# The Case for Bitcoin in an Institutional Portfolio







Zeltner<sub>&</sub>Co











.report



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# **Key Takeaways**

- **Bitcoin increased 150.87% in price in 2023** compared to 15.95% for the Vanguard Total World Stock Index Fund ETF, and -0.06% for the Vanguard Total Bond Market ETF (BND), and 8.97% for gold.
- Bitcoin's annualized return has been 50% per year since 2014, with a total return of 5,751.74%, according to Bloomberg Terminal.
- Allocating 5% to Bitcoin in a traditional 60/40 global stock and bond portfolio between January 2014
  and November 2023 with quarterly rebalancing would have increased the portfolio's cumulative
  return to 157%, which is over twice the total return achieved by the traditional portfolio (71%).
- However, not all investors had the foresight or ability to invest in January of 2014; therefore, the
  Cointelegraph Research team constructed a backtest that does not rely on arbitrary start and end
  dates. Instead, a rolling analysis was done on over 35,000 unique portfolios with one-, two-, and
  three-year holding periods. The rolling analysis also shows a doubling in the total return. A 5%
  allocation to Bitcoin in a 60/40 global stock and bond portfolio returns 46.26% on average
  compared to 22.26% for traditional portfolios without Bitcoin.
- These phenomenal returns did not come at the cost of significantly higher risk or higher drawdowns
  due to Bitcoin's low correlation with traditional assets. Traditional stock and bond portfolios held for 1
  to 3-year time horizons between 2014 and 2023 had an average Sharp Ratio of 0.63 and an average
  drawdown of 16.74%. Adding a 5% allocation to Bitcoin with quarterly rebalancing increased the Sharpe
  Ratio to 1.15 and the maximum drawdown to 18.30%, meaning that the portfolio's risk-adjusted
  return increased by 82.5%.
- Based on historical returns and mean-variance optimization of over 6000 sample historical portfolios of Bitcoin with stocks and bonds, the optimal amount of Bitcoin to add to the portfolio ranges from 3% to 5%.
- The 2024 US presidential candidates Vivek Ramaswamy, a Republican, and Robert F. Kennedy Jr., an Independent, have both declared their intention to back the US dollar with Bitcoin.

- Major financial players like ArkInvest, BlackRock, Fidelity, Invesco/Galaxy, VanEck, and WisdomTree
  have filed for Bitcoin spot ETFs. Bloomberg analysts now put the likelihood of approval in 2023 at 75%
  and 95% by the end of 2024. The Spot Bitcoin ETF approval will bring \$14.4 billion of liquidity in the
  1st year and a BTC/USD price increase of 75%. This is assuming an adoption rate of 1% portfolio
  allocation across 10% of addressable assets under management.
- The percentage of exchange supply is at a 5-year low, and the percentage of supply last active
  for 1+ years is at an all-time high. Combining these on-chain figures with the pivot from hawkish to
  dovish central bank commentary and growing global awareness of Bitcoin, the next bull run may be
  larger than expected.
- On-chain analysis and practitioner experience from entrepreneurs in the payments industry present
  evidence that Bitcoin is being used less as electronic cash and more as digital gold. Bitcoin's share of
  regional cryptocurrency transaction volume ranges from 9.3% in Sub-Saharan Africa to 4.2% in
  Eastern Asia, indicating that other digital assets, primarily stablecoins, are fulfilling the medium of
  exchange role while Bitcoin is fulfilling the store of value role. Bitcoin transaction fees are currently
  around \$14.23, presenting economic obstacles to adoption as money.
- The top 10 largest identified Bitcoin holders worldwide include the dormant Satoshi Nakamoto
  wallets with approximately 1.1 million BTC, Coinbase with 958,225 BTC, Grayscale Bitcoin Trust
  with 643,572 BTC, Binance with 584,373 BTC, Bitfinex with 212,423 BTC, the Chinese government with
  194,000 BTC, MicroStrategy with 189,150 BTC, Block.one with 140,000 BTC, OKX with 133,263 BTC, and
  the US government with 69,640 BTC.
- The top 5 largest privately-owned and Bitcoin-focused unicorn companies worth over \$1 billion include Bitmain (\$40B), Kraken (\$10.8B), Chainalysis (\$8.6B), Blockchain (\$7B), and Blockstream (\$3.2B).
- Bitcoin's price forecast is \$143k in this cycle based on the Total Addressable Market model. In contrast, the Halving Cycle Model shows that Bitcoin could surpass \$200k in 2025.



# **Foreword**

Nothing happens in a vacuum, and Bitcoin is no exception. During the 2008 Great Recession, which saw several financial institutions and banks get large government bailouts, a solution emerged. This solution was influenced by decades of progress in information technology (IT) and computing, along with inspirations from the cypherpunk movement. There had been previous attempts at a working tradable electronic cash for the new Information Age. David Chaum tried DigiCash in 1989. E-Gold was Douglas Jackson's attempt in 1996. In 1997, Adam Back experimented with HashCash. 1998 saw both Bitgold by Nick Szabo and b-money by Wei Dai. However, all of these fell short in one way or another, often missing vital parts necessary for a working model. However, advances in cryptography, peer-to-peer trading, decentralized ledgers, and blockchain technologies were synthesized into a new invention, using many of these past attempts as case studies to build upon. On October 31, 2008, a mysterious individual or group of individuals known as Satoshi Nakamoto released the Bitcoin Whitepaper. This outlined "a peer-to-peer electronic cash system" and marks the beginning of the "blockchain revolution" (Tapscott and Tapscott, 2016). After some buzz within the cypherpunk communities online, Satoshi launched the Genesis Block on January 3rd, 2009.

Bitcoin was created as a hard money system that could be used as a medium of exchange amongst voluntary participants. It has a hard cap limit of 21 million, with an issuance rate that halves about every four years. This issuance comes from mining, but not like that of gold. Instead, it is computational mining. Through this computation process, there is a proof-of-work consensus mechanism being practiced by the voluntary participants. The record of all these transactions on the network is stored in a decentralized manner across the entire world, so the record cannot be falsified and is visible to anyone who wants to view the ledger. It is also pseudonymous – meaning that your identity does not have to be known to utilize the protocol, meaning it is entirely permissionless. There is no gatekeeper keeping someone from participating in the network. Asymmetric cryptography allows Bitcoin holders to keep absolute control over their assets, as long as they alone hold their private keys (generally a 12 or 24-word phrase only the Bitcoin holder is aware of). With this, Satoshi Nakamoto gave the world the first ingredient to begin to take back their self-sovereignty. "Fix the money, fix the world."



# Michael Tabone, Ph.D.

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As the world stands on the cusp of a financial renaissance, we are proud to present the 15th Edition of the Crypto Research Report. Published since 2017, this comprehensive report delves into the remarkable evolution of Bitcoin from its nascent beginnings to a formidable contender for the world's reserve asset. With meticulous research and expert analysis, this report unpacks the complexities of Bitcoin's market performance, institutional adoption, and the challenges and opportunities ahead.

There is a financial civil war brewing. On one side are the Elizabeth Warrens and Gary Genslers of the world, who want governments to control the economy top-down. On the other side are Bitcoin users and entrepreneurs who want freedom to save and build. Bitcoin is bringing back to life the original ideals of "Western Civilization," including property rights, meritocratic societies based on sound money principles, and equality under the law. No matter how powerful or poor you are, the Bitcoin protocol offers each of us the same opportunity to store value in a scarce, non-confiscatable and digital asset. As U.S. presidential candidate Vivek Ramaswamy said, "the promise of Bitcoin is that it's an opt out from the broken financial architecture created by the U.S. Federal Reserve System". In the financial civil war for currency supremacy, Bitcoin will emerge triumphant and establish a new bottom-up economic order controlled by individuals.

With over 150 pages, six chapters, and 94 charts, this report provides a step-by-step guide for institutional investors who want to invest in Bitcoin. We outline the top OTC desks, custodians, insurers, and self-storage practices that have coalesced over the last 14 years of Bitcoin's existence. For investors who do not want to buy Bitcoin directly, we dive into the most popular alternative ways to gain exposure, such as publicly listed Bitcoin mining stocks, venture capital and private equity funds, and passive and active funds. We scrutinize Bitcoin-friendly tax and legal regulations worldwide to build a ranking of the best jurisdictions for Bitcoin users. This report concludes with a price prediction based on the target addressable market analysis and halving cycle theories. This tome is not merely a collection of data and projections; it is a narrative of transformation, innovation, and the relentless march of a digital asset that has captivated the imagination of investors, entrepreneurs, and policymakers alike. Welcome to the conversation. Welcome to the future of finance. Welcome to the Cointelegraph and Crypto Research Bitcoin Report.



# Demelza Hays, Ph.D.

Chief Economist at Cointelegraph and Portfolio Manager at Zeltner&Co.





# 1. Impact of Adding Bitcoin to a Global Stock and Bond Portfolio

The 60/40 portfolio, traditionally composed of equities and bonds, has served investors reliably for decades, as shown in Figure 1. However, the conventional portfolio of stocks and bonds is no longer as efficient as it once was. Diminishing diversification benefits, reduced actual returns, and increasing inflation pose significant hurdles for family offices, endowments, and pension funds. With the evolving financial landscape, there's increasing interest in diversifying this blend to include new asset classes commonly referred to as alternatives.

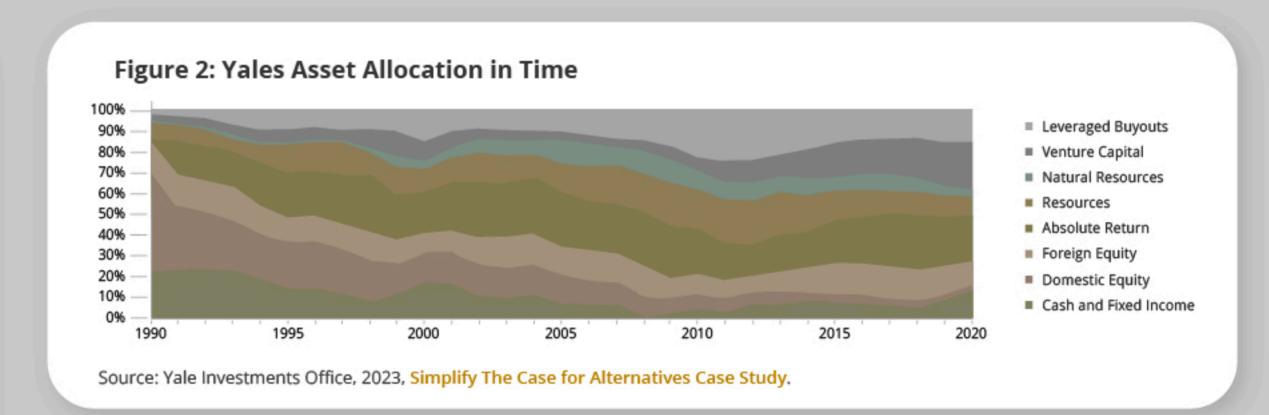
Institutional investors have significantly allocated resources to alternative investments for many years to enhance their returns. A 2023 survey by Fidelity Investments revealed that pension funds allocate 22% to such alternatives, whereas endowments and foundations dedicate 32% of their portfolio to them.<sup>1</sup>

Figure 1: 60/40 Performance Over Long Periods with Traditional Assets

60 / 40 Average Annual Total Return					
10 Year	7.7%				
20 Year	7.5%				
30 Year	8.1%				
40 Year	9.6%				

Source: New York University. 60% S&P 500 Index, 40% 10-year U.S. Treasury Bonds. Simplify The Case for Alternatives Case Study. The results are hypothetical (data ended 12/31/22), do not indicate future results, and do not represent returns that any investor attained. Hypothetical strategies and indices presented are unmanaged and do not reflect management or trading fees. One cannot invest directly in an index

The prestigious Yale University Endowment, a bellwether in the institutional portfolio landscape, has increased its exposure to alternative assets. In the last three decades, their allocation to alternative investments has surged from below 20% to above 77%, as illustrated in Figure 2. This strategic shift has proven beneficial for Yale; over the two decades concluding in June 2022, their portfolio garnered an average yearly return of 11.3%, compared to the 60/40 portfolio's 7.2%.



#### WHAT IS AN ALTERNATIVE INVESTMENT?

An alternative investment is an investment in assets different from traditional investment forms such as stocks, bonds, and cash. Typically, alternative investments include hedge funds, private equity, real estate, commodities, and tangible assets like art and antiques. They can also encompass newer asset categories like cryptocurrencies. Alternative investments are known for their potential to provide diversification benefits to a portfolio because their returns often have a low correlation to traditional asset classes. However, they may also come with higher fees, less liquidity, and a higher investment threshold compared to traditional investments.

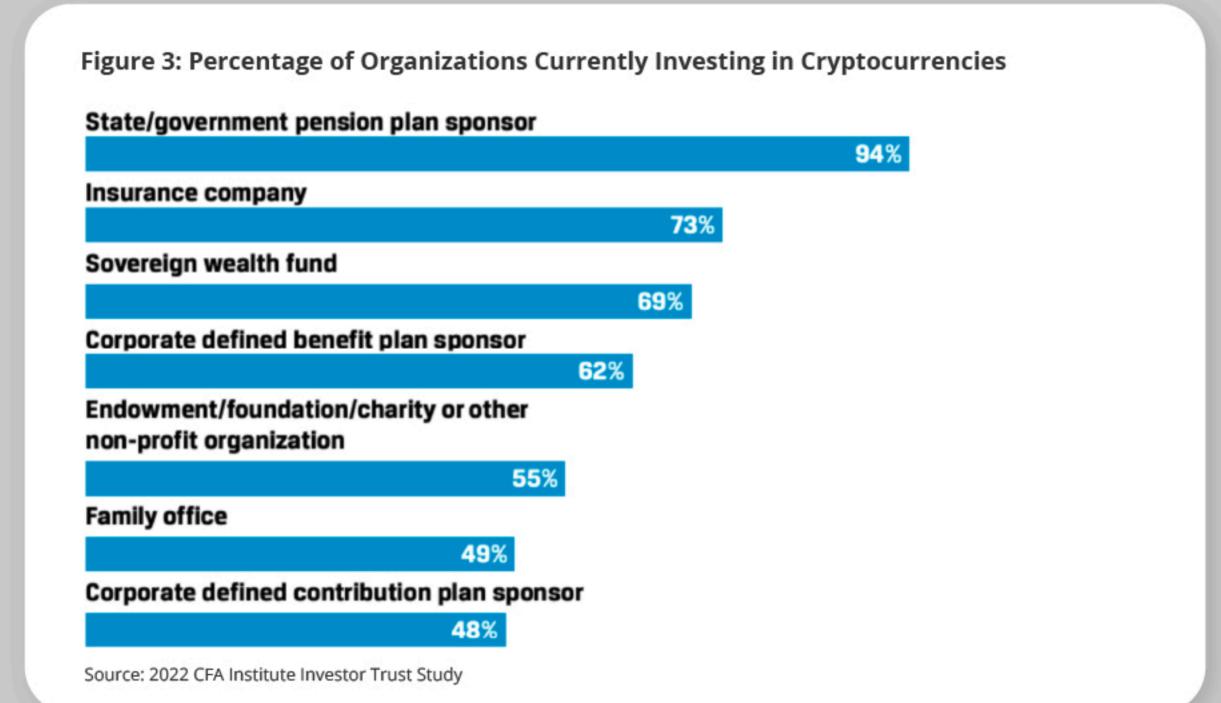


<sup>&</sup>lt;sup>1</sup> Fidelity Investments, "Alternative Investments and Their Roles in Multi-Asset Class Portfolios", 2023

# 1.1 The Role of Bitcoin in Asset Management



One of the most researched alternative assets is Bitcoin, a pioneer in the world of digital currencies. According to the 2022 CFA Institute Investor Trust Study 2, endowments, sovereigns, pension funds, and institutionals are already allocating a portion of their investments to cryptocurrencies like Bitcoin, showcasing a gradual yet significant shift in asset allocation strategies. For the study, Coalition Greenwich surveyed 3,588 retail investors and 976 institutional investors in October and November 2021 from 15 markets across the globe. The survey revealed anastonishing two-thirds of institutional investors have exposure to cryptocurrencies.



