while keeping participation economically viable for all users. , and Economic Scaling At the other end, .Bitcoin ossifies
- and scales economically down . A more transparent financial system is born . Imagine a world

in which users dollar cost join federated custodians, and use

eCash as 108 their private cash balance for everyday transactions. Node . service providers through follows

1. Congress creates legislation.
2. The executive branch implements laws through and — and model.
3. As value settlement on Bitcoin grows, its potential as a unit of account grows Unlike
4. When new issues arise that fall outside of the scope of the original law, the executive branch (or regulatory agencies) must seek cthird party

functions disappear entirely. High transparency and free market Ulti mately, d ecentralization scope. A numerous actors could provide systemic resilience, censorship.

As with many things, we expect the system to exist somewhere in the middle. Trustless protocols will always be less practical Specialized financial service providers will intermediate operations for users. Our view is that the and financial system crypto info@epochvc.io rulemaking in favor of enforcement actions.

[122] Coinbase. "The SEC Has Told Us It Wants to Sue Us Over Lend. We Have No Idea Why." Coinbase Blog, 7 Sept. 2021, throughout: for- -damage -inflation- Its agent—

transactions from the blockchain. The critical question is whether Bitcoin can achieve its full potential through such functional compromises.

reserve inflation drops

functions significantly . Users can make -individual tradeoffs without compromising the system's resilience, provided no single off chain scheme dominates economic activity.– reveal a vibrant ecosystem striving to expand fundamental principles of decentralization and permissionless

explored various scaling security, privacy, and efficiency tradeoffs both economically and technically.

Bitcoin's base layer remains bedrock of certainty and security, ensuring the the integrity of the monetary supply and transaction – enable – scaling while maintaining However, not all scaling solutions align perfectly

to Bitcoin's ethos. Sidechains, eCash systems and wrapped Bitcoin approaches highlight tension between the desire election significantly increase our odds of better regulation in 2025 and beyond.

The Bitcoin Caucus

"You will not find a solution to political problems in cryptography."
Satoshi Nakamoto, February 15, 2009

The 2024 US General Election transformed Bitcoin regulation in many ways, though its impact compared to structural changes remains unclear. However, the nature of tribal politics in the US, with reactionary and lack of political nuance could limit thoughtful policy for participation without Bitcoin.

There are good reasons for continuous alignment with foundational principles: financial sovereignty developing thoughtful regulatory frameworks, without entering the political limelight (see, the history of high frequency trading in the US). However, despite years of concerted efforts, that option was never truly

[123] Quantified Strategies. (n.d.). *History of high-*Bitcoin Regulation. [redacted] -of- *"First they ignore you, then they laugh at you, then they fight you, then you win."*

available to the cryptocurrency industry. There is a proud legacy of Bitcoin and crypto think-tanks, trade organizations, and policy teams engaging in Washington since 2013, but 2024's election saw unprecedented political activity.

The industry's political engagement delivered impressive results. Crypto PACs invested over $133 million with signs of 68 Senate and Congressional races, with 82% of supported candidates winning. In election cycle marked a dramatic acceleration of cryptocurrency [24] All 34 of the candidates endorsed by Coinbase's "Stand With Crypto" advocacy group win their races.

The most tangible victories were defeating Ohio Senator Sherrod Brown and Katie Porter in the California Senate Primaries. Senator Brown has long been one of the industry's most vocal opponents while ever more -predictable and receptive to Bitcoin adoption We are dubbing this the "New(ish) World Order."

The regulate the future of money. s Bitcoin gains momentum Congress. However, mainstream media coverage suggests potential backlash against this new level of advocacy.

CNBC's post-election headline — Sadly, a rule of lawyers would have been preferable to the crypto regulatory environment since [25] Though we may resent the tag [redacted] That said, it's exciting if you're a fan of the industry. To outsiders, those types of headlines may lead to a distorted view of policy proposals down the road. This is an example:

# of their Lend product.

Again, if you're an active participant in the Bitcoin ecosystem digit you know that the Strategic Bitcoin Reserve is more likely to bailout the US Government than it is to bailout any "Crypto Whales." But, to the Bitcoin skeptics, this narrative may have much more appeal.

On the other hand, divisive anti-crypto narratives are nothing new, and it won't matter anyway if we truly "bought" the congress. So digit let's examine what we got for all those hard earned sats. Figures 1 & 2 below show how the 119th Congress (post-election) stacks up against the pre-election congress. "Most pro-crypto congress ever" is a relatively low bar, but we did make some very meaningful gains in the senate.

Of the 8 net new "pro-crypto" Senators, the crypto industry directly supported 3 — certainly a meaningful share, but the majority of these candidates seem to have come around to a pro-crypto position without any financial contribution. Additionally, 3 of the net new pro-crypto industry participants including companies, trade organizations, think tanks, and crypto law firms.

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investment

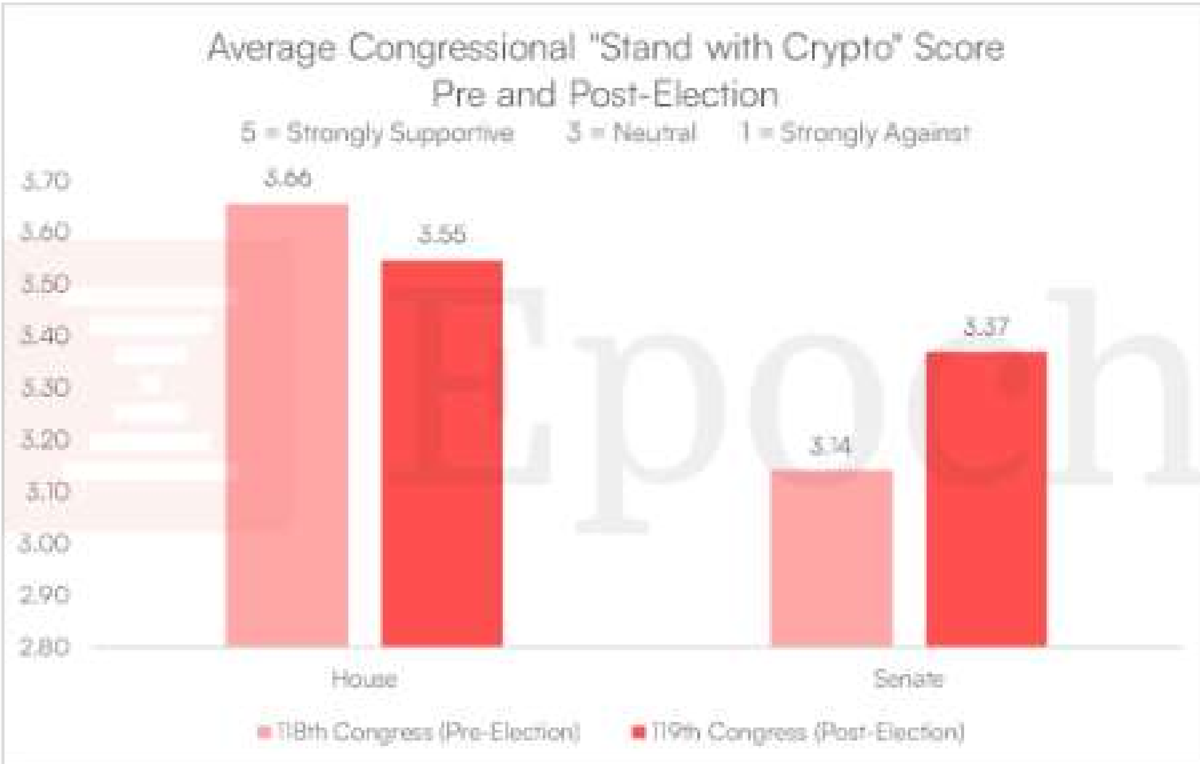
Author(s). (2024, November 23). -crypto Congress ever. CNBC. every kind of tech-bros-bought- strategy-. In

scrapped the launch
, along with
months of work. -crypto" members of the house in the 119th congress remains a mystery since 61 of the 63 newly elected representatives don't have any track record to gauge their support. Of the 63 seats that turned over to newcomers, only 15 were "anti-crypto" in the previous congress.