This pivot into Bitcoin has yielded phenomenal returns in contrast to other salient investments, such as Nvidia and Tesla, as shown in Figure 4.



Bitcoin is a compelling asset for institutions seeking diversification and inflation protection, and I expect adoption to accelerate in 2024.





**Paul Tudor Jones** 

Founder of TUDOR (October 2023)

<sup>&</sup>lt;sup>2</sup> https://www.cfainstitute.org/-/media/documents/article/Enhancing-Investors-Trust-Report\_2022\_Online.pdf



# 1.1.1 The Lindy Effect

It is conventional wisdom that humans look to staying power to judge if something is reliable in the future. If the ground shifts, builders would be weary to build a house upon it instead of looking for solid footing before the start of construction. In the same way, people look to the longevity of an asset class to judge its potential future stability as well. This has led the modern risk manager to look at things like an S&P 500 Index or government-backed bonds as a means of investing today's capital for "safe" future returns. The Lindy Effect puts into layman's terms what economists describe by way of the Regression Theorem. In short, individuals look to the collective subjective value of something in the recent past and project that value to the current and short-term future times. However, this is often a recency bias which can lead people to invest in what has worked before believing it will always work in the future.

The Lindy Effect is often the barometer for commodities like gold and silver, as they have had thousands of years of documented history as a medium of exchange, stores of value, and industrial use. In the same breadth, Bitcoin has only been around since the **Genesis Block** was launched on January 3rd, 2009. To many, this remains an unproven medium of exchange or store of value as the asset itself lacks longevity in comparison to other asset classes. To some, Bitcoin is a fad that will burn out like the pet rock. To others, there is an asymmetrical risk involved with flagrantly brushing aside Bitcoin instead of taking an educated look at the potential evolution of money.

# 1.1.2 Asymmetrical Risk Asset

In the study of the growth of networks, many scientific theories have emerged. Two that relate to the growth of networks like Bitcoin are Metcalfe's Law and Sarnoff's Law. Both theories state that the value of a network is proportional to the number of users on a network. Sarnoff's law states that there is a direct linear relationship between the number of users (nodes communicating with the entire network). While Metcalfe states there are other factors (externalities) to take into account, and therefore, one has to take the number of users and square it to get exponential growth. In either case, the underlying point is that the growth of a network provides some signal to the potential growth in value, be it directly linked or exponential.

Greg Foss, executive director of strategic initiatives at Validus Power Corp, who has spent over 30 years in high-yield credit trading and analysis, often says that a Bitcoin investment is the most "asymmetric opportunity" of all time. In an interview from the spring of 2023, he said:

"[Bitcoin] is the best asymmetric upside opportunity I have ever seen in my career of managing risk. We know that fiat debasement is 100% certain. How do you protect yourself against that? Well, we could run through the different asset classes that do, but one of the things that really doesn't protect you against that is bonds. It's just about everybody in the world... all pension plans, all high-net-worth individuals, all family offices, everybody owns bonds. Well, that is a fiat contract. It is a contract that will debase alongside the fiat because it's a fiat contract. So my biggest goal having spent my entire life in bonds is to try and convert some of that money into Bitcoin to hedge the downside you're going to have on your bonds with the upside that you have on Bitcoin." 5

What asymmetry means is that the asset, Bitcoin, is the hardest asset in terms of scarcity. Gold's total supply on the earth is unknown, and increased prices could justify greater mining, increasing the amount above ground. Even land can be expanded if the demand is high enough. <sup>6</sup> This cannot happen to Bitcoin. No amount of money, desire, or price increase can create more than 21 million. This means that all the demand has to go into the current asset supply, which has a deflationary admittance schedule. At the time of this writing, the next Bitcoin halving event will occur around April 2024 at block height 840,000, and 96.9% of all the existing BTC will have been mined. With 3.1% left over the next 117 years (the halving cycle greatly diminishes in 2140), owning some of the hardest assets at attainable fiat prices makes sense.

The asymmetrical opportunity is conversely asymmetrical risk. This newfound paradigm shift into the alternative asset of Bitcoin as it grows, according to Metcalfe's law or Sarnoff's law, would mean that having no position in the asset is a risk that outweighs that of holding a position. If a firm allocates 0.5% of its liquid holdings into BTC, and the price goes to zero, it can survive. However, if that 0.5% of its liquid holdings grow to 40% due to the CAGR of BTC, and a firm does not get involved, it risks being substantially behind competitors and other firms in the market.



<sup>3</sup> https://www.nature.com/articles/s41598-022-26961-x

<sup>4</sup> https://cointelegraph.com/explained/what-is-metcalfes-law-and-why-does-it-matter

https://youtu.be/M-v3unR2VtA?si=Pi94e2X13tqDkXpD

<sup>6</sup> https://www.atlasobscura.com/articles/how-to-build-island

A firm investing in Bitcoin can gain a fiat financial increase on its balance sheet if market conditions stay status quo in the next decade or so. However, if those conditions worsen into recessions or depressions, Bitcoin investment may mean the difference between having tradable, valuable assets and having diminished staying power with traditional financial instruments.

However, there are many challenges for investors considering Bitcoin that we touch on in the following chapters, including:

- Volatility of Bitcoin compared to traditional assets.
- Need for specialized infrastructure and custody solutions.
- Regulatory uncertainties.
- · Limited historical data compared to traditional assets.

In this report, we will explore the reasons behind the majority of financial advisers' historical reluctance to allocate to alternative investments. We'll also highlight how many of the significant past barriers to embracing alternatives have been addressed. Subsequently, we'll discuss the anticipated outcomes of incorporating a diverse range of alternatives into a traditionally balanced portfolio.



Instead of investing in gold as a hedge against inflation, a hedge against the onerous problems of any one country, or the devaluation of your currency whatever country you're in – let's be clear, Bitcoin is an international asset, it's not based on any one currency and so it can represent an asset that people can play as an alternative.













Futures Trading / Spot Trading / Copy Trading / Asset Management

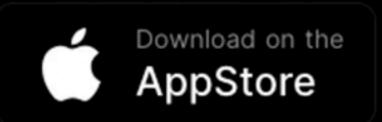
**10M** Global Users **700+** Listed Cryptocurrencies

**User-first** Experience

Bings



# Learn. Trade. Earn









# 1.2 Historical Returns Absolute and Risk-adjusted

In 2023, Bitcoin experienced a phase of recovery. Bitcoin often receives media coverage relating to its price volatility. The value of Bitcoin has indeed fluctuated dramatically since its inception in 2009. Occasional collapses have attracted the allegation that Bitcoin is a Ponzi scheme. On aggregate, however, there has been a solid upward trend, and the asset has recovered from price drawbacks. Bitcoin's annualized return has been 50% per year since 2014, and a total return of 5,751.74%, as reported by Bloomberg. Using data going back to 2010, Bitcoin's annual return rate stands at an impressive 230%, dwarfing the Nasdaq 100 Index, the second-best performer, by tenfold. Comparatively, large U.S. stocks yielded a 14% annual return, high-yield bonds grew by 5.4%, and gold saw returns of 1.5% in the same period.



Including Bitcoin in a traditional investment portfolio can enhance performance in various ways. Here are the main benefits covered in the subsequent sections:

- Improved Performance: Research suggests that small allocations of Bitcoin can have a positive impact on risk-adjusted returns when compared to other assets. 7
- Diversification: Bitcoin is recognized for its low correlation with traditional markets, which can provide superior risk-adjusted returns. 8

 Hedge Against Inflation: Investors might be interested in adding Bitcoin to their portfolios for purposes such as hedging against inflation 9 and global financial uncertainty due to its properties as a scarce, secure, and price-inelastic digital commodity. It also has portability features that allow it to function similarly to money. 10

Each of these points suggests different ways in which including Bitcoin in a traditional investment portfolio can influence its performance. The overall impact on an individual's portfolio could vary depending on multiple factors, including the proportion of Bitcoin, the rest of the portfolio's composition, and the broader economic and market conditions. It's advisable for investors to carefully consider their own risk tolerance and investment goals and perhaps consult with financial advisers before making the decision to include Bitcoin in their portfolio.



<sup>&</sup>lt;sup>7</sup> Butterfill, James. "Bitcoin's role in an investment portfolio." CoinShares, 9 September 2020,

https://coinshares.com/research/Bitcoins-role-in-an-investment-portfolio.

https://www.fidelity.com/learning-center/trading-investing/Bitcoin-investment-considerations.

https://www.galaxy.com/insights/research/Bitcoin-in-a-portfolio-impact-and-opportunity/.







<sup>8 &</sup>quot;Should Bitcoin Be A Part Of Your Portfolio? Backtest, Allocations, And Simulations – Trading Strategies – Quantified Strategies." Quantified Strategies, 2 October 2023, https://www.quantifiedstrategies.com/should-Bitcoin-be-part-of-your-portfolio/.

<sup>9 &</sup>quot;How Bitcoin may impact your portfolio." Fidelity Investments, 23 January 2023,

<sup>10 &</sup>quot;Bitcoin in a Portfolio: The Impact and Opportunity." Galaxy Digital, 2 October 2023,



To understand the statistical impact of adding Bitcoin to a traditional portfolio, Cointelegraph's research department replicated the 2020 Bitwise study, "The Case for Crypto in an Institutional Portfolio," <sup>11</sup> which was later updated in the 2023 Bitwise report, "Bitcoin's Role in a Traditional Portfolio." <sup>12</sup>

Using the most recent data, Cointelegraph's researchers answer three key questions that investors ask when allocating a portion of their portfolio to Bitcoin:

- How much Bitcoin should be added to a portfolio?
- · How long should the position be held before selling?
- How often should the portfolio be rebalanced?

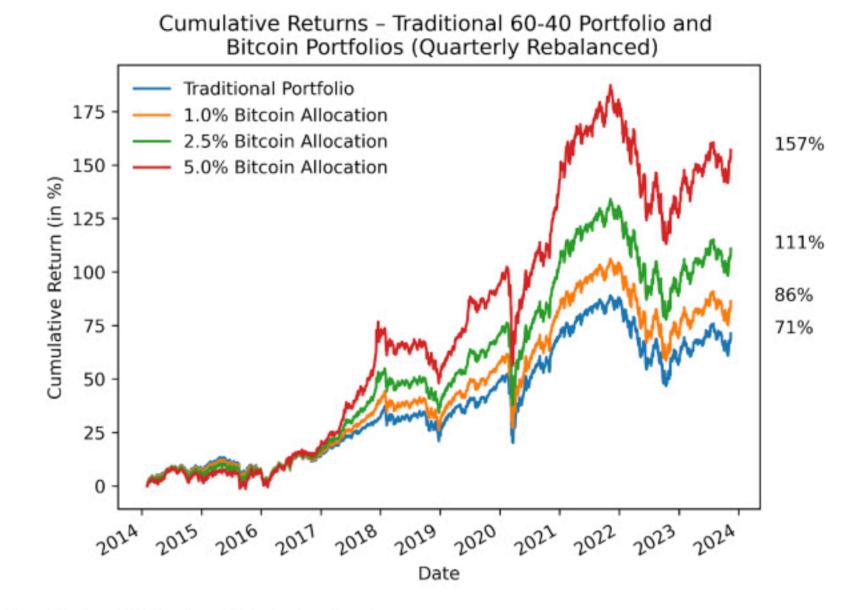
# 1.2.1 Methodology

In the following analysis <sup>13</sup>, we look at the three-year rolling cumulative return for the period between Jan. 1, 2014, and Nov. 13, 2023. <sup>14</sup> We consider rolling analyses advantageous as they address worries about selective time period choices and offer a more comprehensive understanding of how frequently and significantly a Bitcoin allocation affects a portfolio across various market conditions. In rolling analyses, rather than selecting random start and end dates, we establish a specific duration for the holding period (one year, two years, or three years) and examine every possible holding period of that length within our data. The sample portfolios allocate up to 60% to the Vanguard Total World Stock ETF (VT), up to 40% to the Vanguard Total Bond Market ETF (BND), and a range of 0 to 10% in Bitcoin. The analysis used the 3-month treasury rate of 5.45% as the risk-free rate.

# 1.2.2 Optimal Allocation

As Figure 7 shows, a traditional 60-40 portfolio with quarterly rebalancing and no exposure to Bitcoin would have yielded a cumulative return of 71% between 2014 and the end of 2023. This would have increased to up to 157% had the portfolio allocated 5% to Bitcoin. Meaning Bitcoin gave over double the total return achieved by the traditional portfolio.

Figure 7: How Adding Bitcoin to a Traditional Portfolio Would Have Impacted Returns



Source: Cointelegraph Research, CryptoResearch.Report

However, not all investors had the foresight or ability to invest in January 2014; therefore, the Cointelegraph Research team constructed a backtest that does not rely on arbitrary start and end dates. Instead, a rolling analysis was done on over 6,000 unique portfolios with one-, two-, and







<sup>11</sup> https://static.bitwiseinvestments.com/Research/Bitwise-The-Case-For-Crypto-In-An-Institutional-Portfolio.pdf.

<sup>12</sup> https://s3.amazonaws.com/static.bitwiseinvestments.com/Research/Bitcoins-Role-in-a-Traditional-Portfolio-08-2023.pdf,

<sup>&</sup>lt;sup>13</sup> Past performance is no guarantee of future results, and Cointelegraph make no representation that any reader of this report or any other person will or is likely to achieve similar results. The statements contained in this publication are for information only and are not a offer or suggestion to invest in cryptocurrencies.

<sup>&</sup>lt;sup>14</sup> Similar to the Bitwise study, the choice to omit the timeframe prior to 2014 aimed to more accurately reflect the context of professional asset allocators in the U.S., given that the first investable Bitcoin fund was introduced towards the end of 2013. Furthermore, excluding the initial years of Bitcoin's history renders the analysis more cautious. This is because before 2014, Bitcoin experienced a significant price increase, yielding a return of 1,537,795% from July 17, 2010, to December 31, 2013.

three-year holding periods. The rolling analysis also shows a doubling in the total return. A 5% allocation to Bitcoin in a 60/40 global stock and bond portfolio returned 46.26% on average compared to 22.26% for traditional portfolios without Bitcoin.

Figure 8 shows that these phenomenal returns did not come at the cost of significantly higher risk or higher drawdowns due to Bitcoin's low correlation with traditional assets. Traditional stock and bond portfolios held for 1 to 3-year time horizons between 2014 and 2023 had an average Sharp Ratio of 0.63 and an average drawdown of 16.74%. Adding a 5% allocation to Bitcoin with quarterly rebalancing increased the Sharpe Ratio to 1.15 and the maximum drawdown to 18.30%, meaning that the portfolio's risk-adjusted return increased by 82.5%.

Figure 8: Portfolio Performance Metrics

Source: Cointelegraph Research, CryptoResearch.Report

Bitcoin Allocation AVG	Cumulative Return AVG	Sharpe Ratio AVG	Standard Deviation AVG	Max Drawdown
0%	22.26%	0.63	10.54%	16.74%
1%	26.85%	0.77	10.62%	16.88%
2%	31.54%	0.89	10.80%	17.07%
3%	36.35%	0.99	11.08%	17.29%
4%	41.25%	1.08	11.43%	17.64%
5%	46.26%	1.15	11.85%	18.30%
6%	51.38%	1.21	12.32%	19.01%
7%	56.60%	1.25	12.83%	19.73%
8%	61.93%	1.29	13.37%	20.44%
9%	67.37%	1.32	13.94%	21.17%
10%	72.91%	1,35	14.54%	21.89%

To visualize the summary statistics above, Figures 9 through 12 illustrate the effects of allocating between 0% and 10% of a portfolio to Bitcoin over three years. Each dotted line in the charts is like a timeline showing what happens over three years, from Jan. 1, 2014, to Nov. 13, 2023, for each amount of Bitcoin you might add. There are lots of points on these lines - 1,764 to be exact - and each point is like a snapshot of what happened during those three years.

Areas with more points mean more portfolios provided that return versus areas with fewer points. A green line in the chart shows the average result.

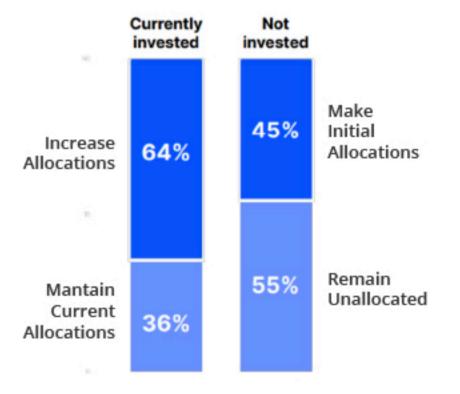
# RESEARCH IN FOCUS

# coinbase Institutional

Institutional Investor 2023 Digital Assets Outlook Survey In November 2023, Coinbase conducted a research survey in collaboration with Institutional Investor to gain a comprehensive understanding of the attitudes and future perspectives of institutional investors regarding digital assets. <sup>15</sup> Using an online questionnaire, the study asked questions to 250 institutional investors from the U.S. including hedge funds, asset managers, and allocators with \$1B+ in AUM and \$50M+ in some cases.

Thinking about the next three years, do you anticipate the percentage of your assets invested in cryptocurrency to increase, decrease, or stay the same?

The survey revealed that 64% of existing investors anticipate boosting their investments in digital assets over the next three years. Additionally, 45% of the surveyed are institutional investors who currently do



not have crypto investments are planning to allocate resources to them in the coming three years. In terms of market outlook, 57% of the institutional investors surveyed are optimistic about cryptocurrency prices increasing in the next 12 months, a significant increase from just 8% who held this belief in October 2022. Moreover, the respondents expressed a belief in the potential of blockchain technology to supplant traditional payment and trade settlement systems in the future.



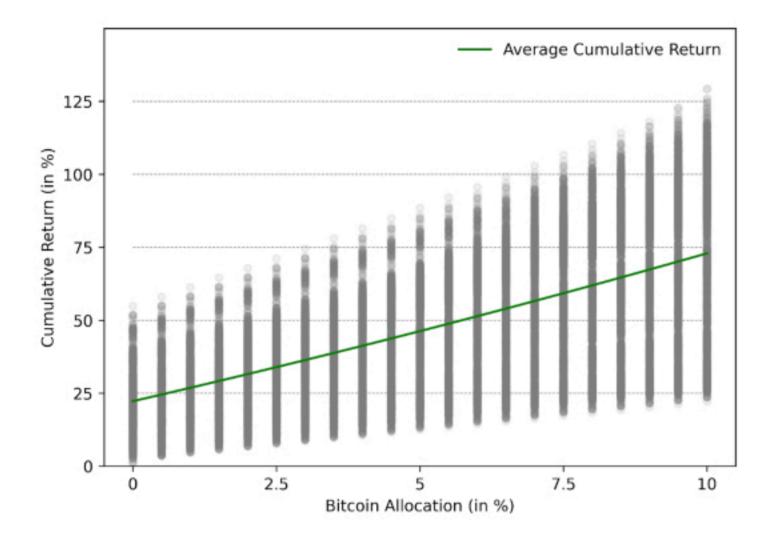




<sup>15</sup> https://coinbase.bynder.com/m/2519c5820cdfe414/original/2023-Institutional-Investor-Digital-Assets-Outlook-Survey.pdf

The first line on the left is what happens when you don't add any Bitcoin to your investment, and the lines that follow show what happens when you gradually add more, up to 10%. These lines aren't about time moving forward; they're just about how much Bitcoin you add. What stands out immediately is that the more Bitcoin you added historically, the higher your return was.

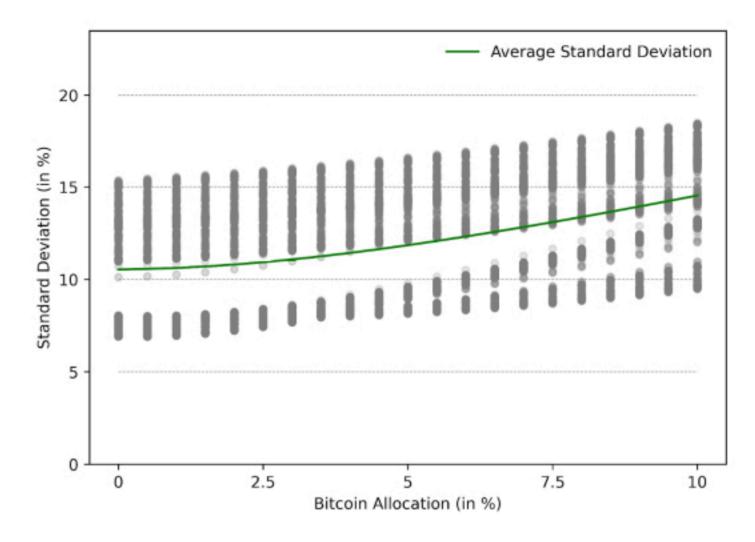
Fig 9: Three-Year Rolling Cumulative Return by Bitcoin Allocation (Quarterly Rebalanced)



Source: Cointelegraph Research, CryptoResearch.Report

While adding Bitcoin to a global 60/40 stock and bond portfolio increased the cumulative return, there's a catch: it can also make things more unpredictable or risky. Figure 10 shows what happens to the volatility when Bitcoin is added. Although the risk increases, it doesn't just go up in a straight line. Instead, there is a curvature in the line. This means that if you only add a little bit of Bitcoin, like between 0.5% and 2%, it doesn't make your investment much riskier. But as you add more Bitcoin beyond that, things can get unpredictable pretty quickly.

Fig 10: Three-Year Rolling Standard Deviation by Bitcoin Allocation (Quarterly Rebalanced)



Source: Cointelegraph Research, CryptoResearch.Report

In Figure 11, we mix the info from Figures 9 and 10 to look at the portfolio Sharpe ratios. The shape of this graph is pretty interesting: it goes up quickly at first and then levels off as you put more Bitcoin into your investment. This chart says that when you add some Bitcoin to your investment, it usually means you're getting more return for the risk you're taking. But there is no such thing as a free lunch: once you start adding more and more Bitcoin, especially after about 5% of your total investment, this extra benefit doesn't increase as much as the risk does.

So, adding a bit of Bitcoin can be helpful, but after a certain point, adding more comes at the cost of significantly higher risk. Based on historical returns and mean-variance optimization, the optimal amount of Bitcoin to add to the portfolio ranged from 3% to 5%.









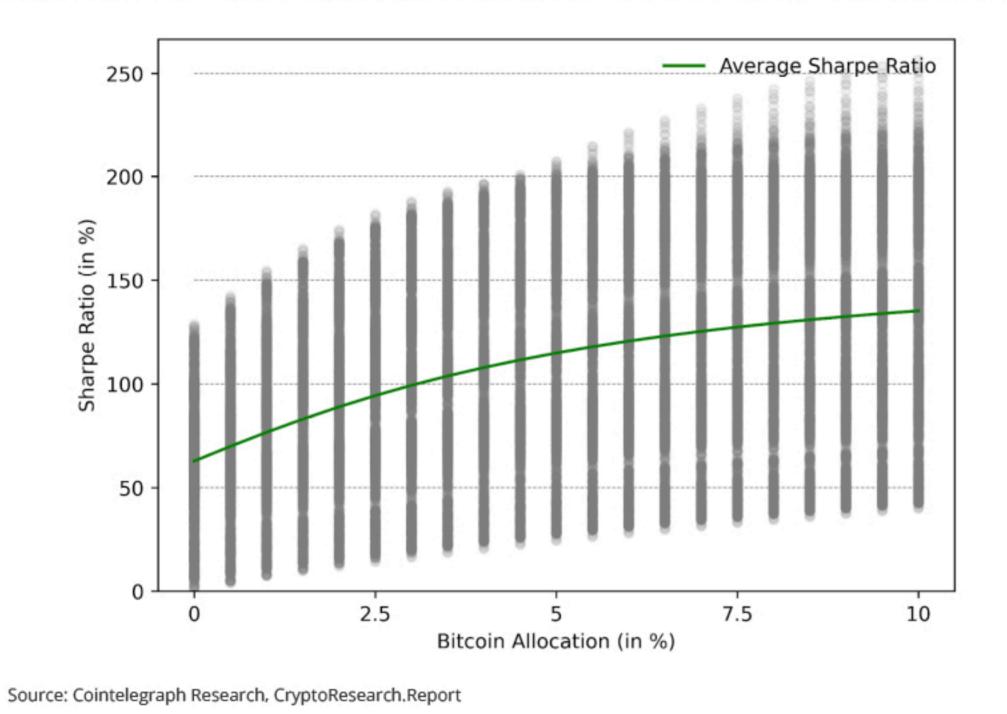
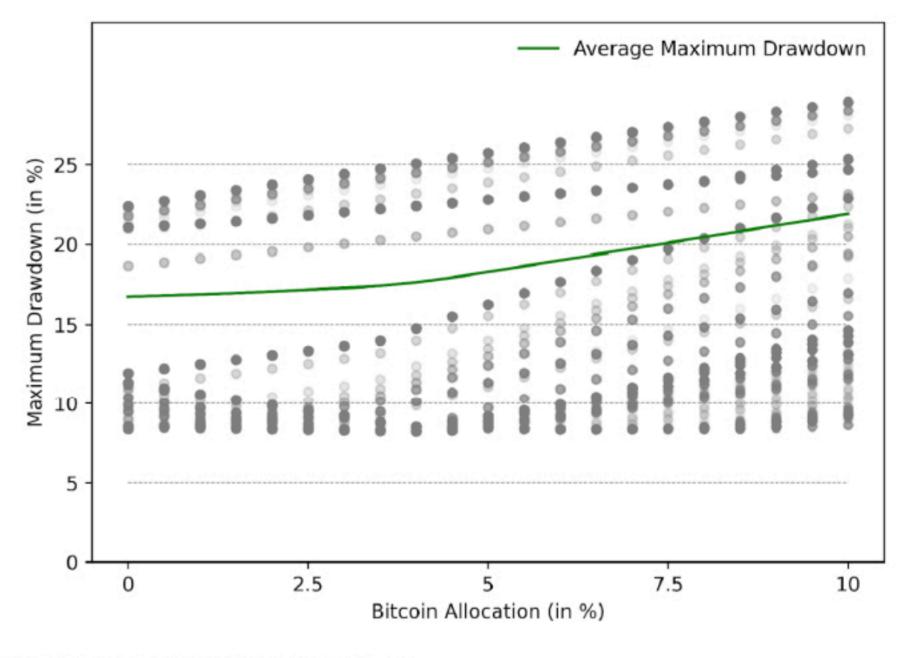


Figure 12 shows how different amounts of Bitcoin affect the biggest drop, or 'maximum drawdown,' in an investment's value. Similar to the Sharpe Ratio chart, the green line on the graph indicates that, on average, adding a little bit of Bitcoin, like between 0.5% and 4.5% of a 60/40 stock and bond portfolio, doesn't change the maximum loss much over three years.

Allocation over 5%, the effect on the biggest drop starts to grow a lot. For institutional investors with a low-risk appetite, sticking to a Bitcoin amount of 5% or less of the total investment may be the best from a risk-adjusted and maximum drawdown perspective.

Fig 12: 3-Year Rolling Maximum Drawdown by BTC Allocation (Quarterly Rebalanced)



Source: Cointelegraph Research, CryptoResearch.Report

The limited increase in standard variation and maximum drawdown might be surprising since Bitcoin itself jumps around a lot in value. But Bitcoin doesn't usually move up and down in the same way as stocks or bonds do due to the low correlation.

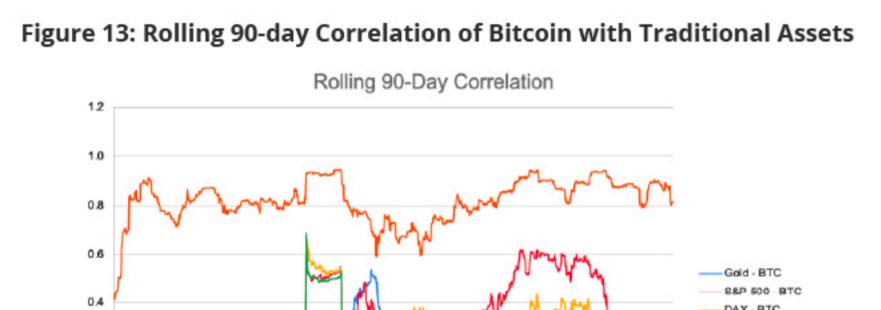
Figures 13 and 14 show the low correlation between Bitcoin and traditional asset classes.

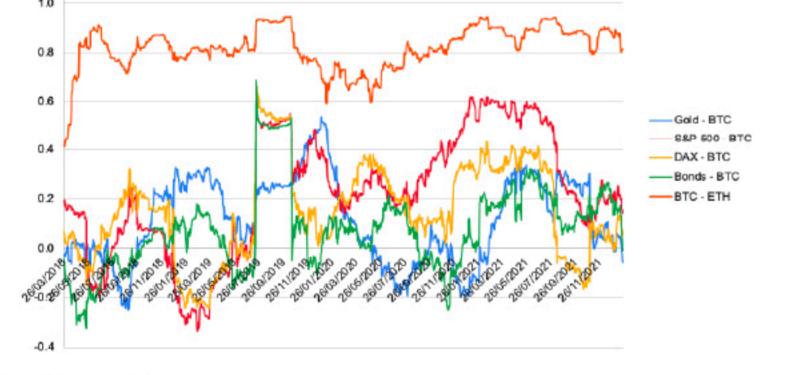




Classifying Bitcoin has always been a conundrum. Bitcoin's correlations with traditional assets have perplexed investors with their variability. From inception to 2020, Bitcoin was largely uncorrelated from any asset class, lending the asset a meaningful role as a portfolio diversifier. After the liquidity injections and inflationary impulse in 2020-22, Bitcoin behaved like a risk asset. And more recently, its correlations with risk-on assets have broken down as it has behaved more like gold. So, determining Bitcoin's nature alongside other asset classes has been fiendishly difficult. Bitcoin's purest correlation of late has been to changes in the broad money supply, making it a gauge of liquidity of sorts. As the U.S. nears a reckoning on the debt, and foreign buyers of Treasuries appear ever more scarce, alongside high and growing deficits, a monetization of the debt and a reliquification from central banks seems more likely. Amid these circumstances, Bitcoin would be a clear beneficiary. The likely potential for a spot ETF in the U.S. in Q1 2024 is another potent catalyst, alongside the highly touted quadrannual halving event. While many institutions have been disillusioned by crypto markets amid the credit crunch of 2022 and the subsequent drawdown, much of the largesse has been purged from the markets and the industry is quietly rebuilding. While Bitcoin is in the doldrums today, it endures as a global monetary asset of consequence, and brighter catalysts lie ahead.







Bitcoin has had an unprecedentedly low correlation with traditional asset classes enabling investors to increase their portfolio risk-return ratio. Over the last ten years, Bitcoin's correlation has stayed low to moderate with traditional asset classes.