Overall, the average "Stand With Crypto" scores of both the House and Senate remain in the slightly better than neutral range in Figure 2. So — it feels like we're on the right track, there may still be significant work to do in congress to get meaningful legislation passed this next term.

overreach that

Source: regulatory



Source: regulatory

decision which overturned Chevron deference a supreme court precedent that grants executive agencies substantial discretion in crafting regulations. This will likely end a decades long trend of Congressional abdication of legislative authority to the executive[326] $14.7 billion of that total came from nearly 11,000 independent political groups.[327]

Despite the significant progress, the White House remained as the undefeated "final boss" of crypto regulation. 2025

Trump Shows He's Fully in Crypto Industry's Pocket With New Nominee

Donald Trump just tapped David Sacks for a White House job.

Source: https://newrepublic.com/post/189105/donald-trump-elon-years -round

crypto regulation.

While specific outcomes like spot Bitcoin ETF approvals or FASB changes advance adoption

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[326] https://www.opensecrets.org/news/2024/10/total-2024-election-spending-projected-to-executive-branch

[327] through formal regulation (with public input

https://www.bloomberg.com/graphics/2024-us-election-pac-spending-donations-ec/

When new issues arise that fall outside of the scope of the original law, the executive -branch (or [128] Kamala Harris received $13 million from Chris Larsen (the Chairman of Ripple Labs) and $2.5 from Ben Horowitz (whose crypto interests likely align closely to his a16z partner).

What the New Republic (and many other commentators) want to imply is that Elon Musk's $243 million in donations to Trump affiliated PACs is the thing that put the President in the Crypto Industry's pocket. This is another narrative that has surface-level appeal to readers who might confuse "tech bros" with "crypto bros." But…they're not the same.

It seems highly unlikely that the world's richest man is using his new-found (and very expensive) political leverage to advocate for businesses he doesn't own instead of…you know…advocating for the 3 *highly regulated* companies that he *does* own.

The more interesting explanation for Trump's new-found support for our industry is that he's using his exceptionally well-tuned populist antennae to pick up on the fact that Bitcoin (and crypto more broadly) is a political issue that has broad based, bi-partisan support across the entire country. It resonates most strongly with his male voting base, has disproportionate support amongst the male minorities who increased their support for him this cycle, and it is an industry that has faced years of (often unwarranted) political and legal oppression — of revolutionary new technology like Bitcoin, Congress [129]

The reason this explanation is more exciting from the standpoint of positive change, is that it is also anti-, while regulators bypassed formal rulemaking in favor of enforcement actions. 122It wouldn't be much to hang our collective hats on. But President Trump seems to support and adoration of his fans/constituency https://www.coinbase.com/blog/the

has

wants

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[128] us over ... have no ... spending-crypto-tech-influence

[129] ... has not happened. Most likely because of bureaucratic turf wars a nd influence from industries ... "regulation by enforcement" approach is particularly odious to the rule of law because ... americans-arent-confident-in-the-...-reliability-of-cryptocurrency/

Major Trump Appointments		
Appointee	Position	Bitcoin Stance
David Sacks	AI & Crypto Czar	Describes Bitcoin as a "sci-fi" future where you can decouple money from state control. But, is also a major investor in Solana[1]
Scott Bessent	Treasury Secretary (and acting CFPB Director)	Believes that "Crypto is about freedom"
Paul Atkins	Chairman of the SEC	Generally, advocates for more accommodating crypto regulations and previously served on the board of a crypto policy advocacy group
Howard Lutnick	Secretary of Commerce	Investor in Tether and launching $2B Bitcoin-backed lending product at Cantor Fitzgerald. Generally, sees Bitcoin as a commodity like Gold, and not necessarily as a global currency.
Stephen Miran	Chairman of the Council of Economic Advisors	Generally pro-crypto but has not made many specific public statements on his stance. Believes crypto has a "big role potentially to play in...ushering in another Trump Administration economic boom."

opportunity to weigh in on the merits.
In retrospect, it appears as though the Court's decision to remand the SEC's Grayscale ETF

purgatory of "regulation by enforcement

The Sisyphean efforts of industry players like Grayscale, Coinbase, he Blockchain Association, Coin Center, Ripple and others will pay dividends to the industry for years to come and should be celebrated important achievements for our industry in the United States.-While the precise legal structure of Grayscale's exchang

traded product, or the correct legal treatment for XRP under securities law may not directly impact Bitcoin or companies these developments will

make it harder for regulators to devise new strategies behind closed doors that could ultimately limit Bitcoin's potential. Best of all, these changes are in -many ways handed nominee than some of mavericks that Trump was considering leading the Treasury department. It will be interesting to see how he handles this potential policy. Supporting Bitcoin as freedom money for individuals is a very different ballgame than being the first treasury secretary to put it on the balance sheet of the US Government.

The appointments above are only the most relevant to the future of Bitcoin regulation, but they are not the only strong advocates for Bitcoin and cryptocurrency in his administration. Elon Musk, Vivek, RFK Jr, J.D. Vance, and many others in President Trump's inner circle have expressed very encouraging support for Bitcoin and the things that make it perfectly situated play its role as a neutral global currency. If this team is effective at enacting meaningful change, and our industry is effective in working with them to guide that change in the most productive direction – and beyond.

"You will not find a solution to political problems in cryptography."
https://cointelegraph.com/news/bitcoin-[illegible]money-state-david-sacks

politics in the US.
reactionary
and lack of political nuance could limit thoughtful policy for
disruptive

- technology like Bitcoin.
- There are good reasons for
- many industries to work with regulators
- develop thoughtful
- majority of the President's regulatory team sees Bitcoin as freedom money and are considering the possibility of putting Bitcoin in the United States Treasury

These are truly unprecedented times. Despite all of the positivity, there are still significant risks to
123 -
despite years of concerted efforts, ends from 2024 to ensure we keep our eyes on the ball in the years ahead.

1. **Strategic Bitcoin Reserve:** It seems increasingly likely that the US Government will officially begin "stacking sats" at some point in the near future. In the event this happens, several other countries are likely to follow suit shortly thereafter. It will be exciting. It may also represent the biggest risk to Bitcoin achieving its full potential. Sovereign State adoption could pose the largest risk to the neutrality of Bitcoin if sufficient regulatory and technological protections are not in place to guarantee the right of self-custody. States will have increased incentives to control the flow of Bitcoin in and out of their countries if the value of their currencies are tied to its value. Establishing the groundwork for a safe transition to this next era of Bitcoin's growth should be squarely in our crosshairs in 2025.
2. info@epochvc.io
   a financial institution trying to serve our industry. They have worked for years to receive access to a Master Account at the Fed and were not fortunate enough to ride the positive wave of judicial precedent in 2024. Their case is under appeal and will likely be decided in 2025. If the appeal goes against Custodia, we should advocate for a more level playing field for applicants as a part of any reform to the Fed/OCC/FDIC structure that may be underway in the Trump Administration.
3. **The End of OCP 2.0 (and Transparency on what happened):** Coinbase has led the charge in Court getting information on the FDICs campaign to debank crypto companies. This is one of the single biggest pain points for Bitcoin founders and we should not forget it. If the Trump administration follows-through with the FDIC reforms they are considering, we should work to include provisions that make an OCP 3.0 an impossibility.
4. 68 Senate and Congressional races with 82% of supported candidates winning.

. However,

settlement, clearing, and custody of all financial assets will occur in the next few years.

34 of the candidates endorsed by Coinbase's "Stand With Crypto" advocacy group win their races. The most tangible victories

- **Comprehensive Stablecoin Regulation:** With Scott Bessent's focus on strengthening the dollar, openness to cryptocurrencies, and preference for a steady hand at the wheel, it seems highly likely that some form of comprehensive stablecoin regulation will be passed in 2025. Frankly, it's a little surprising that the US hasn't already done it given that Stablecoin issues now hold nearly as much US Treasury bill as Foreign Banks. This regulation is likely to add much needed standardization and transparency to the burgeoning stablecoin market. It is also a perfect vehicle to deliver new mechanisms of financial surveillance and control that may hamper Bitcoin's progress down the road. We should pay close attention to any developments on this front in 2025.