**Figure 14: Bitcoin Correlation Matrix** 

	S&P 500	Gold	DAX	Bonds	втс	ETH
S&P 500	1.000	0.098	0.492	0.413	0.150	0.018
Gold		1.000	0.112	0.334	-0.055	0.034
DAX			1.000	0.155	0.059	0.091
Bonds				1.000	-0.009	-0.060
втс					1.000	0.813
ETH						1.000

Source: Cointelegraph Research, Crypto Research Report



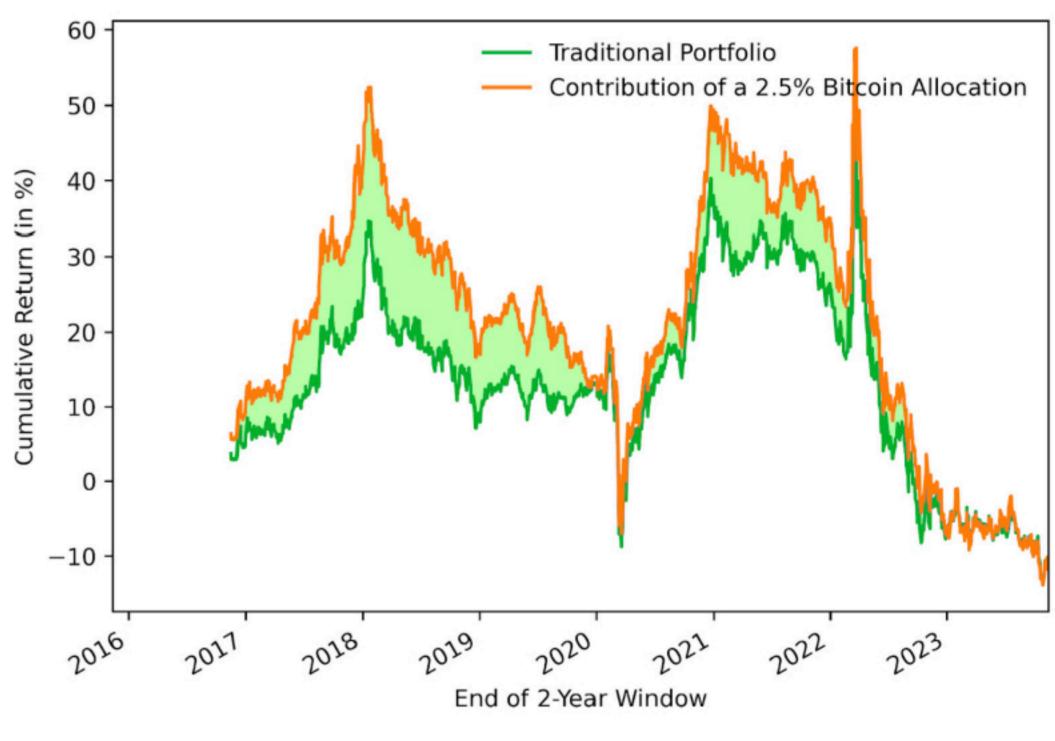
Source: Cointelegraph Research, CryptoResearch, Report

# 1.2.3 Optimal Time Horizon

Paying Homage to the original Bitwise report, "Bitcoin's Role in a Traditional Portfolio," Cointelegraph researchers studied the historical optimal time horizon for holding Bitcoin by calculating the rolling cumulative return and Sharpe ratio measures for holding durations ranging from one to three years. This was done using a benchmark scenario of a 2.5% Bitcoin allocation and conducting rebalancing quarterly.

Figure 15: One-Year Rolling Cumulative Return: Contribution of a 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (Quarterly Rebalanced) Traditional Portfolio 50 Contribution of a 2.5% Bitcoin Allocation 40 Cumulative Return (in %) 30 20 10 -10-20End of 1-Year Window

Figure 16: Two-Year Rolling Cumulative Return: Contribution of a 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (Quarterly Rebalanced)

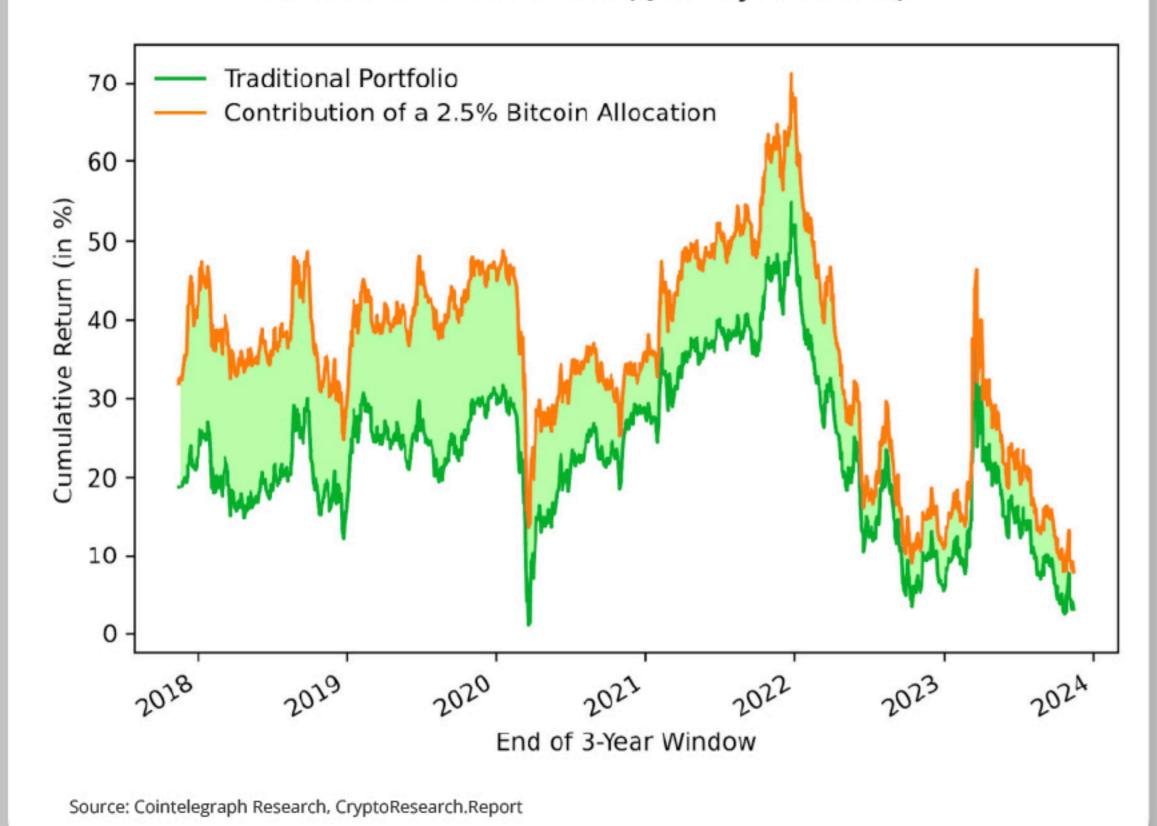


Source: Cointelegraph Research, CryptoResearch.Report



Source: Cointelegraph Research, CryptoResearch.Report

Figure 17: Three-Year Rolling Cumulative Return: Contribution of a 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (Quarterly Rebalanced)



As can be seen in Figures 15 through 17, the contribution of 2.5% Bitcoin to a traditional portfolio's return remains positive throughout most of the sample period. The same holds for the two-year and three-year rolling returns. This can also be seen in Figure 11, where the median contribution over

three years stands at 12.88 percentage points. The three-year holding period also features a higher win/ loss ratio compared to other holding periods. Let's look at the three-year rolling cumulative return. The win rate is 99.94%, meaning that nearly every three-year holding period between Jan. 1, 2014, and Nov. 23, 2023, provided positive returns for investors.

Figure 18: Contribution of a 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio Summary Statistics

Change in Cumulative Returns								
	Max	Med	Min	Win Rate	Lose Rate			
1 YR	16.68pp	2.32pp	-2.98pp	70.00%	30.00%			
2 YR	20.24pp	6.98pp	-1.23pp	94.16%	5.84%			
3 YR	22.31pp	12.32pp	1.84pp	100.00%	0.00%			

Source: Cointelegraph Research, CryptoResearch.Report

This shows that even investors who bought in at the top of the market can still have positive performance as long as they wait at least three years to sell. An alternative to waiting three years to sell is to avoid buying in at the top. This may sound difficult, but it's easily achievable. Investors can dollar cost or value cost average their investment over time to avoid going all in at one point in time.

Dollar-cost or value-cost averaging over time is an easy and prudent approach to building a position in Bitcoin. Selling puts on CME or Deribit can also be used to build a position in Bitcoin while simultaneously earning premiums. For investors who want to build a position quickly without staggering their investment over a few months, Bitcoin's price has often seen significant spikes in the fourth quarter of the year, suggesting a seasonal trend.



Figure 19: Bitcoin's Best Quarter Has Been Q4 Historically

TIME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AGO	SEP	ОСТ	NOV	DEC
2023	+39.63%	+0.03%	+22.96%	+2.81%	-6.28%	+11.98%	-4.02%	-11.29%	+3.91%	+28.52%	+8.81%	+14.22%
2022	-16.68%	+12.21%	+5.39%	-17.3%	-15.6%	-37.28%	+16.9%	-13.88%	-3.12%	+5.56%	-16.23%	-3.59%
2021	+14.51%	+36.78%	+29.84%	-1.98%	-35.31%	-5.95%	+18.19%	+13.8%	-7.03%	+39.93%	-7.11%	-18.9%
2020	+29.95%	-8.6%	-24.92%	+34.26%	+9.51%	-3.18%	+24.03%	+2.83%	-7.51%	+27.7%	+42.95%	+46.92%
2019	-8.58%	+11.14%	+7.05%	+34.36%	+52.38%	+26.67%	-6.59%	-4.6%	-13.38%	+10.17%	-17.27%	-5.15%
2018	-25.41%	+0.47%	-32.85%	+33.43%	-18.99%	-14.62%	+20.96%	-9.27%	-5.58%	-3.83%	-36.57%	-5.15%
2017	-0.04%	+23.07%	-9.05%	+32.71%	+52.71%	+10.45%	+17.92%	+65.32%	-7.44%	+47.81%	+53.48%	+38.89%
2016	-14.83%	+20.08%	-5.35%	+7.27%	+18.78%	+27.14%	-7.67%	-7.49%	+6.04%	+14.81%	+5.42%	+30.8%
2015	-33.05%	+18.43%	-4.38%	-3.46%	-3.17%	+15.19%	+8.2%	-18.67%	+2.35%	+33.49%	+19.27%	+13.83%
2014	+10.03%	-31.03%	-17.25%	-1.6%	+39.46%	+2.2%	-9.69%	-17.55%	-19.01%	-12.95%	+12.82%	-15.11%
2013	+44.05%	+61.77%	+172.76%	+50.01%	-8.56%	-29.89%	+9.6%	+30.42%	-1.76%	+60.79%	+449.35%	-34.81%
Average	+3.60%	+13.12%	+13.11%	+15.50%	+7.66%	+0.25%	+7.98%	+2.69%	-4.78%	+22.90%	+46.81%	+5.63%
Median	-0.04%	+12.21%	-4.38%	+7.27%	-3.17%	+2.20%	+9.60%	-7.49%	-5.58%	+27.70%	+8.81%	-3.59%

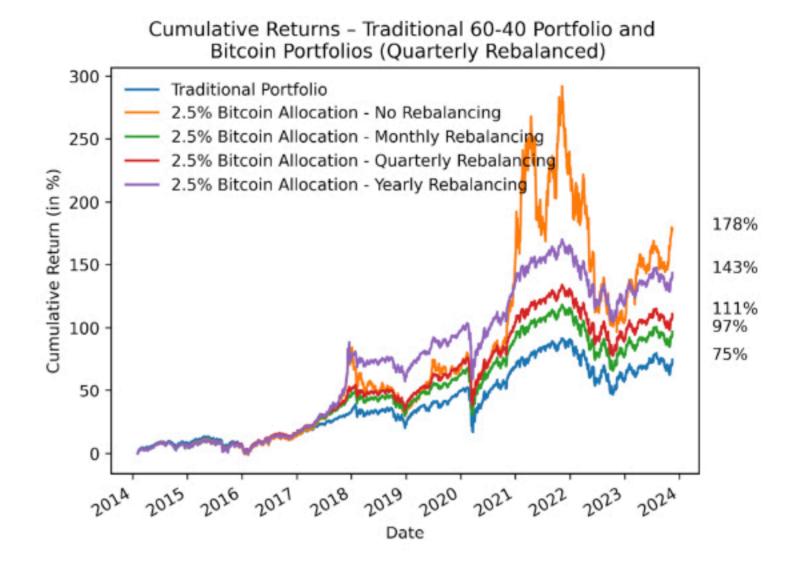
Source: PwC, CoinShares, AIMA

# 1.2.4 Optimal Rebalancing Strategy

In the following analysis, we assume a 2.5% allocation to Bitcoin and look at the three-year rolling cumulative return for the period between Jan. 1, 2014, and Nov. 23, 2023. This means that we calculate the cumulative return for three years and then move forward day by day. As depicted in Figure 20, no rebalancing provided the best results historically when measured by cumulative return. No rebalancing provided a 178% return compared to a portfolio with no Bitcoin, which provided a 75% return. However, rebalancing strategies can reduce risk, especially when combined with uncorrelated assets.

Historically, the best rebalancing frequency for Bitcoin was yearly (143%), followed by quarterly (111%), followed by monthly monthly (97%). Essentially, this points out that letting the Bitcoin position breathe as much as possible within the portfolio has historically provided the best results.

Figure 20: Comparing Rebalancing Strategies for Bitcoin in a Traditional Portfolio



Source: Cointelegraph Research, CryptoResearch.Report

The summary statistics chart shows that the lowest volatility rebalancing strategy for Bitcoin was monthly with a 10.88 annualized standard deviation. Interestingly, the traditional portfolio without Bitcoin had more volatility than a portfolio with 2.5% allocated to Bitcoin and rebalanced monthly, quarterly, or yearly. The lowest maximum drawdown rebalancing strategy was monthly as well. Therefore, a conservative approach to Bitcoin would include a single-digit allocation to Bitcoin with a monthly rebalancing strategy. Alternatively, investors could avoid transaction fees associated with selling Bitcoin on a time-based trigger such as a month or quarter and instead set a target range for the Bitcoin allocation to move between.

Once the Bitcoin allocation surpasses a certain threshold, for example, 5%, the excess Bitcoin could be sold on the spot or with covered call options. Dynamic rebalancing strategies for Bitcoin have outperformed time-dependent strategies historically.



# RESEARCH IN FOCUS

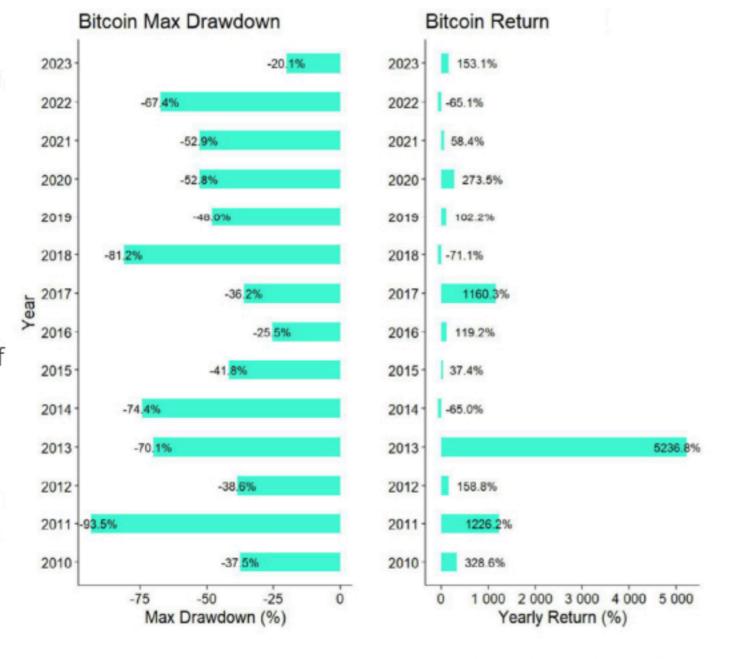


The ETC Group's 2024 Outlook <sup>16</sup> written by André Dragosch, PhD., is an exceptional report on the relationship between global macroeconomic conditions and Bitcoin's price. Reviewing leading indicators such as the U.S. unemployment rate, the NAHB Housing Market Index, and the regional Fed manufacturing surveys, the report indicates that the U.S. economy might already be sliding into a recession. However, Dr. Dragosch explains that a recession may push Bitcoin's price even higher, "any material economic weakness, especially in U.S. employment, is likely going to induce renewed

monetary easing by the Fed."
Using data from Bloomberg, the annual maximum drawdowns and returns were calculated between 2010 and 2023.

The results show that the maximum drawdown can be pretty significant in Bitcoin's bear market years. The worst 2022 drawdown saw Bitcoin lose 67% of its value.

However, Bitcoin's annual return was only negative 3 out of the last 13 years, 2022, 2018, and 2014, all coinciding with Bitcoin's predictable 4-year halving cycle.



Source: Bloomberg, ETC Group

Investors can incorporate dynamic or static rebalancing strategies to help avoid the maximum drawdowns associated with Bitcoin's performance, which ETC Group discusses in their recent report. One example is the rebalancing strategy utilized by the Bitcoin Alternative Investment Fund in Liechtenstein, the Digital and Physical Gold Fund by Incrementum. <sup>17</sup> The strategy automatically rebalances between two uncorrelated assets, Bitcoin and gold, once either asset surpasses a target threshold.