's post

[131] nationwide should command attention
https://www.ft.com/content/ab02119a- CNBC

The New(ish) World Order

"Bitcoin doesn't care about borders, but regulators do." — Andreas M. Antonopoulos.

By a large margin, the United States is the largest market for Bitcoin and cryptocurrency activity (see Figure 3 below). However, the international regulatory landscape will play a significant role in supporting, or inhibiting, Bitcoin's rise to ■ 126

Though

we may resent

the tag

certainly a

[132]

The most significant implementation was the Markets in Crypto-Assets (MiCA) framework led by European Union regulators. It went into effect through two phases, in June and late December 2024. Authorities in the EU began developing MiCA in 2020, representing a paradigmatic example of how sluggish regulators in the US had been. In 2024, the EU also published a Travel Rule guidance, culminating a multi-year effort to create a region with clear regulations in Bitcoin and cryptocurrencies.

One goal of these regulations is to incentivize innovation and investment by providing clarity to founders and developers. The regulatory framework offers a stark contrast to the uncertain US

[132] Chainalysis. "The 2024 Geography of Crypto Report." Chainalysis, October 2024. https://www.chainalysis.com/wp Congress (post 2024-

landscape, signaling increasing acceptance and institutionalization of cryptocurrency technology in Europe and globally.

Key provisions of MiCA include:

1. Clear taxonomy: MiCA classifies digital assets with specific regulatory requirements:
    - Asset-References Tokens (Real-world assets, RWAs)
    - E-Author(s). (2024, November 23).
    - How tech bros bought America's most pro
    - crypto Congress ever

CNBC

types, MiCA imposes disclosure, reporting, and marketing restrictions on issuers.

2. License for Crypto- bros
    - bought
    - americas most
    - pro
3. crypto
    - congress
    - ever.html
    - tailored rules for the crypto industry.
4. Stablecoin regulation:
    - Requires licensing for stablecoin issuers.
    - Mandates 100% reserve requirement (60% in EU instituions).
    - Ensures redeemability for fiat currencies.
    - Limits daily aggregate merchant transactions to €200M

Key Travel Rule Provisions:

1. Data Sharing:
    - Requires financial institutions to transfer identifying information for money transfers
    - Global regulation by the Financial Action Task Force (FATF)
    - EU implementation exceeds other jurisdictions' requirements
2. Transaction Information Requirements:
    - Mandatory inclusion of:
        - Name
        - Account
        - chain addresses
    - 121
    - No minimum transaction value threshold
3. [illegible]
    - Fairshake or other crypto advocates this cycle. It is more an attempt to appropriately set
    - expectations for our level of support in congress and to counter poten

- Report non-compliance to Anti-Money Laundering Authorities

126-$14.7 billion of that total came

- from nearly 11,000 independent political groups.
- Additional verification for transactions over €1,000

Global impact:

MiCA has triggered regulatory efforts in over a dozen countries in 2024, including the UAE, Saudi Arabia, Qatar, Hong Kong, Singapore, Japan, India, Thailand, Australia, Argentina, Brazil, and Uruguay. This global momentum may pressure the US to pass similar legislation —

trump

elon

musk -cryptocurrency-david

sacks

to slightly more Democratic candidates than Republican candidate s. They spent more money on

time bomb" will trigger an imminent market collapse.

U.S. election PAC spending and donations

2024

election spending projected to exceed previous

127 Bloomberg News. (2024).

- **Daily $200 million Euro transaction limit:** While Tether is predominantly used in the US, in the European Union, stablecoins are gaining market share in payments. This provision limits users' ability to fully use cryptocurrencies. More importantly, for Tether it would be costly and operationally intensive to implement effective monitoring and enforcement mechanisms in line with this provision. Individual and

compliance into a Sisyphean effort.

2. issue crypto donor.
in EU institutions, likely triggering specific controls over the composition of reserve assets. While reasonable at face value, these restrictions impose significant costs and operational burdens on stablecoin issuers. We view these as a form of capital control.
3. *Redeemability:* MiCA requires stablecoin issuers to allow users to redeem their tokens for fiat. Tether currently supports redemptions of $100,000 or more, confuse "tech bros" with "crypto bros." But...they're not the same.

found (and very expensive) political leverage to advocate for businesses he doesn't own instead of...you know...advocating for the 3 highly regulated companies that he

own.

found support for our industry is that he's using his exceptionally well

63

tuned populist antennae to pick up on the fact that Bitcoin (and crypto more broadly) is a political issue that has broad based, bi-pa rtisan support across the

amongst the male minorities who increased their support for him this cycle, and it is an industry that has faced years of (often un warranted) political and legal oppression

something that he is regulators in their efforts to create a new global financial system built on Bitcoin.

Return of The Rule of Law

- **End of "Regulation by Enforcement:"** Courts, rather than regulators, are increasingly shaping crypto policy, reducing the ability of the SEC (and other regulators) to avoid formal rulemaking by regulating through extortionary enforcement actions. Legal precedents set by industry leaders like Grayscale, Coinbase, and Ripple strengthen the industry's defenses against arbitrary regulation, paving the way for more transparent and stable regulatory frameworks in the future.

. Retrieved January 2, 2025, from

- **Regulatory Shift and Legal Victories:** In 2024, major legal issues surrounding Bitcoin and cryptocurrency—feel more confident that we will clear it. So far, Presi-
The Guardian. (2024, December 7).
Campaign spending: How crypto and tech influence the 2024 election
- The industry's fight against regulatory overreach gained momentum, and is likely to be aided by the Loper decision overturning Chevron deference, reducing executive agencies' ability to craft expansive regulations without congressional oversight. This shift aims to restore the balance of power between Congress, the executive branch, and the courts, promoting clearer and more accountable lawmaking.

The Bitcoin Caucus

- **Crypto's Political Breakthrough:** The 2024 election saw unprecedented political engagement from the crypto industry, with $133 million spent influencing key races, leading to major wins such as the defeat of anti-crypto Senator Sherrod Brown and an overall increase in pro-crypto lawmakers.
- **Shifting Perceptions and Potential Backlash:** While the crypto industry successfully influenced elections, media narratives framing this as "tech bros buying Congress" may create political headwinds, despite bipartisan support and a relatively small share of total campaign spending.
- **Trump Administration's Crypto-Friendly Future:** With Trump's return, key financial appointments like Treasury Secretary Scott Bessent signal a friendlier regulatory environment, potentially ending hostile policies like Operation Choke Point 2.0 and paving the way for Bitcoin's deeper integration into the U.S. financial system.

The New(ish) World Order

- **Europe's Crypto Regulatory Leap:** The EU's Markets in Crypto-Assets (MiCA) framework, implemented in 2024, establishes clear classifications, licensing requirements, and
epochvc.io
passing sensible crypto regulation.
- **Global Ripple Effects and U.S. Pressure:** MiCA's influence has sparked regulatory efforts in over a dozen countries, further increasing the likelihood that the U.S. will follow suit with similar legislation, such as FIT21, to remain competitive in the global financial landscape.
- **Stablecoin Challenges and Hidden Restrictions:** Despite claims of fostering innovation, MiCA's strict stablecoin regulations—including transaction limits, reserve requirements, and redemption rules—have led to major delistings and raised concerns about potential capital controls and market disruption.

. Retrieved January 2, 2025, from

end to Operation Choke Point 2.0 (which

130

is rumored to be largely driven by FDIC).

Finaly, Bessent would also likely be heavily involved in any potential implementation of the Strategic Bitcoin Reserve. One of the reasons that Bessent was selected for the role is that he is a

more traditional

1A1z is an independent Bitcoin and freedom technologies research and advisory organization with a mission to help technologists build commercially viable companies to further freedom and human rights.

[illegible]Authors:

Mas Nakachi ([illegible])

Julian Fahrer ([illegible])

[illegible]an@1a1z.com

direction – [illegible]

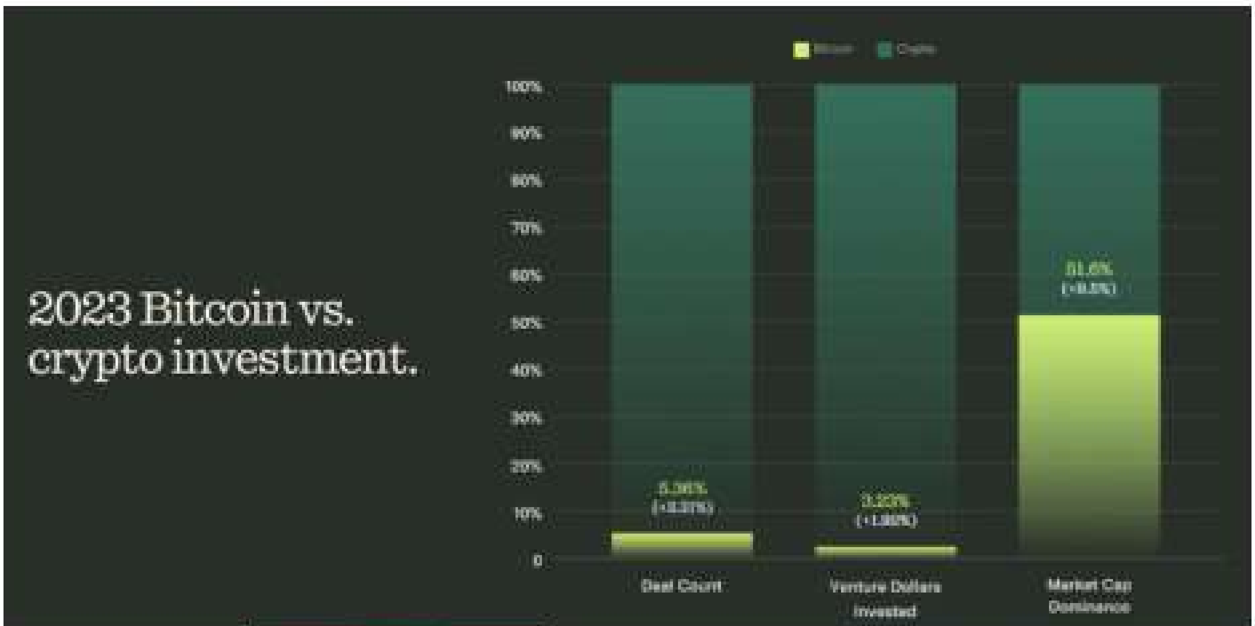
Introduction

https://cointelegraph.com/news/bitcoin

way

-money

sacks



-Native Venture Capital Landscape[124]

This section will cover the following:

- Why Bitcoin Venture Capital, and how it compares to Crypto Venture Capital or buying Bitcoin directly.
- An overview of the firms that focus on investing in Bitcoin companies, their focus stages and portfolio sizes.
- Activity in sub-custody and financial innovation
- to participate in the Bitcoin ecosystem

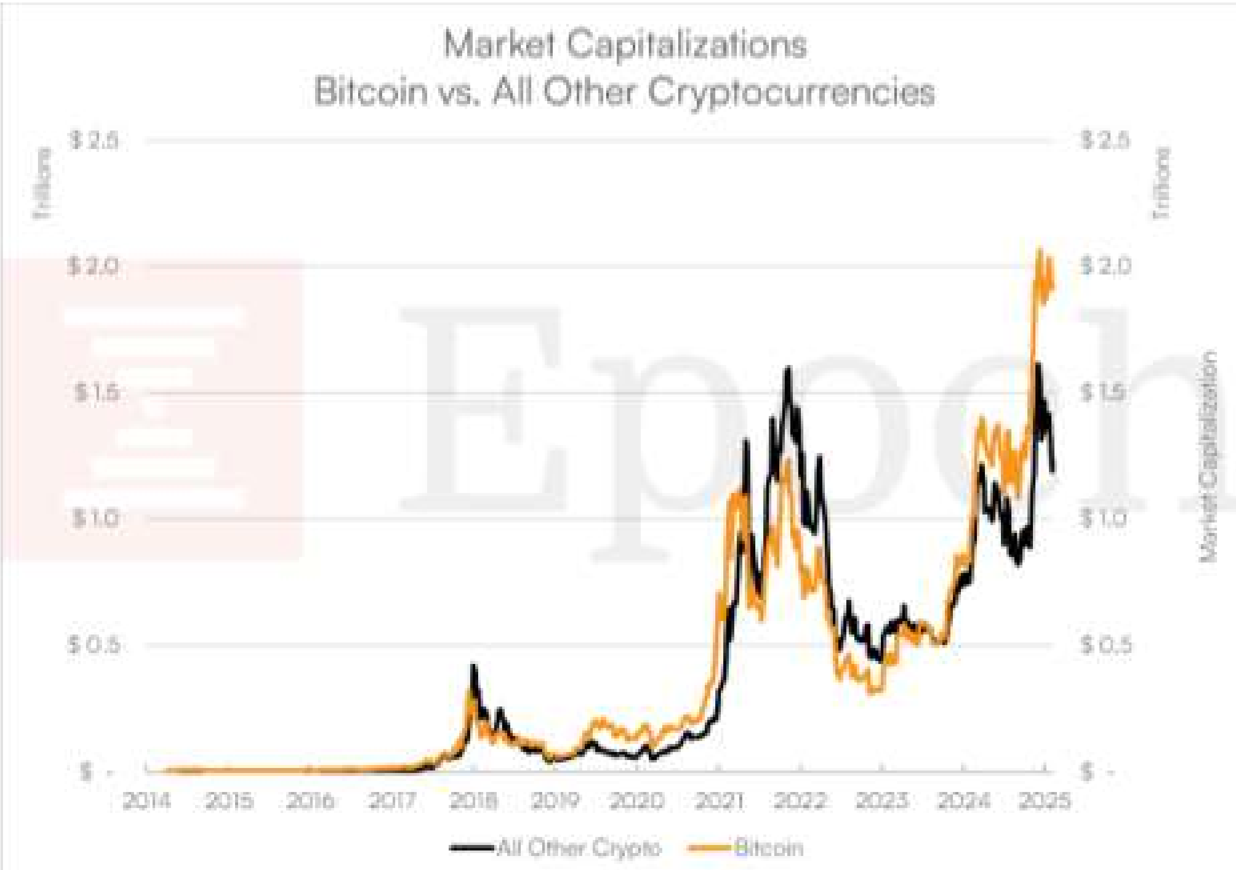
124 Source: https://tvp.fund/whitepapers/bitcoin-venture-capital-research/

the future of Bitcoin regulation in the US

and they may be harder to spot if the good times
se ends from 2024 to ensure we keep our eyes on the ball in the years ahead. Bitcoin-

Strategic Bitcoin Reserve:

It seems increasingly likely that the US Government will



[illegible][135]

What are Bitcoin Companies and Venture Firms

What constitutes a Bitcoin company, or a venture firm, may not be obvious.

Broadly speaking, the general definition is any Bitcoin company is one whose primary focus increases the adoption or utility of Bitcoin. In addition to providing returns to investors, many venture firms see themselves as mission-aligned with Bitcoin — committed to increasing its utility and advancing freedom being not just an important side effect but critical to motivating and attracting the right founders.

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[135] Source: https://cryptocap.com/

in 2025. If the appeal goes against Custodia, we should advocate for a more level playing FDIC structure that may be underway in the Trump Administration- The End of OCP 2.0 (and Transparency on what happened) cases, and assets by leveraging non monetary capabilities or secondary layers secured by Bitcoin on the other. Beyond this, the definition becomes more controversial as some companies and firms exclusively focus on Bitcoin the asset and some Bitcoin as more of a platform. For the purpose of this report, both are included in the widest definition, with differences between Asset and Platform provided where we found meaningful deviations. However, data in this report is limited to companies that primarily invest in Bitcoin companies — so data does not include other funds that may also invest in Bitcoin companies if it is not a focus.