This report shows that as a fund manager, it makes sense to attribute part of your investments to digital assets, and as a high-frequency trading firm, you should attribute part of your resources to crypto as well. At IMC, we invest capital, time, and people to become as dominant in this space as we are in traditional markets.

Trading in digital assets is evolving rapidly. In some ways, it's moving towards traditional market trading. At IMC, we particularly love the crypto-specific characteristics, notably the Decentralized Finance space and trading in perpetual futures, a new addition to our portfolio.

IMC is committed to trading crypto and we're in it for the long run; given the size of our company, the long-term strategy forms the basis for everything we do. Particularly because it takes a lot of time to adapt our systems to new markets and products, as everything we do is automated.

At IMC, we are excited about the crypto space and we're looking forward to the next bull run. By making markets more professional and competitive, both on and off chain, and therefore a lot more attractive for everybody, we play our part in building the ecosystem and increasing the chances of that run.





Michiel Knoers sits on the Board of IMC as the Global Head of Trading. He started at IMC in Chicago in 2012 and worked there for seven years before moving to Amsterdam to lead the European trading team. In early 2021, IMC started trading crypto after acquiring FRIJT Trading and, more recently, Tensor Technologies in Switzerland – both companies set up by former IMC employees.



<sup>16</sup> https://etc-group.com/blog/special-reports/ETC-Group-Crypto-Market-Outlook-2024/

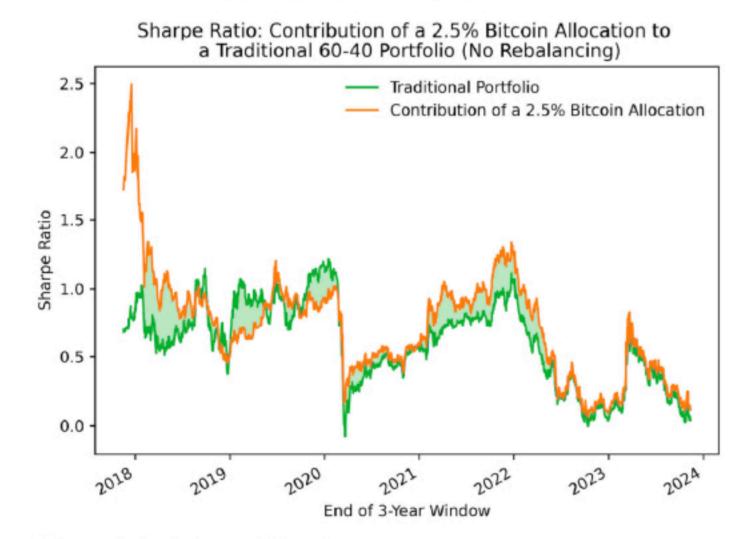
<sup>17</sup> https://www.incrementum.li/en/investment-funds/incrementum-digital-and-physical-gold-fund/

Figure 21: Summary Statistics of Bitcoin Rebalancing Strategies

	Cumulative Return (in %)	Annualized Return (in %)	Volatility Annualized Std. Dev.; in %	Sharpe Ratio	Max Drawdown (in %)
	74.8	5.9	11.61	0.06	23.65
Rebalancing	178.27	11.07	20.2	0.29	49.83
Yearly Rebalancing	143.42	9,55	11.53	0.37	24.47
Quarterly Rebalancing	110.95	7.96	10.91	0.25	24.06
Monthly Rebalancing	96.9	7.2	10.88	0.18	23.95

Source: Cointelegraph Research, Crypto Research Report

Figure 22: Sharpe Ratio Contribution of 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (No Rebalancing)



Source: Cointelegraph Research, CryptoResearch.Report

Throughout the sample portfolios in the backtest, the impact of a 2.5% allocation to Bitcoin to the Sharpe Ratio varied in magnitude, but the average influence was significant at 21.25 percentage points. Crucially, the beneficial effect of including Bitcoin in the investment portfolio did not result in increased volatility. This is evidenced by Figure 22 - 25, which illustrates the enhancement of the Sharpe ratio of a conventional investment portfolio during the same rolling three-year periods. Similar to the case with cumulative returns, incorporating Bitcoin consistently improved the overall Sharpe ratio of the traditional portfolio for every three-year interval examined in our research.

Our study's results confirm those found by BitWise in their 2023 <sup>18</sup> and 2022 <sup>19</sup> reports on adding Bitcoin to a traditional portfolio.

Figure 23: Sharpe Ratio Contribution of 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (Monthly Rebalancing)

Sharpe Ratio: Contribution of a 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (Monthly Rebalanced)

1.75

1.50

1.25

0.50

Traditional Portfolio
Contribution of a 2.5% Bitcoin Allocation

Traditional Portfolio
Contribution of a 2.5% Bitcoin Allocation

End of 3-Year Window

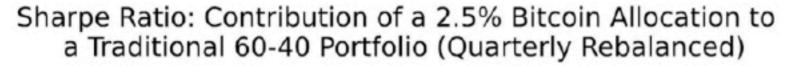
Source: Cointelegraph Research, CryptoResearch.Report

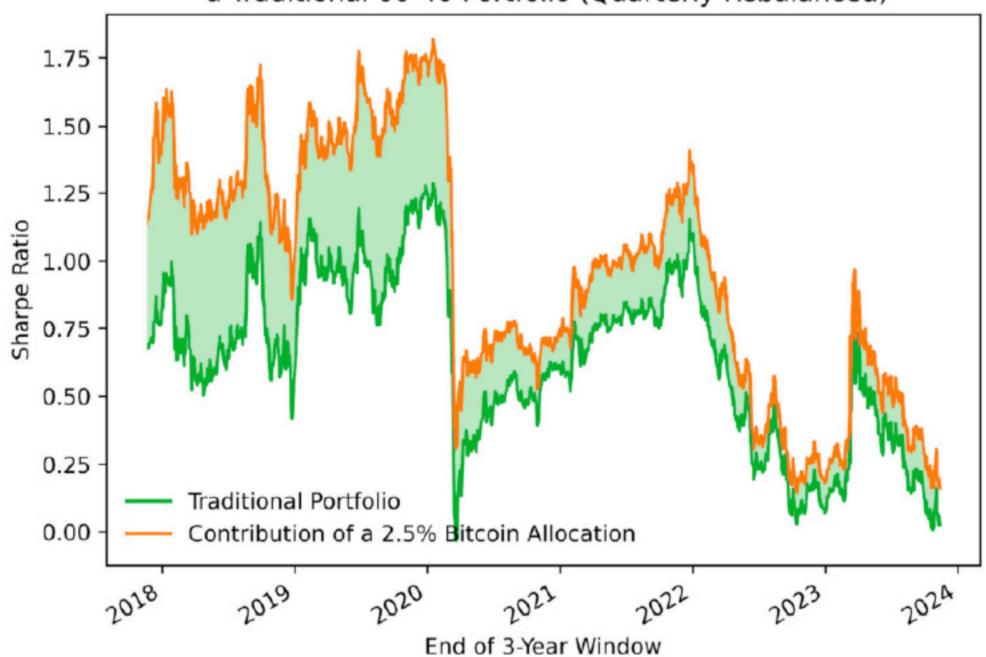


<sup>18</sup> https://s3.amazonaws.com/static.bitwiseinvestments.com/Research/Bitcoins-Role-in-a-Traditional-Portfolio-08-2023.pdf

<sup>18</sup> https://static.bitwiseinvestments.com/Research/Bitwise-The-Case-For-Crypto-In-An-Institutional-Portfolio.pdf

Figure 24: Sharpe Ratio Contribution of 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (Quarterly Rebalancing)

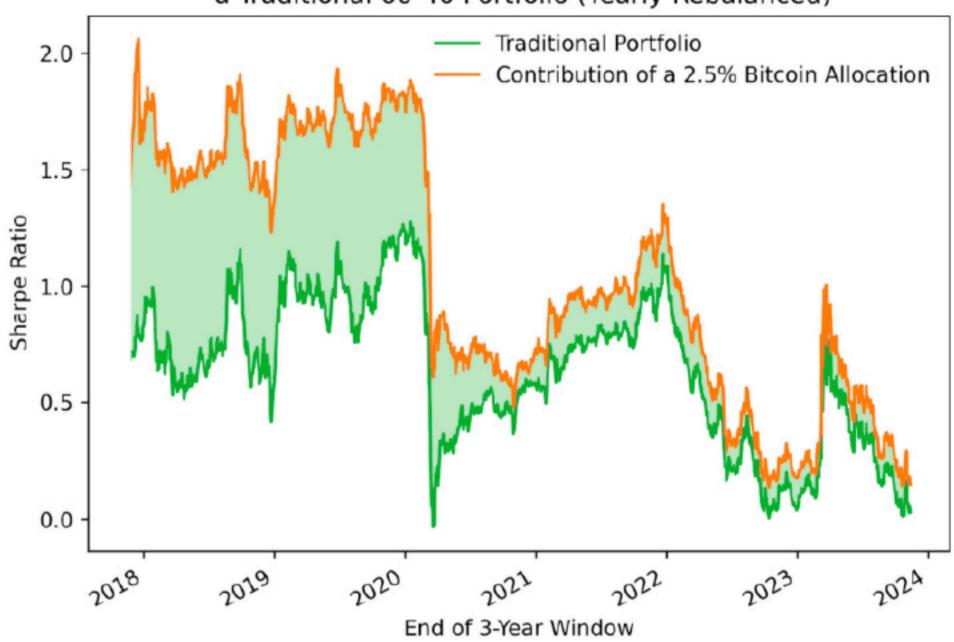




Source: Cointelegraph Research, CryptoResearch.Report

Figure 25: Sharpe Ratio Contribution of 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (Yearly Rebalancing)

# Sharpe Ratio: Contribution of a 2.5% Bitcoin Allocation to a Traditional 60-40 Portfolio (Yearly Rebalanced)



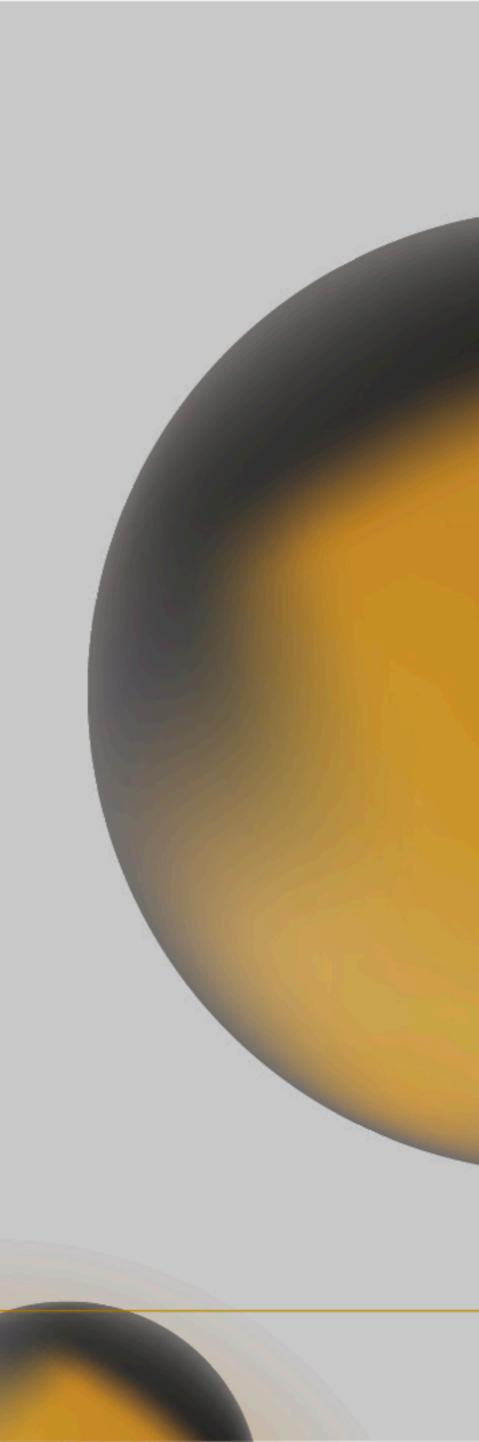
Source: Cointelegraph Research, CryptoResearch.Report



The comprehensive analysis presented in this chapter underscores a significant paradigm shift in asset management, highlighting the growing importance of Bitcoin as an alternative investment within a global stock and bond portfolio. This shift is driven by the evolving financial landscape, characterized by diminished returns and diversification benefits from traditional assets, alongside the rising threat of inflation. The incorporation of Bitcoin into the 60/40 portfolio model is not just a fleeting trend but a strategic response to these changing dynamics.

Institutional investors, as evidenced by the strategic allocations of entities like the Yale University Endowment, are increasingly recognizing the value of diversifying their portfolios with alternative investments, including cryptocurrencies like Bitcoin. The empirical data from various studies, including those conducted by Fidelity Investments, Cointelegraph Research, and the CFA Institute, reveal a significant tilt toward Bitcoin, reflecting its potential to enhance returns while offering a hedge against inflation and currency devaluation.

This chapter has shown that adding Bitcoin to a traditional portfolio can significantly improve its performance metrics, including cumulative returns and Sharpe Ratio, without disproportionately increasing risk or maximum drawdowns. The optimal allocation, time horizon, and rebalancing strategies for Bitcoin investment have been thoroughly examined, providing valuable insights for institutional investors and fund managers. However, it's important to acknowledge the challenges associated with Bitcoin investments, such as volatility, the need for specialized infrastructure, regulatory uncertainties, and limited historical data.





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# Infrastructure for Institutions Investing in Bitcoin



# 2. Infrastructure for Institutions Investing in Bitcoin

Given Bitcoin's historical performance, the key question is, why haven't more financial advisers incorporated it into their portfolios? The answer often lies in the volatility and perceived risks associated with cryptocurrencies, along with a lack of understanding and infrastructure to handle such assets.

However, as the world's leading investors and institutions gradually embrace Bitcoin and the broader cryptocurrency domain, it clearly indicates its potential to enhance returns and offer diversification benefits.

# 2.1 Trading

For institutional investors who opt to buy Bitcoin directly, the first question is, "Where should I buy Bitcoin?" Although we cannot give financial advice in this report, we can provide information on the largest centralized exchanges, OTC desks, and brokers that sell Bitcoin to institutional investors around the world.

# 2.1.1 Exchanges

The most popular method for first acquiring Bitcoin is likely a centralized exchange or CEX. These exchanges generally require Know Your Customer (KYC) information so that governments can have a way to find individuals for tax and Anti-Money Laundering (AML) purposes. The largest Bitcoin exchanges are typically ranked based on their trading volume, liquidity, and overall user base. However, it's important to note that the rankings can vary over time due to changes in market dynamics, regulatory environments, and other factors. The annual revenue for Kraken is not published since the company is held privately; however, the SEC mentioned an annual revenue of \$43 billion between 2020 and 2021 in their public complaint against Kraken in 2023. The research team at Cointelegraph suspects that this number was mistyped and that the figure reported by the Karens at the SEC may refer to volume. As of December 2023, the top Bitcoin exchanges include:

Figure 26: Top Bitcoin Exchanges

	EXCHANGE	AVERAGE MONTHLY TRADING VOLUME FOR ALL DIGITAL ASSETS 2023	INCEPTION DATE	NUMBER OF USERS	DOMICILE	ANNUAL REVENUE
#1	BINANCE  Known for its high trading volume and a wide range of available cryptocurrencies.  Does not service the US.	\$271 billion <sup>20</sup>	2017	169 million registered <sup>21</sup> and unknown active monthly	No official company headquarters	\$12 billion <sup>22</sup>
#2	coinbase  Famous in the United States and globally, it's known for its user-friendly interface and regulatory compliance.	\$40 billion <sup>23</sup>	2012	110 million registered <sup>24</sup> and 8.5 million active monthly <sup>25</sup>	USA	\$3.1 billion <sup>26</sup>
#3	Respected for its security measures and wide range of supported fiat and cryptocurrencies.	\$18 billion <sup>27</sup>	2011	10 million <sup>28</sup>	USA	\$43 billion between 2020 and 2021 <sup>29</sup>

Source: Cointelegraph Research, CryptoResearch.Report



<sup>&</sup>lt;sup>20</sup> https://www.theblock.co/data/crypto-markets/spot/cryptocurrency-exchange-volume-monthly

<sup>21</sup> https://www.binance.com/en-NZ

<sup>22</sup> https://www.binance.com/es-LA/feed/post/157884

<sup>&</sup>lt;sup>23</sup> https://www.theblock.co/data/crypto-markets/spot/cryptocurrency-exchange-volume-monthly

<sup>24</sup> https://www.statista.com/statistics/803531/number-of-coinbase-users/

<sup>25</sup> https://www.cnbc.com/2023/02/21/coinbase-coin-earnings-q4-2022.html

<sup>26</sup> https://d18rn0p25nwr6d.cloudfront.net/CIK-0001679788/86fe25e0-342b-40fa-aacc-ea04faf322cb.pdf

<sup>27</sup> https://www.theblock.co/data/crypto-markets/spot/cryptocurrency-exchange-volume-monthly

<sup>28</sup> https://www.linkedin.com/company/krakenfx/

<sup>&</sup>lt;sup>29</sup> https://www.sec.gov/files/litigation/complaints/2023/comp-pr2023-237.pdf

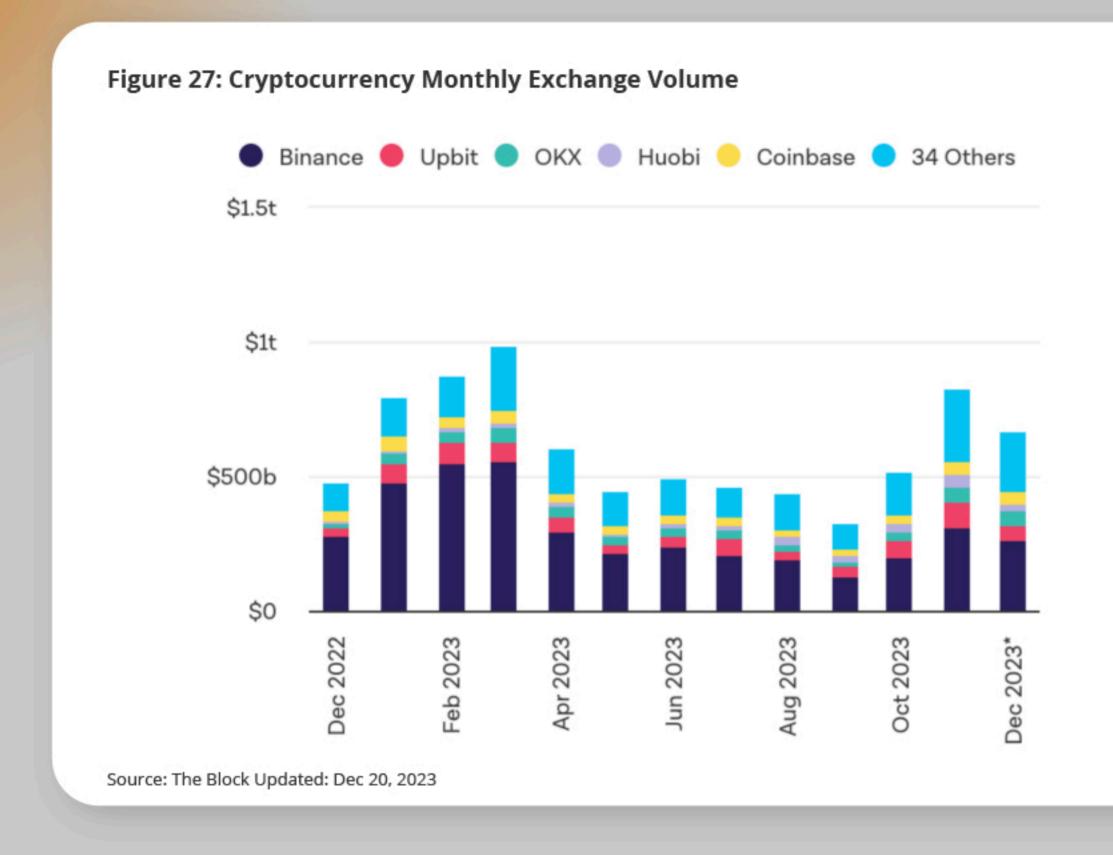


Figure 28: Off-exchange Settlement Mitigates Counter-party Risk 1. DELEGATE ASSETS FROM COLD-CUSTODY CUSTODY Available 20 BTC □ Delegate 10 BTC LOCKED Delegate Funds 2. TRADING BALANCE AVAILABLE ON **EXCHANGE WITHOUT ASSET TRANSFERING** OFF-EXCHANGE SOLUTION 10 BTC INSTANT TOP-UP API call 3. OPTIMISED ON-CHAIN NET SETTLEMENT WITH EXCHANGE EXCHANGE = AVAILABLE FOR TRADE 10 BTC CREDIT ACCOUNT Deribit BYB T bit.com Gate.io Source: Cointelegraph Research

While CEX can be a convenient way to accumulate Bitcoin, one needs to be aware of trade-offs.

- 1- While you may have a Bitcoin address on a CEX, the private keys are not only exclusively known to you. Meaning that your BTC can be withheld from you for whatever reason. This includes not processing your transactions promptly and your account being locked out for various reasons let's say you lost your password or the email address you usually log in with. Customer service can take a long time, and you do not have access to your Bitcoin.
- 2- If the CEX you are using does not have proof of reserves, you do not know how the CEX is using your Bitcoin. Proof of reserves means the CEX has a third-party audit to ensure that the assets the CEX says

are on their books are on their books. Celsius famously rehypothecated (sold the same asset multiple times) to help provide a scheme to produce yield for its users, which ultimately backfired and caused significant market issues.

A potential solution to the risks associated with buying Bitcoin from exchanges is off-chain settlement. The off-exchange settlement allows institutions and investors to mitigate counter-party risk and increase capital efficiency. The biggest exchanges are launching their own custodians with this technology already enabled. The custodian, the biggest provider of off-chain settlement technology, Clear Loop, is Copper, which is based in the UK.





# 2.1.2 Brokers and OTC-Desks

Identifying the top Bitcoin Over-The-Counter (OTC) desks can be more challenging than exchanges. OTC desks often operate with a degree of confidentiality, and their transaction volumes are not always publicly disclosed. However, several OTC desks have gained prominence in the industry due to their reputation, volume of transactions, and clientele. Some of the notable OTC desks known for their significant role in Bitcoin trading include:

Figure 29: Top Bitcoin OTC-Desks

	BROKER OR OTC-DESK	INCEPTION DATE	DOMICILE
#1	CUMBERLAND  A subsidiary of DRW Trading, Cumberland is known for large-scale cryptocurrency trading and offers OTC services.	2014	USA
#2	B 2 C 2  Known for deep liquidity, the UK-based trading firm was acquired by the Japanese financial group SBI in 2020.	2015	UK
#3	GSR  London-based liquidity provider with a 10-year track record and connections to 60 exchanges and DEXes.	2013	UK
#4	MKRAKEN  Established a crypto exchange with a dedicated OTC desk for high-volume institutional investors.	2011	USA
#5	coinbase PRIME  Trusted OTC desk from a highly regulated exchange, offering secure and reliable transactions for large trades.	2018	USA

Source: Cointelegraph Research, CryptoResearch.Report

#### WHAT IS A BITCOIN BROKER?

In traditional finance, OTC desks often focus on selling securities not listed on a stock exchange, such as "pink sheet" securities, whereas stock brokers sell exchange-listed securities for the most part. In the Bitcoin market, a broker or an OTC desk can refer to different types of services in the cryptocurrency space, ranging from platforms that facilitate the buying and selling of Bitcoin for retail investors to more institutional-focused services.

Due to privacy, institutional investors interested in buying Bitcoin prefer to use OTC desks over exchanges or brokers. OTC-Desks and brokers get their liquidity from different sources, and this is highly relevant for investors who wish to trade without influencing the price.

Brokers typically forward the client's order to an exchange or OTC desk. The order is visible in the order books of the exchanges and may influence the price of the trading pair - that's not always desired, especially for larger trades or "insider" trades. OTC desks manage their own private order book, sometimes also their own liquidity. In reality, the distinctions between brokers, OTC desks, and market makers can be fluid.



Markus Perdrizat, ACK Consulting Knowledge

An alternative to buying large quantities of Bitcoin via an OTC desk is smart order routing software that breaks up large trades into small tranches and routes them to different OTC desks and exchanges to get the best execution. In the late 1980s and 1990s, the majority of institutional security trading occurred through OTC desks; however, over time, sophisticated institutional investors adopted smart order routing software that allowed them to trade directly. The researchers at Cointelegraph predict that the same trend will occur in the digital asset market because smart order routing software gives institutional investors more control over their trades and more privacy. There are various smart order routing software in the digital asset market, such as CoinRoutes, Talos, and Wyden (formerly AlgoTrader).





# Institutional digital asset trading for CeFi and DeFi

Aggregate trading across exchanges

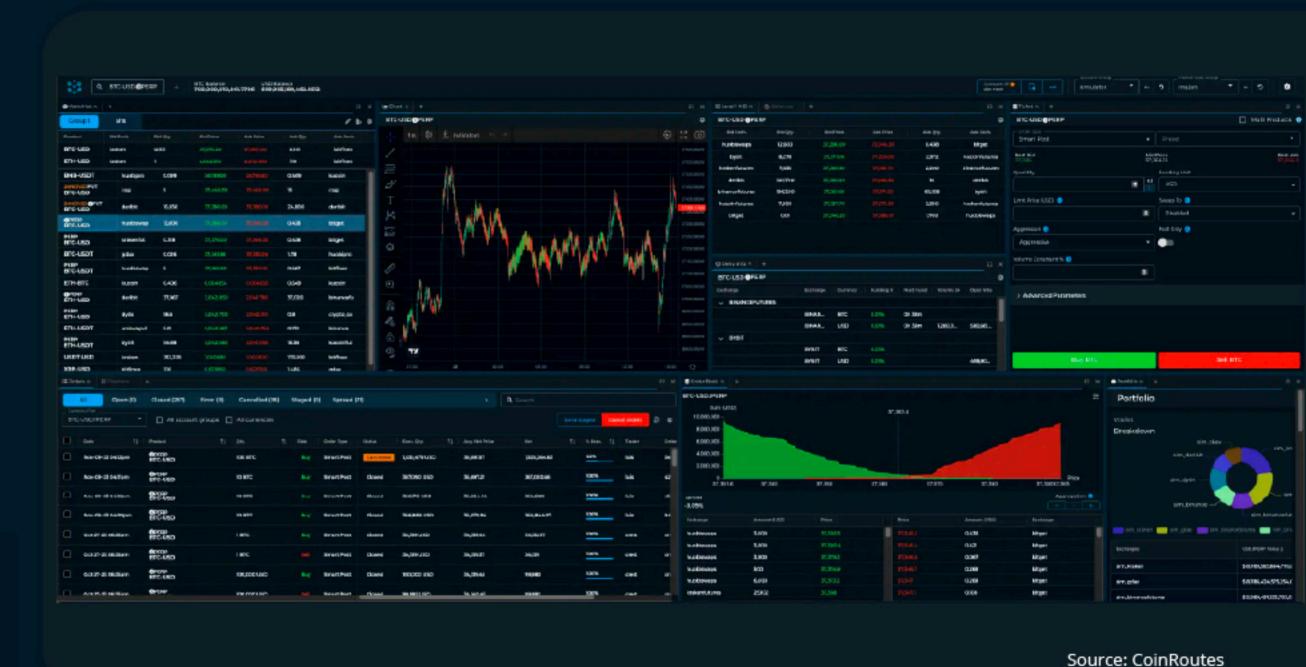
Bespoke algorithms for every trading strategy

Best prices, Lowest fees

Request demo

60+ Exchanges & Liquidity Providers 10+ Advanced Trading Algorithms \$150B+
Notional Executed since
2017

CoinRoutes is proud to be associated with Cointelegraph's digital asset report as we believe steadfastly that digitalization is the future of asset management. Considering global adoption of new technology always accelerates to become mainstream when the newer technology is more efficient and less expensive than the old, we are committed to reducing the cost & improving the efficiency of digital asset trading. To do so, there is a need for better trading methods and market access, but also, and perhaps most importantly, it requires a definitive answer to this question:





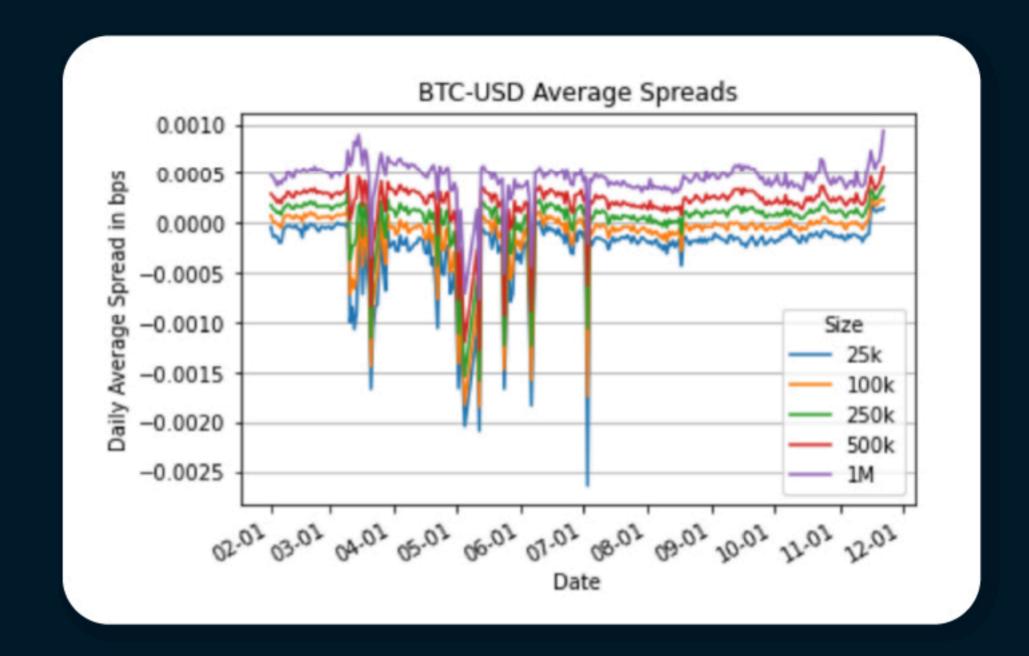
# What Is the cost to trade Bitcoin & other crypto assets?

The question sounds simple, but alas, it is not, with the vast majority of current markets ignoring other participants & trading at prices which are often higher or lower than other markets display. There are several reasons for this phenomenon:

- A perceived lack of data there is no "official" consolidated best bid and offer (BBO) for crypto assets.
- Market Fragmentation there are many marketplaces including centralized exchanges (CEXs), liquidity providers (LPs) and decentralized exchanges (DEXs) with conflicting price oracles.
- Opportunism many market agents ignore "best execution" responsibilities to their clients in favor of maximizing profits from payment for order flow (PFOF) arrangements and keeping their costs down.

Our goal at CoinRoutes, in addition to helping investors navigate this market to achieve best execution, is to provide data to help investors & trading firms understand the market. We can provide context, despite the fragmentation, for understanding the cost of trading in terms that traditional institutional traders will be comfortable with. To that end, we have developed a consistent metric we call the CoinRoutes Liquidity Index. To understand why we constructed the index, however, it is useful to look at some raw data that shows trading costs across the major centralized crypto exchanges.

This chart shows the cost to buy and sell \$25,000, \$100,000, \$250,000, \$500,000 and \$1,000,000 of Bitcoin in US Dollars from February through November of 2023:



As can be seen in this chart, there is a small persistent negative cost for \$25,000 orders that became very large<sup>30</sup> during some of the periods earlier this year. The persistent negative cost results from price discrepancies across exchanges where the bid on one exchange is often higher than the offer. Traditional financial markets would call these "crossed markets" which are very rare in most asset classes, but almost always exist in digital assets. It is worth noting, however, that most of the time, those differences are lower than the costs to move assets between exchanges and arbitrage away the difference. There are, however, often meaningful differences during periods of high volatility. Such price discrepancies can create a distorted view of the potential cost to trade. As a result, we created the CoinRoutes liquidity index to normalize the data and provide traders with a consistent and fair benchmark for understanding the cost of liquidity.