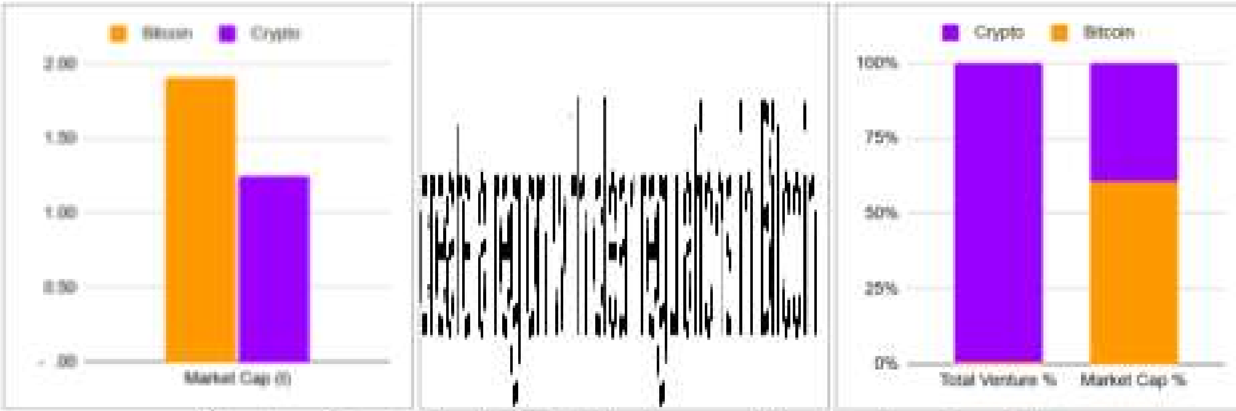
We interviewed a number of venture funds, and found the main difference lies in the use of Bitcoin technology- [redacted]
stablecoins like USDT coming to Bitcoin and its layers. However, Bitcoin layers built with a native token, or with a focus on tokenizing other assets, was met with much higher skepticism. Despite some perceptions, most firms are not entirely opposed to Bitcoin-based tokens, but some indicated that companies issuing native tokens would be less likely to receive investment due to the additional regulatory challenges and incentive misalignments — unless they could prove it was absolutely necessary. Some firms are open to the potential future tokens but indicated that the overwhelming majority of projects with tokens today did not meet that bar. Others were much more laissez-faire and open to tokens or other artifacts as long as they generally increased Bitcoin awareness and usage.

Bitcoin vs Crypto Venture

Bitcoin and crypto companies differ fundamentally in their access to capital. While Bitcoin companies operate mostly without tokens, crypto companies can raise capital through Initial Coin Offerings (ICOs) and Token Generation Events (TGEs), similar to public equity markets. This distinction affects company operations, and timeline liquidity for venture investors.

Bitcoin is a decentralized project where coins must be mined, earned or bought instead of
[redacted]
Financial Times. (2024, June 17). Stablecoin issuers rank as 18th largest holders of US debt

crypto companies.



Bitcoin vs Crypto Market Capitalizations and Venture Investments

industry combined. As of publication, Bitcoin commands $1.9 trillion in market value while all 126 crypto-assets account for $1.25 trillion. Funding figures since 2019, show the total amount of venture funding invested across crypto companies reaches a staggering $75.4 billion, while Bitcoin tops $546.3 million. The final chart shows the disparity even clearer: despite Bitcoin commanding 1.5 times the market capitalization of the crypto industry, it has only received 0.6% of total venture investments. The ratio of market capitalization to investment for Bitcoin is 4,150 times compared to crypto's 17 times. This data reveals a staggering misallocation of venture capital and represents an important opportunity for firms focused on Bitcoin investments.

Bitcoin Venture Capital

A1z and Galaxy Q4 2024 report. Galaxy report does not include any Bitcoin venture firms referenced in this report

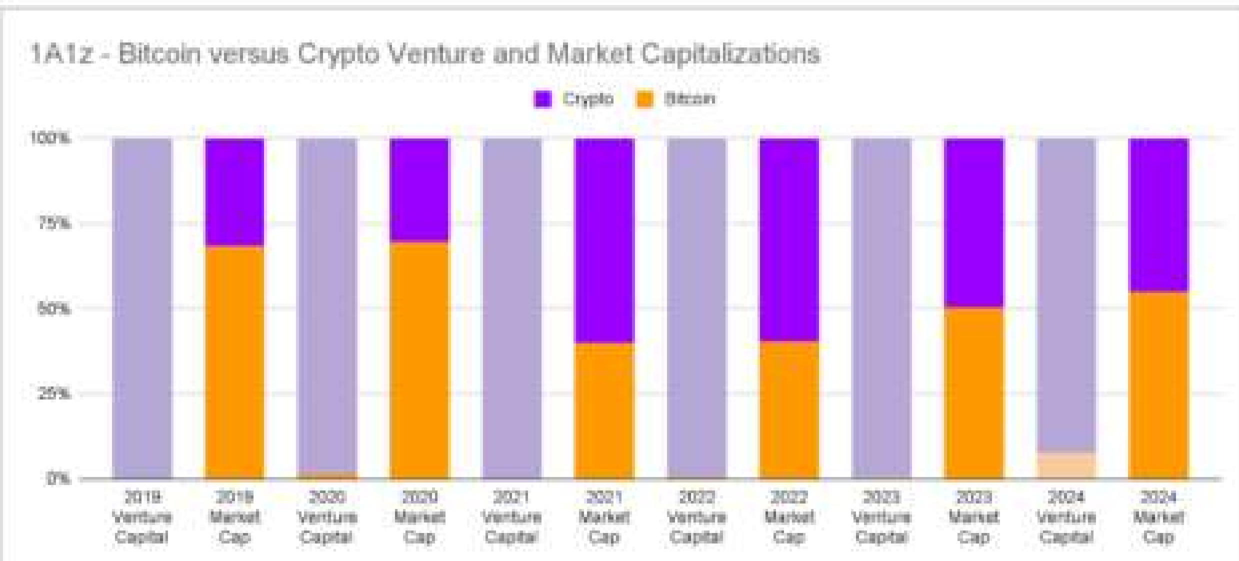
[137] 1A1z sourced through SEC Form D filings, firm websites, firm investor presentations and interviews

[138] Bitcoin venture fundraising numbers inclusive of SPVs

Key provisions of MiCA include

the uncertain US [139]

Breaking out capital raised by year shows a similar story but shows a clear downtrend in crypto venture capital raised since peaking in 2022, and, conversely, a material increase in capital available for Bitcoin companies since the prior peak of $118m in 2022 to $417.5m in 2024, in large part driven by Fulgur Venture and others' geography and Sygnum. While the relative trends are clear, given that the y-axis for crypto is 100 times larger than Bitcoin, these scales overstate how much capital rebalancing is taking place between Bitcoin and crypto.



The chart above puts the scale of these trends in perspective. It compares the relative dollar

[redacted]

[139] in Europe and globally.

relative market capitalizations of crypto and Bitcoin for each year over the past six years. Despite Bitcoin's market capitalization dominance being between 40% and 70% over the last 5 years, Bitcoin's share of venture capital funding for each year was less than 1%. That's until 2024, when it spiked to 7.5%. This indicates that while there's growth in the amount invested in Bitcoin companies, there is still huge potential for further investment.

Another key development impacting overall capital allocation to this broad sector of Bitcoin and crypto is the approval of the spot Bitcoin exchange-traded products in the US public markets in January 2024. These new instruments attracted inflows of $32.2 billion in 2024, which is near to the $37.7 billion raised by crypto venture firms at the 2022 peak. We assume allocator flows that would otherwise have gone into crypto venture capital instead of exposure in more traditional liquid vehicles.

The disparity also lies in the number of venture firms with Bitcoin or crypto mandates. In 2024, there were 15 active Bitcoin-focused venture firms in total, compared to 79 newly launched crypto venture firms. The most Bitcoin venture firms created in a single year was three in 2021, whereas 250 new crypto venture firms launched the following year. In 2024, at the single-fund level, the largest crypto fund raised topped $850 million. It was led by Paradigm, with ten crypto funds in total having raised over $100 million each. Meanwhile, the largest funds raised in Bitcoin reached $125 million by Ten31 in 2022, and $70 million (committed of $100 million) by Ego Death Capital in 2024/25.

Why Invest in Venture Instead of Bitcoin?

The most common question asked by prospective investors is: Why invest in a fund instead of just buying Bitcoin?

Although the empirical data is not conclusive, since venture funds typically follow a J-curve where returns are harvested in later years and therefore most funds are too recent for the performance data to be meaningful. With that said, it is a common — always Name Account numbquestion, so we provided a summary of responses.

A common theme was that allocations to Bitcoin itself are not mutually exclusive with exposure to Bitcoin venture funds or Bitcoin public equities. In fact, some firms recommend that investors start with a core Bitcoin position first before considering venture capital as they want to ensure alignment.

For those who are already Bitcoin investors, firms spoke to the upside potential of companies bringing utility to Bitcoin in some cases akin to leveraged positions in Bitcoin such that as Bitcoin succeeds, companies building around Bitcoin are best placed to reap the benefits. Some of these an

Epoch

Custody Wallet Transactions:
Collect and retain sender and recipient information
Additional verification for transactions over €1,000**Global impact:**
MiCA has triggered regulatory efforts in over a dozen countries in 2024, including the UAE,

Saudi Arabia, Qatar, Hong Kong, Singapore, Japan, India, Thailand, Australia, Argentina, Brazil

and Uruguay. This global momentum may pressure the US to pass simil
ar legislation especially
along the lines of FIT21.
Potential challenges:

The implementation has caused significant disruption, particularly for stablecoin issuers. Major crypto exchanges like Kraken, Coinbase, and Crypto com have delisted non compliant stablecoins (notably Tether's USDT) from European platforms, signaling the r egulation's significant market impact. Market analysts have long predicted Tether's demise, and with this latest bout of regulatory clampdown, commentators are using it as evidence that the "ticking

time bomb" will trigger an imminent market collapse.
two corporate finance underpinnings which can be classified as the following:

- Independent of Bitcoin, all corporate valuations are based on multiples of different financial metrics which in turn represent the present value of all the future value accruing to the business that someone is willing to pay for today. In this context, a successful Bitcoin business embeds all the future value yet to accrue to it that someone will pay a multiple for. If that business is tied to the growing asset and based on a sound monetary system that is Bitcoin, that multiple at any given time T will in theory make the https://x.com/JacobKinge/status/1872420454440546776
- statement (e.g. EBITDA). By building their balance sheet on a more solid monetary base, Bitcoin companies will eventually be able to drive value through both their inco**Daily $200 million Euro transaction limit:**
  While Tether is predominantly used in

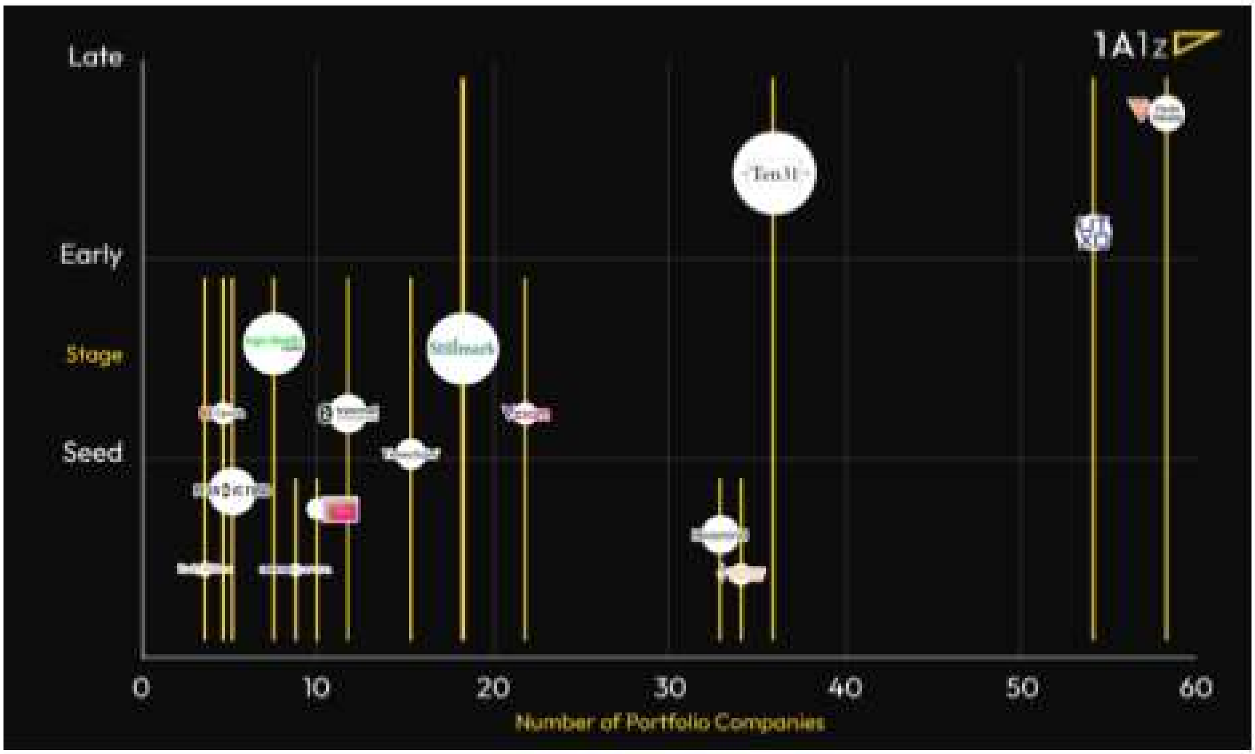
the US, in the European Union, stablecoins are gaining market share in payments. This provision limits users' ability to fully use cryptocurrencies. More importantly, for Tether it would be costly and operationally intensive to implement effective monitoring and enforcement mechanisms in line with this provision. Individu

compliance into a Sisyphean

effort. 2.*Reserve requirements*

MiCA requires stablecoin issuers to hold 60% of reserves in EU institutions, likely triggering specific controls over the composition of reserve-assets. While reasonable at face value, these restrictions impose significant cotand operational burdens on stablecoin issuers. We view these as a form of capital control.

Redeemability



tokens for fiat. Tether currently supports redemptions of $100,000 or more

suggesting they do not have the operational infrastructure to support users

- redeemability option. Bitcoin Opportunity Fund blends both investments in publicly traded Bitcoin equities, Bitcoin itself along with associated derivatives, with direct investments in typically later stage private companies.

- **Fund of Funds:** Cantilever's first fund primarily invested in multiple Bitcoin venture funds, combining exposure across multiple different fund managers and portfolios, with the intention of making 2-3 direct co-investments as well
- **Equity Crowdfunding:** immensely. There is still much work to be done, and many threats to be wary of, but it is likely that 2025 will mark the first time in history that founders will truly be able to work with
- regulators and Cow Labs incubate, fund and spin out standalone Bitcoin product companies.
- **Accelerators:** Wolf, created by the founder of NYDIG and Stoneridge, and BitcoinFi backed by Draper Associates, Boost and Thesis, provide structured programs for

Regulatory Shift and Legal Victories:

- In 2024, major legal issues surrounding Bitcoin and cryptocurrency custody saw

federal and state levels and signaling a shift towards

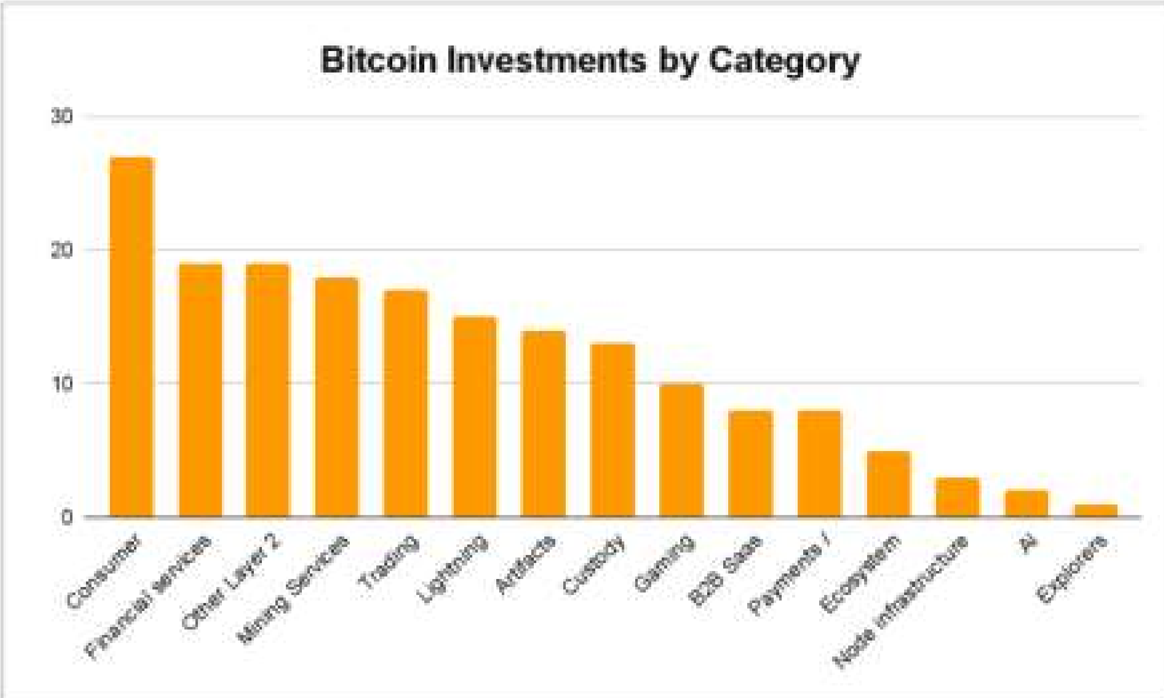
proactive legal engagement. **Curtailing Regulatory Overreach:** The industry's fight against regulatory overreach focused investors. Our intention is to provide an overview of Bitcoin-focused firms for founders and investors who are also focused on Bitcoin, but that does not mean other firms or funds should not be considered.