<sup>&</sup>lt;sup>30</sup> We theorize that those extreme negative costs resulted from price discrepancies made worse due to exchange banking difficulties stemming from the closure of Signet and Silvergate's network. In those circumstances, it was very difficult to move US Dollars between exchanges on weekends, making arbitrage virtually impossible.

# **CoinRoutes Liquidity Index Defined**

To calculate the CoinRoutes Liquidity Index, we measured the cost differential between \$25k orders and \$1 million orders based on optimal "smart routing" for buying and selling at each size. This is calculated by "walking the book", as CoinRoutes holds the full order book of all major exchanges in memory. The calculation uses that order book to add up the cost for selling at all bids, ranked in order of highest to lowest to achieve a \$1 million sale and the cost of buying from all offers, ranked from the lowest to the highest to achieve a \$1 million buy. We then calculated time weighted averages from 5 second samples every day. It is important to note that this benchmark assumes optimal order routing, meaning it assumes all exchanges were available for trading at all times, with sufficient inventory of dollars, stablecoins or tokens. As a practical matter, this requires access to sophisticated routing technology and superior treasury management. As a result, this is a difficult benchmark for most institutions to replicate without spending on infrastructure or paying a vendor. It is, however, an accurate and fair method to measure the cost of liquidity, before markups or fees that most liquidity providers may charge.

# **CoinRoutes Liquidity Index Results:**

CoinRoutes calculated the index from February through the end of November of 2023 for Bitcoin & Ether denominated in US Dollars, in USDT (Tether) and for Perpetual Swaps for both also denominated in US Dollars and USDT. There are several important conclusions:

- 1. Costs for trading Bitcoin and Ethereum in institutional size are quite competitive with global equities of similar market capitalizations<sup>31</sup>, if the institution is able to access all markets. (Retail investors in Bitcoin and Ethereum pay much more, which is quite different than equity markets where such traders pay extremely small spreads, often with no fees)
- 2. USDollar spot transactions are more expensive than USDT (Tether) spot trades. While this trend has moderated somewhat over the year, it is still statistically significant.

<u>For Bitcoin</u>, over the last quarter, the dollar cost for \$1 million in liquidity averaged between 5 and 7.5 basis points, while the USDT costfor \$1 million in liquidity averaged between 3.5 and 5.5 basis points with some more volatility.

<u>For Ethereum</u>, over the last quarter, the dollar cost for \$1 million in liquidity averaged between 5 and 9 basis points, while the USDT cost for \$1 million in liquidity averaged between 4 and 8 basis points.

3. There is more liquidity & lower cost to transact in perpetual swaps than in spot. This is unsurprising, as reported volumes on the swaps market are significantly larger than spot, but the order book data backs this up. This also explains why OTC trading is so popular in the spot market, as the market makers are able to hedge in the perpetual swaps market to create tight spreads.

<u>For Bitcoin</u>, the perpetual swap cost for \$1 million in liquidity averaged between 3.5 and 7 basis points for the USD denominated swaps and between 1 and 2.5 basis points for the USDT denominated swaps.

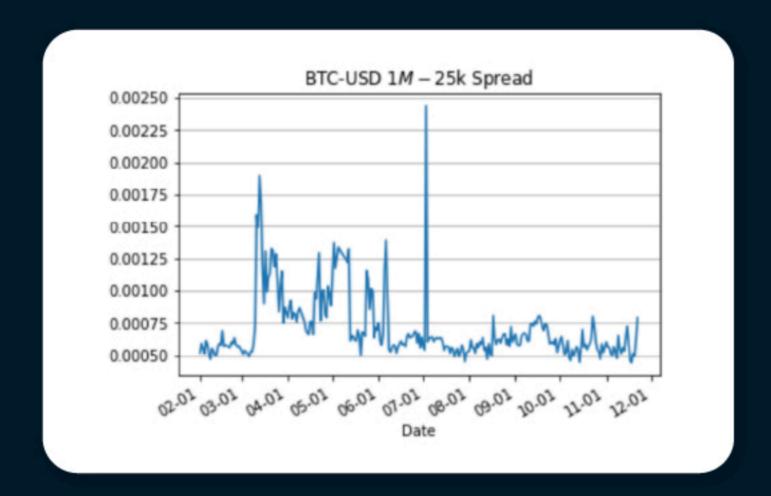
<u>For Ethereum</u>, the perpetual swap cost for \$1 million in liquidity averaged between 4 and 8 basis points for the USD denominated swaps and between 2 and 3.5 basis points for the USDT denominated swaps.

This first chart show the liquidity cost to buy or sell \$1million of Bitcoin in US dollars across the major crypto exchanges. Note that during the spring and again in the early summer there were spikes, predominantly on weekends when banking issues made moving money across exchanges difficult, but the average has settled into a range between 5 and 7.5 basis points.

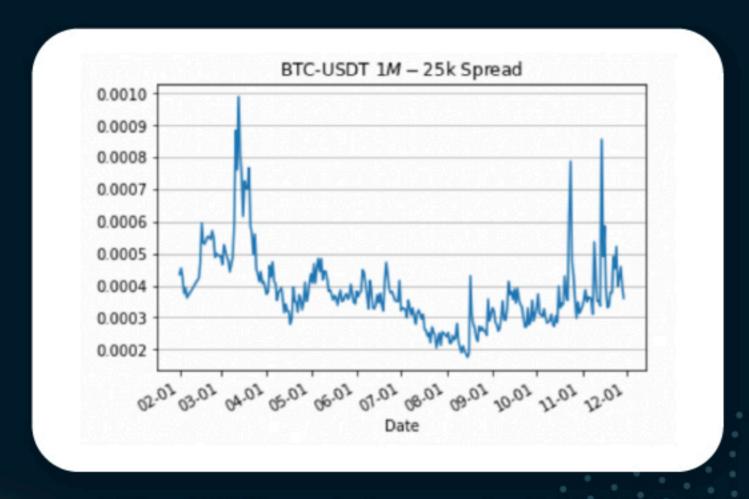
As this measures the cost for each, it implies an average bid / offer spread of between 10 and 15 basis points for US dollar based liquidity, which is similar to what anecdotal evidence suggests is an average spread for institutional size.



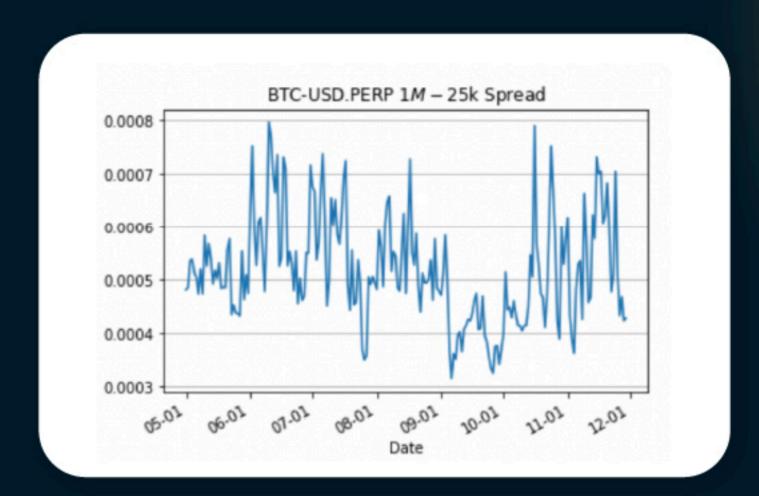
<sup>&</sup>lt;sup>31</sup> Estimates from Bloomberg for ALL equity trades of institutional size are for roughly 14 basis points on an observed basis. https://www.bloomberg.com/professional/blog/buy-side-equity-trading-costs-ease-through-2022/

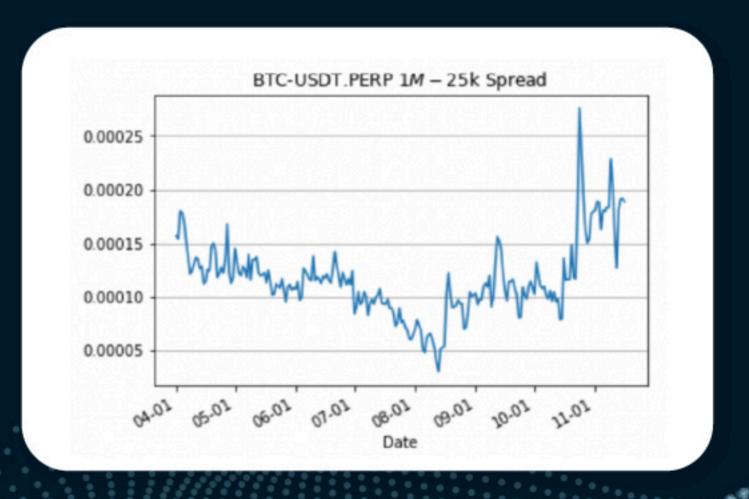


The second chart shows the cost for Bitcoin in USDT. Notice fewer and less significant spikes in the costs and an overall lower baseline.



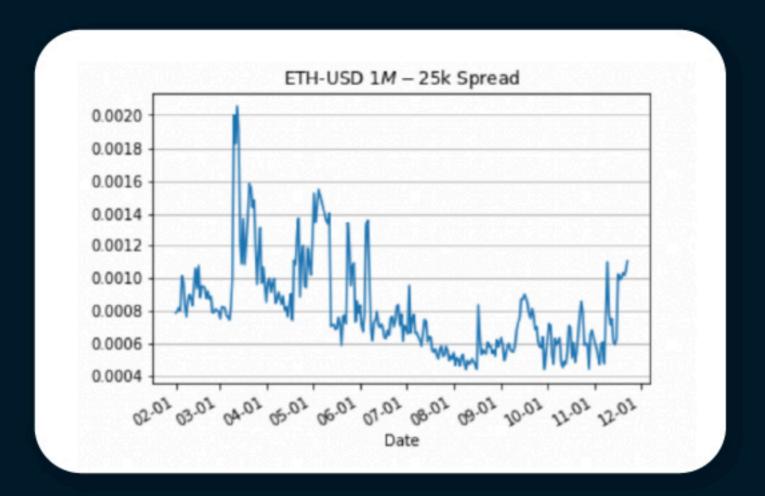
Next are the charts for the USD and USDT perpetual swap contracts for Bitcoin. The USD swap is a bit less costly to trade than USD spot, but notice the significant liquidity in the USDT swap, rendering that vehicle the most efficient way to acquire Bitcoin liquidity.

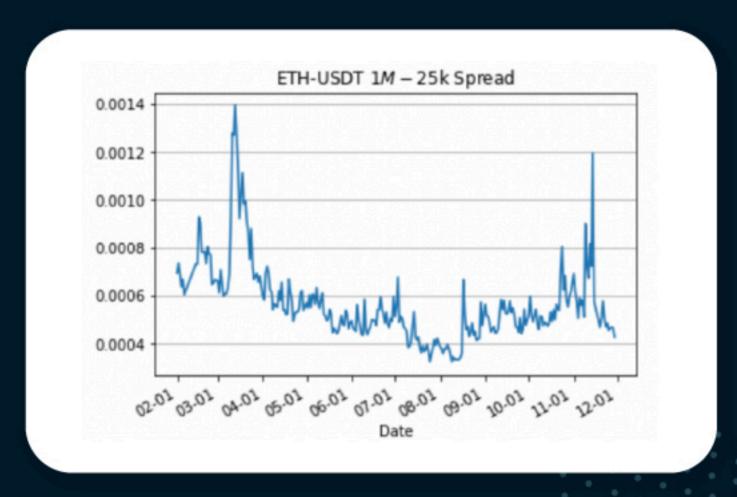




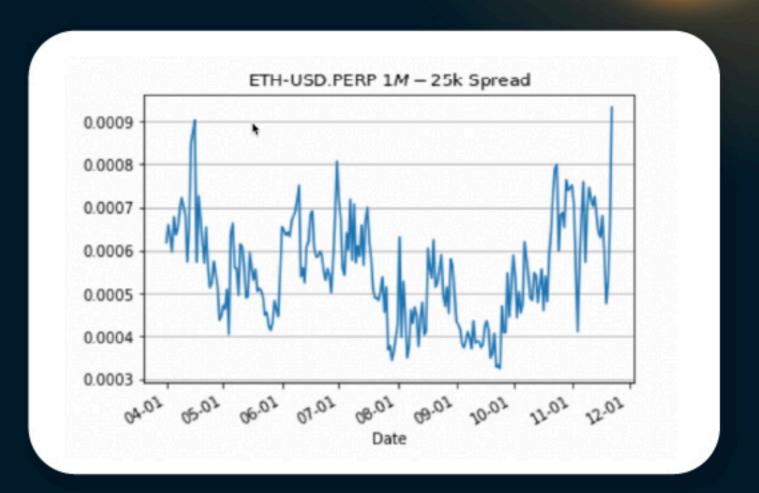
The Ethereum charts follow the same pattern as for Bitcoin, albeit with slightly higher liquidity costs. The USD spot chart, reflecting the smaller market capitalization of Ethereum, shows a baseline cost over the past few months of between 6 and 10 basis points, which compares to the 5.5 to 7 basis points for Bitcoin.

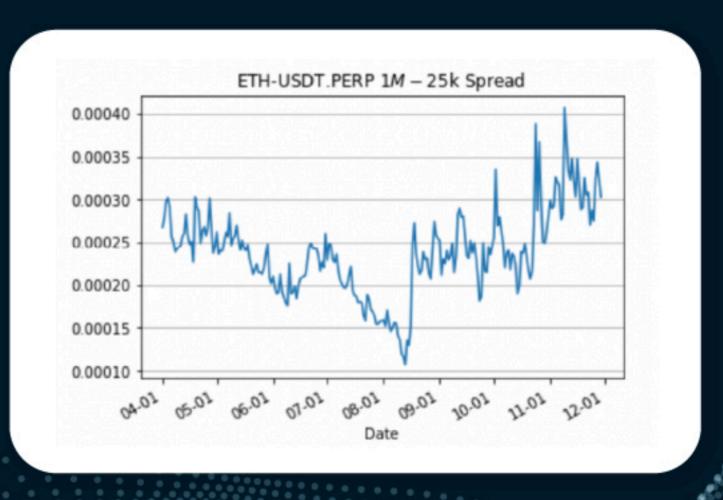






The Ethereum vs USDT chart, meanwhile, shows an average trading cost lower than the USD chart, but still higher than the Bitcoin vs USDT chart. Similarly, the Ethereum perpetual swap charts show the USDollar swaps as less expensive to trade than spot, and the USDT perpetual swap being substantially more liquid than all the other Ethereum products.





As can be seen from these graphs the trading costs for both Bitcoin and Ethereum (and all digital assets) vary significantly from time period to time period. As a result, traders entering the digital asset markets need tools for understanding the market conditions when they trade and to measure the efficacy of their trading strategies. At CoinRoutes, we believe that using normalized data, such as our liquidity index can provide such clarity for traders.



# 2.1.3 Bitcoin-Only Exchanges, Brokers, and OTC-Desks

Some investors want to work exclusively with companies that only handle Bitcoin transactions. This is often due to philosophical reasons, such as "Bitcoin Maximalism." However, this preference may also stem from a desire to stay completely anonymous. The Bitcoin-only company Relai allows individuals to buy up to \$1,000 per day without doing any KYC. Another reason that investors may prefer Bitcoin-only companies is risk-reduction. Other digital assets are considered securities by the Securities Exchange Commission in the U.S. Since alternative digital assets "alt-coins" may be securities, the exchanges that sell them are violating the Securities Act for selling unregistered securities.

It is important to note that the SEC lost its case against the alt-coin XRP in 2023. In July, the United States Southern District Court of New York found that XRP (and thus cryptocurrency) was not a security when sold to the public on an exchange.