Not covered in this report are general crypto funds who also occasionally invest in Bitcoin companies such as Castle Island Ventures, Paradigm, HashKey and Greenfield.xyz. While these firms may or may not be as mission aligned with Bitcoin founders and those listed above, that does not mean they cannot add value to entrepreneurs and should also be considered in fundraising activities.

Additionally, traditional software venture capital firms are also starting to invest in Bitcoin companies and bring a wealth of experience, scale, and networks that may not be accessible to Bitcoin-overall increase in pro crypto lawmakers. **Shifting Perceptions and Potential Backlash:** While the crypto industry successfully create political headwinds, despite bipartisan support and a relatively small share of total campaign spending. **Trump Administration's Crypto**

Friendly Future:

With Trump's return, key financial-appointments like Treasury Secretary Scott Bessent signal a friendlier regulatory- paving the way for Bitcoin's deeper integration into th



Consumer, which includes rewards, social and crowdfunding, was the largest category by number of invested in companies, with Financial Services, including collateralized lending, insurance and banking, and non-Lightning Layer 2s the two next largest. Mining services and Trading follow, with Lightning companies perhaps surprisingly low as the 6th largest category.

However, breaking out each category by pure Bitcoin the asset companies versus general platform investments shows all of Artifacts and significant portions of Other Layer 2s and Gaming are driven by use cases other than directly supporting Bitcoin itself. Overall, 70% of the portfolio companies invested in by the Bitcoin-focused firms build on Bitcoin as a monetary asset or store of value. We highlight this as there is disagreement over what constitutes a Bitcoin company, for example with the Artifact category being ordinals, inscriptions, runes etc., and Layer 2s that claim to be built on Bitcoin but have their own blockchain and token, some of these more Bitcoin adjacent use cases are debatable.

Portfolio Uniqueness and Co2investments

Analysing the 183 Bitcoin companies with public investments from the 15 Bitcoin- 1A1z

Bitcoin Venture Investment -

Bitcoin Portfolio Crossover Analysis

1A1z	Axiom	Early Riders	Ego Death	Epoch	Fulgur	Hivemind	Initial	Lightning Ventures	New Layer	Plan B	Stillmark	Ten31	Timechain	Trammel	UTXO	# of PortCos	Unique
Fulgur	12%	0%	8%	0%		15%	10%	22%	2%	3%	10%	7%	8%	7%	3%	58	51%
UTXO	4%	0%	0%	2%	4%	2%	0%	6%	2%	0%	2%	6%	2%	4%		54	83%
Ten31	8%	0%	3%	3%	11%	19%	0%	17%	0%	3%	17%		11%	11%	8%	36	44%
Lightning Ventures	15%	3%	9%	3%	35%	32%	9%		3%	9%	12%	18%	12%	6%	9%	34	21%
Hivemind	15%	3%	12%	0%	24%		6%	33%	0%	3%	15%	21%	12%	15%	3%	33	30%
Axiom		0%	10%	15%	35%	25%	15%	25%	0%	5%	20%	35%	25%	10%	10%	21	20%
Stillmark	21%	0%	5%	0%	32%	26%	11%	21%	5%	5%		26%	11%	11%	5%	19	25%
Timechain	36%	0%	50%	7%	36%	36%	7%	29%	0%	29%	14%	29%		29%	7%	15	21%
Trammel	18%	0%	18%	0%	36%	45%	9%	18%	0%	0%	18%	36%	36%		18%	11	0%
New Layer	0%	0%	0%	0%	10%	0%	0%	10%		0%	10%	0%	0%	0%	10%	10	70%
Initial	33%	11%	11%	0%	67%	22%		33%	0%	11%	22%	0%	11%	11%	0%	9	0%
Ego Death	25%	0%		0%	50%	50%	13%	38%	0%	38%	13%	13%	88%	25%	0%	8	13%
Plan B	25%	0%	50%	25%	25%	25%	25%	50%	0%		25%	25%	75%	0%	0%	5	25%
Epoch	60%	0%	0%		0%	0%	0%	20%	0%	20%	0%	20%	20%	0%	20%	5	20%
Early Riders	0%		0%	0%	0%	25%	25%	25%	0%	0%	0%	0%	0%	0%	0%	4	50%

Of the portfolio companies of the venture firms (left), what % are also invested in by other venture firms (top) 1a1z.com

1A1z human rights

- .-Co — Authors:
- Axis [redacted]
- Of the firms on the left, what percentage of their portfolio companies also received investment from firms on the top

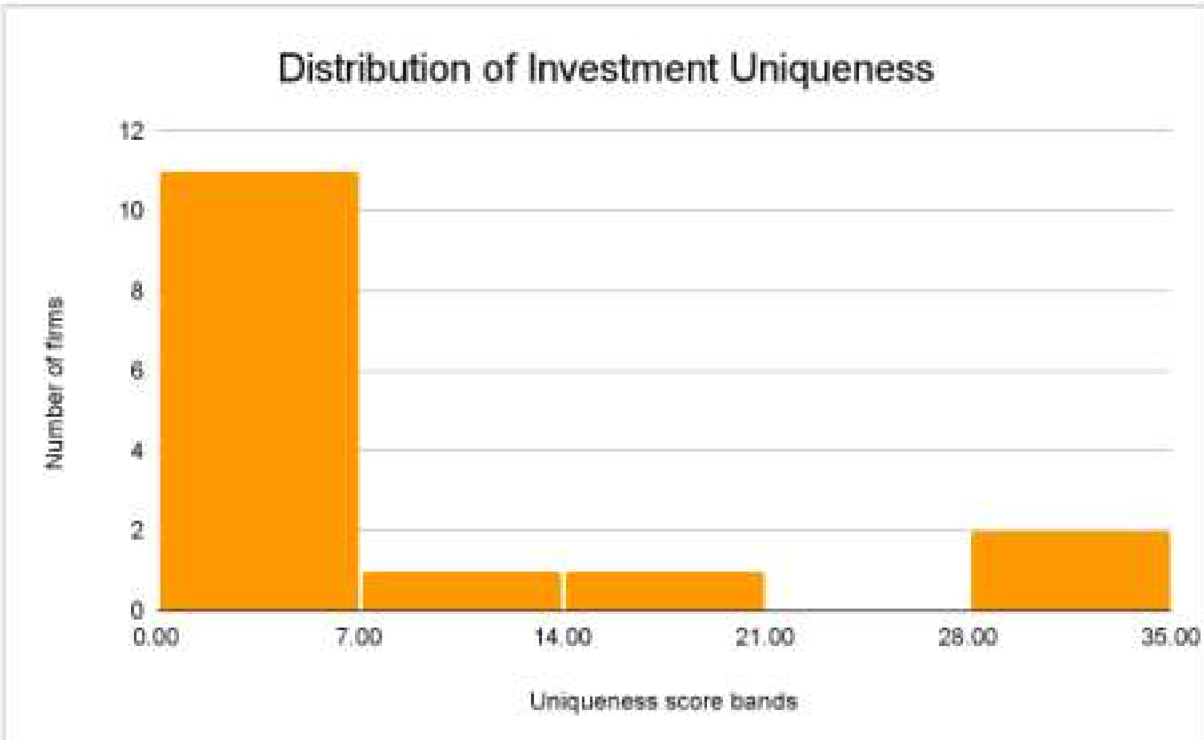
- www.lalz.com

  receive investment from any of the other 14 firms

The highest overlap between venture firms is between Ego Death Capital and Timechain, who invested in 7 out of 8 of the companies in Ego Death's portfolio. In terms of unique investments, notable outliers here are UTXO with 83% unique investments as they have a broader mandate

Introduction The Bitcoin venture investment section covers 15 firms that focus on funding Bitcoin companies, presenting an overview of the landscape, activity and

investment trends. Our supporting data is from primary and secondary research, as well as direct anonymized interviews with partners from most of the largest Bitcoin



venture firms.

Even though Bitcoin's market capitalization is larger than that of the entirety of crypto combined, venture investments and dollars invested are comparatively a tiny fraction, as illustrated byTrammel Venture Partners for 2023:

The Emerging Bitcoin

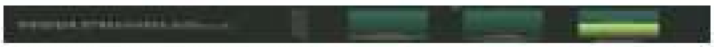
Native Venture Capital Landscape

Here you can see that the majority of firms have relatively low uniqueness, indicating that most firms invest in the same companies. Only a couple of firms demonstrate significantly high uniqueness, and those that do tend to have differentiated mandates, for example investing in Artifact companies or non-lightning "layer 2s" that have their own token.

To summarize, 67 out 183 portfolio companies, or 36.6%, have more than 1 investor from this group. This general overlap of investing is to be expected with multiple firms all seeking to invest in the best founders in a still limited number of Bitcoin companies. Since only a few firms lead rounds, many of the smaller firms participate in those rounds, creating overlap between them.

Venture Trends

This is actually a very interesting time to be in Bitcoin venture capital. From our numerous https://tvp.fund/whitepapers/bitcoin-venture capital research/

- 
    - Bitcoin is increasingly gaining mindshare amongst the allocators as differentiated from crypto and this is manifesting itself currently in the spot markets and starting epochvc.io As the market continues to mature, evolving from "crypto" and "digital assets" to looking to hire investors with Bitcoin expertise as well. differentiating Bitcoin and Crypto , many investors and capital allocators want exposure to companies. Within a sea of generalized crypto funds, several venture firms are filling this void,
    - Source: CryptoCap where LPs are starting to ask about Bitcoin company exposure specifically.
    - As previously mentioned, there is tremendous under allocation to Bitcoin venture capital as measured by the Bitcoin market capitalization to Bitcoin venture capital raised ratio of 4,150X. This is in comparison to the equivalent ratio for crypto of 17X. This misallocation is starting to correct as investors start understanding the sheer difference in TAM of a fundamentally new monetary system versus what are mostly interesting computer science experiments.

- Bitcoin Treasury Plays
    - The financialization of Bitcoin continues unabated.
    - With the success of MSTR, more corporates, be they public or private companies, are increasingly looking into how to generate enterprise value through the https://cryptocap.com/
    - -backed private Bitcoin companies do currently implement a Bitcoin and scale of funding.
    - We expect this trend to continue across the board and have been hearing of potential de-SPAC transactions where a key pillar is a Bitcoin treasury play.
    - At the fund level, we have seen 3 approaches to the Bitcoin standard:
        - The venture fund can directly purchase Bitcoin on an opportunistic basis
        - A hybrid fund can purchase Bitcoin as part of its liquid investment sleeve

. Retrieved January 2, 2025, from

- An investment group, has a liquid fund in its overall complex, that invests in liquid assets like Bitcoin and pubcos

- Infusing Bitcoin
  - Another emerging theme is that of infusing Bitcoin into an operational, traditional businesses that are revenue / EBITDA positive
  - Ideally this is not just a pure balance sheet play and Bitcoin fundamentally enhances the core revenue-generating end of the business as well
  - "Bitcoin private equity" is a term that a few investors have used to describe this play of a control investment in a traditional business and transforming it through Bitcoin
  - invest in Bitcoin companies if it is not a focus.–We interviewed a number of venture funds, and found the main difference lies in the use of Bitcoin technology

-
  - based tokens and Bitcoin as the sole asset. In general, most firms support
  - stablecoins like USDT coming to Bitcoin and its layers. However, Bitcoin layers built with a native token, or with a focus on tokenizing other assets, was met with much higher skepticism. Despite
  - some perceptions, most firms are not entirely opposed to Bitcoin based tokens, but some

- [illegible] the additional regulatory challenges and incentive misalignments [illegible]
  - the overwhel [illegible]
  - much more laissez faire and open to tokens or other artifacts as long as they generally increased Bitcoin awareness and usage.

- Bitcoin vs Crypto Venture
  - Bitcoin and crypto companies differ fundamentally in their access to capital. While Bitcoin companies operate mostly without tokens, crypto companies can raise capital through Initial
  - Bitcoin L1 contracting primitives like Discreet Log Contracting primitives are picking up traction to implement borrow/lending protocols, and financial instruments like covered calls directly on Bitcoin L1
  - Coin Offerings (ICOs) and Token Generation Events (TGEs), similar to pub lic equity markets. This
  - BitVM is enabling more trust-minimized bridging to the Bitcoin L2s, reducing bridge risk, which caused billions to be lost in the broader crypto ecosystem last cycle
  - [illegible] merely minted, allocated and sold. This rapid access to short term liquidity at the expense of retail investors, combined with misplaced hype, misleading narratives a
  - nd the misguided [illegible] crypto companies explosion of new functionality and applications which

epochvc.io

Bitcoin vs Crypto Market Capitalizations and Venture Investments
Cross, Sam Callahan, Rob Hamilton, Matt Dines, Julian Fahrer, Satoshi Nakamoto, the team at 1A1z: Dan O'Prey and Mas Nakachi, Bitcoin Layers, and Build Asset Management

Authors

- Eric Yakes, @ericyakes Source:
- VJ Vesnaver, @victoreejones, and
- Adam Stryer, @sultanofchart, Galaxy report does not include any Bitcoin venture firms referenced in
- this report https://x.com/clarkmoody
- Danny Knowles

See you next year

Disclaimer

Breaking out capital raised by year shows a similar story but shows a clear downtrend in crypto venture capital raised since peaking in 2022, and, conversely, a material increase in capitalavailable for Bitcoin companies since the prior peak of $78m in 2 022 to $417.5m in 2024, in large part driven by Fulgur Venture and others' pursuant to exemptions from such registration and are subject to significant restrictions.

The information in this document is believed by Epoch Management Company, LLC ("Epoch") to

. While the relative trends are clear, given that the yaxis for crypto is 100 times larger than Bitcoin, these scales overstate how much capital rebalancing is taking place between Bitcoin and crypto.

The chart above puts the scale of these trends in perspective. It compares the relative dollaramounts of venture capital available to crypto and Bitcoin companies, while comparing the

that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes c

information or make any representations not contained herein.

Investment in the Bitcoin Venture Fund I ("the Fund") involves significant risks of loss of Bitcoin's market capitalization dominance being between 40% and 70% over the last 5 years, than 1%. That's until 2024, when it spiked to 7.5%. This indicates that while there's growth in the amount invested in Bitcoin s offering materials and consult with the appropriate financial, tax or legal adviser before investing in the Fund. The risks disclosed in this document do not include all of the risks and other significant considerations of an investment in the Fund.

The information provided herein shall not form the primary basis of any investment decision. Each investor should independently confirm such information and obtain any other information deemed relevant to an investment decision. A decision to invest in the Fund should be made after reviewing the Fund's offering materials, conducting such investigations as the investor deems necessary and consulting the investor's own advisers. Investors should not treat this document as advice in relation to legal, taxation or investment matters. Additional information may be available from Epoch upon request. This document is provided for informational purposes only.