Figure 30: Top Bitcoin-Only Exchanges, Brokers, and OTC-Desks

	BROKER OR OTC-DESK	INCEPTION DATE	DOMICILE
#1	Relai is based in Switzerland and is Europe's most accessible Bitcoin-only investment app. It enables instant Bitcoin purchases through SEPA payment integration. Relai does not take custody of the client's Bitcoin.	2020	Switzerland
#2	RIVER  Unlike Relai, River does offer custody as well. They use multisig cold storage and offer no trading fees on recurring trades such as dollar-cost averaging strategies.	2019	USA
#3	Swan  Founded by the toxic maximalist Cory Klippsten, Swan offers a range of services from custodial Bitcoin retirement plans to advisory services.	2019	USA
#4	Pocket automatically exchanges bank transfers into Bitcoin and sends them directly to the client's Bitcoin wallet, similar to Relai. No account, no registration, straight from the investor's banking app.	2020	Switzerland



In November 2023, we sold around 800 BTC with a trading volume of around 25 million EUR. We are currently selling around 25 BTC per day, with around 1m EUR trading volume per day on average.





Julian Liniger, CEO of Relai

An alternative to buying Bitcoin from an exchange, OTC desk, or broker is to buy directly from the miners that secure the Bitcoin network. Bitcoin miners can sell "clean" Bitcoin to investors who want to own Bitcoin with no transaction history. The demand for clean Bitcoin may increase if regulators continue to blacklist certain wallet addresses and mixing technologies.

# 2.2 Custody and Storage

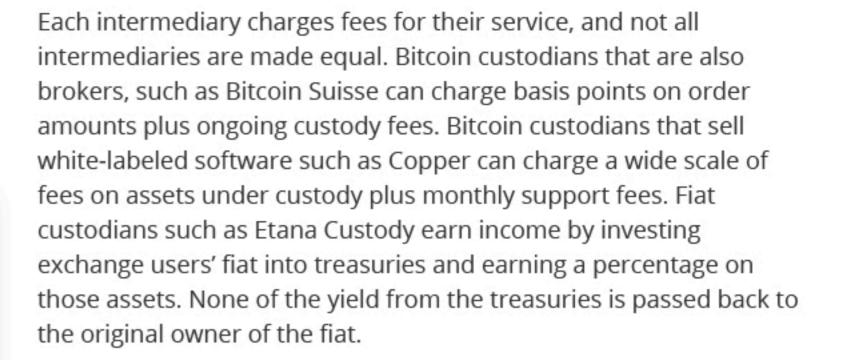
After an institutional investor buys Bitcoin via an exchange, broker, OTC desk, or miner, the next question is, "How can I safely store Bitcoin?" In the evolving landscape of digital assets, the secure storage of Bitcoin has emerged as a paramount concern, especially for institutional investors managing significant portfolios. The unique nature of cryptocurrencies necessitates storage solutions that offer both rigorous security and seamless accessibility.

This chapter breaks custody into three main categories: centralized Bitcoin custody, centralized fiat custody, and self-custody. The earliest firms in the Bitcoin ecosystem fulfilled both the role of broker and custodian since few companies existed in the space. For example, Bitcoin Suisse in Switzerland is both a custodian and a broker. Over time, the different roles became specialized, and companies focused solely on custody emerged. There are different types of Bitcoin custodians, including custodians that take delivery of Bitcoin and Bitcoin custodians that use white-label storage technology and then sell to third-party companies that want to store their client's assets in a familiar interface. In addition to Bitcoin custodians, fiat custodians work with Bitcoin companies. For example, when an investor has fiat sitting on an exchange such as Kraken, that does not mean that Kraken is storing the fiat in Kraken's corporate bank account. Kraken and other exchanges cannot hold onto fiat for customers. They must rely on banking partners such as Bank Frick in Liechtenstein to facilitate fiat withdrawals and deposits. Since

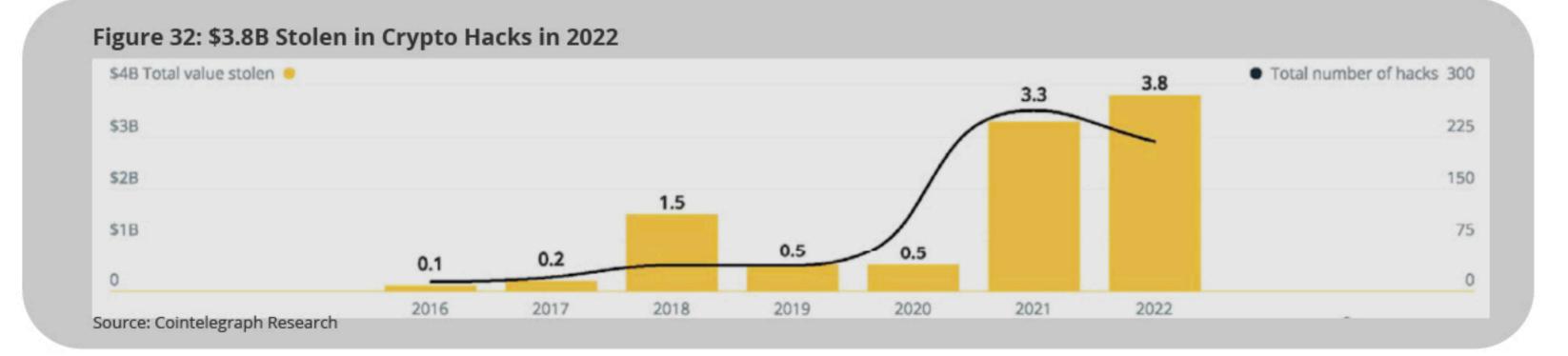


many banks faced backlash from regulators for facilitating Bitcoin purchases, a new category of fiat routing software companies arose. Companies such as Etana Custody, based in Denver, Colorado, allow banks to hide behind the Etana brand to avoid negative media and regulatory consequences. Etana does not take custody of the fiat currency held by Kraken users but rather routes the fiat transaction to a series of member banks that handle settlement.





The following sections delve into the various institutional-grade storage options available, ranging from specialized Bitcoin custodians to self-storage practices. Additionally, it sheds light on the pivotal role of fiat custodians in the crypto ecosystem, the importance of wallets tailored for substantial transactions, and the growing domain of insurance tailored to mitigate risks associated with digital assets. As we navigate through each segment, we'll introduce some of the industry's leading service providers and products, aiming to equip investors with the knowledge to make informed decisions in this rapidly advancing arena.



# 2.2.1 Bitcoin Custodians

Never was as much money stolen in crypto hacks as in 2022. According to Chainalysis' 2023 crypto crime report, \$3.8B was lost due to cybercrime last year, mainly in DeFi protocols and centralized exchanges.



Source: Cointelegraph Research

The loss of cryptocurrency due to hacks and the bankruptcy of centralized exchanges such as FTX has made the topic of custody even more important. Institutional investors who do not want to hold their own keys can use a custodian to store their digital assets. However, it is important to note that not all custodians are made equal and that some custodians do fail. In 2023, the Bitcoin custodian Prime Trust was sent into receivership by the Eighth Judicial District Court of Nevada due to a "substantial deficit between its assets and liabilities."<sup>32</sup> Therefore, it is crucial to look for custodians who have many years of experience without a hack, substantial equity on the balance sheet, and client assets are segregated on the custodian's balance sheet.



# The Step-by-step Guide to Choosing Your Crypto Custodian

#### Introduction

In an era defined by the rapid evolution of technology and finance, cryptocurrencies have emerged as a groundbreaking financial asset class. They promise financial sovereignty, borderless transactions, and unparalleled opportunities for growth. However, as the crypto landscape continues to expand, so do the challenges surrounding the security and custody of these digital assets, writes Yves Longchamp, Managing Director and Head of Research at AMINA Bank.

In this evolving ecosystem there is a need for thought leaders in the industry to talk more openly and candidly about crypto security and custody. Let's start by sharing some valuable advice that will look to make your crypto journey smoother and help you find the right partner, one that embodies the pinnacle of best practices in this space.

# **Understanding the Basics**

First thing's first, let's break down some important crypto terminology. When we talk about custody, we're essentially talking about how you secure and manage your digital assets. Think of it as the way to safeguard your most prized possessions.

Now, digital assets are not like traditional bank accounts or physical assets. There are no bank vaults here. Instead, your digital assets are stored on the blockchain, and you access them using private keys. These keys are the linchpin of your security strategy, and their protection is paramount. Understanding how keys, wallets, and other advanced technologies work is essential to foolproof digital asset protection, which is the exact expertise a trusted custodian can provide.

# The Cardinal Rules of Crypto Custody

### Rule 1: Choose Your Custodian Wisely

Imagine entrusting your priceless artwork to a world-renowned museum. In the world of digital assets, selecting the right custodian is equally critical. Look for a custodian that aligns with high security and regulatory standards and has a proven track record. Such a partner will ensure your assets are treated with the utmost care and due-diligence, ensuring your assets are segregated from its balance sheet.

# Rule 2: Seek the Specialized Knowledge of Expert Partners

While institutions wield significant expertise, navigating the complex landscape of cryptocurrency custody is best done in partnership. Custodians bring a wealth of specialized knowledge, cutting-edge security infrastructure, and a depth of experience that is unparalleled. Seek a custodian who seamlessly combines technical prowess with user-friendly interfaces, simplifying your journey.

<sup>32</sup> https://cointelegraph.com/news/nevada-court-approves-regulator-petition-prime-trust-receivership



# AMINA

#### Rule 3: The Wallet Dilemma

Just as you have an array of investment instruments at your disposal, choosing the optimal wallet type is vital. Two primary categories are hot and cold wallets. Hot wallets, like a well-connected office, offer fast transactions but are susceptible to external breaches. Cold wallets, providing physical protection like a secure vault, are offline and virtually impenetrable. Keeping both a hot and cold wallet is advisable, especially when interacting with the internet regularly. Hot wallets will help you buy and sell instantly, and cold wallets will secure your assets against external risks. Institutions have the luxury of tailored solutions, such as a mix of both wallets, that align with their specific security and operational needs.

#### Rule 4: Diversify, Diversify

Diversification is the cornerstone of crypto security. Just as you wouldn't pool all your traditional assets in a single basket, spreading your digital holdings across various wallets, particularly secure cold wallets, multiplies your safety net. Look for a custodian offering a comprehensive suite of wallet options, ensuring your assets remain resilient against any eventuality.

#### Rule 5: Harnessing Advanced Technologies

The crypto landscape is replete with innovative security technologies. Multi-Signature (Multisig) and Multiparty Computation (MPC) stand as the vanguards. Multisig mandates multiple signatures to authorize transactions, rendering it virtually impervious to hacks. MPC, the more intricate sibling, divides private keys into indecipherable fragments, thwarting even the most determined attackers. Seek a custodian that deploys these advanced safeguards to fortify your assets.

#### Conclusion

As you venture through the complex realm of digital wealth and assets, security remains paramount. Your chosen custodian should epitomize cutting-edge security, unwavering regulatory adherence, and a steadfast commitment to preserving your assets' integrity.

In this quest for the ideal custodian, consider regulated custodians with a consistent track record and high security standards— it will ensure that your coins are segregated from the custodian balance sheet. Collaborating with an established custodian allows you to benefit from the latest technology. Use a mix of cold and hot wallets to manage your coins, as this combination provides high security and convenience.

Diversify! Use a wide range of wallet options as you don't want to pool all your assets in one single wallet. Finally, be sure the custodian is replete with innovative security technologies such as Multisig and MPC.

As you embark on this thrilling digital voyage, remember that your institution's strength is contingent upon the security it embraces. Choose your custodian carefully, as it is a beacon of security, poised to safeguard your digital wealth with the utmost care and due-diligence.





**Yves Longchamp**Managing Director of Amina and Head of Research



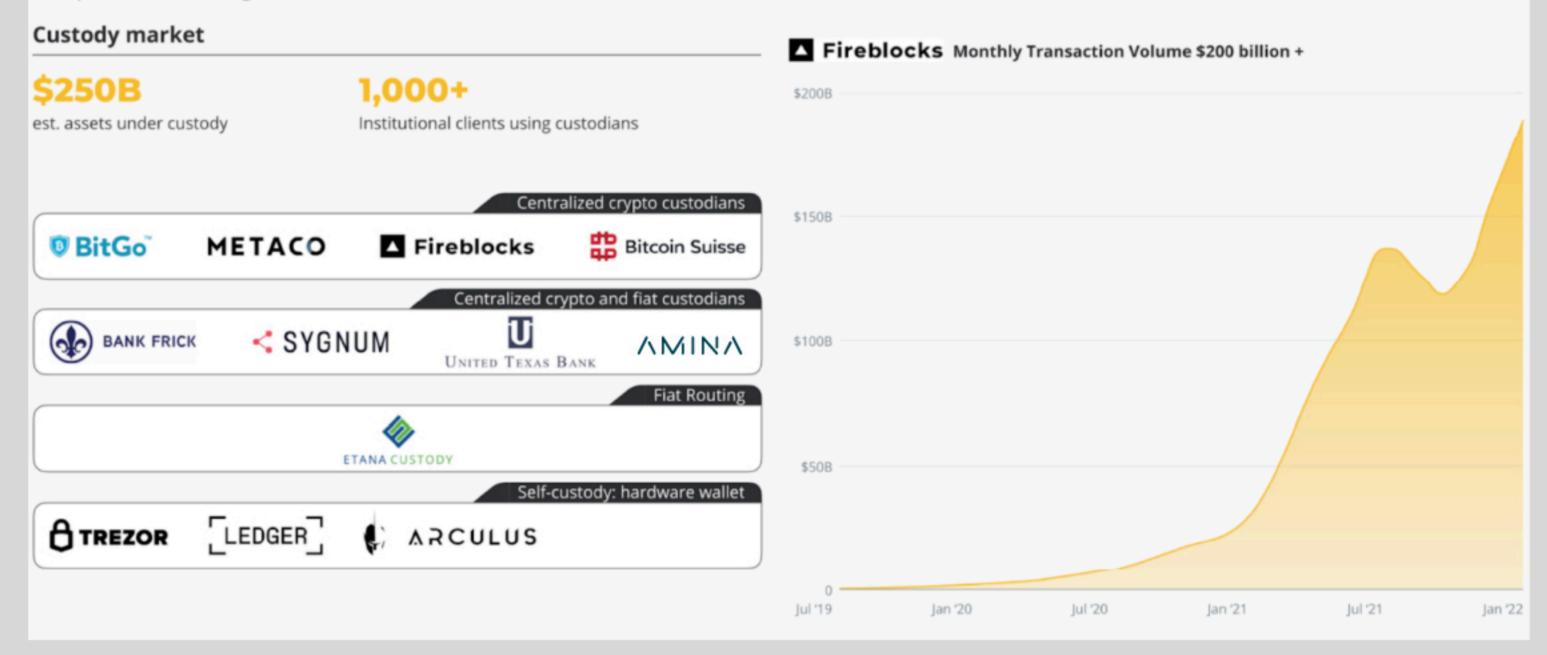
Bitcoin custodians specialize in providing secure storage services for large holdings of Bitcoin, typically for institutional investors. The custody market has an estimated \$250 billion in assets under custody with over 1,000 institutional clients. For example, BitGo and Fireblocks reached peak assets under custody of \$64 billion in 2021<sup>33</sup> and \$45 billion in 2022, respectively<sup>34</sup>. While some custodians, such as BitGo, take custody of the digital assets, others, such as Fireblocks, offer solutions that allow firms to self-custody their assets using Fireblocks' technology. Therefore, the total amount of assets under custody by custodians that offer white-labeled solutions is unknown.

Figure 33: Valuation and Assets under Custody of U.S. Custodians

	▲ Fireblocks	<b>®</b> BitGo
TYPE	CENTRALIZED CRYPTO CUSTODIAN	CENTRALIZED CRYPTO CUSTODIAN
Peak AuC	\$45B	\$64B
Valuation	\$8B	\$1.2B
Location	US	US

Figure 34: Fireblocks Monthly Transaction Volume \$200 Billion+

Custody and crypto banking assets under custody have been growing over the past 3 years despite regulatory complications and high-risk environment.



Source: Cointelegraph Research

Source: Cointelegraph Research

<sup>34</sup> https://www.prnewswire.com/news-releases/fireblocks-raises-550-million-in-series-e-funding-to-become-the-highest-valued-digital-asset-infrastructure-provider-301469630.html

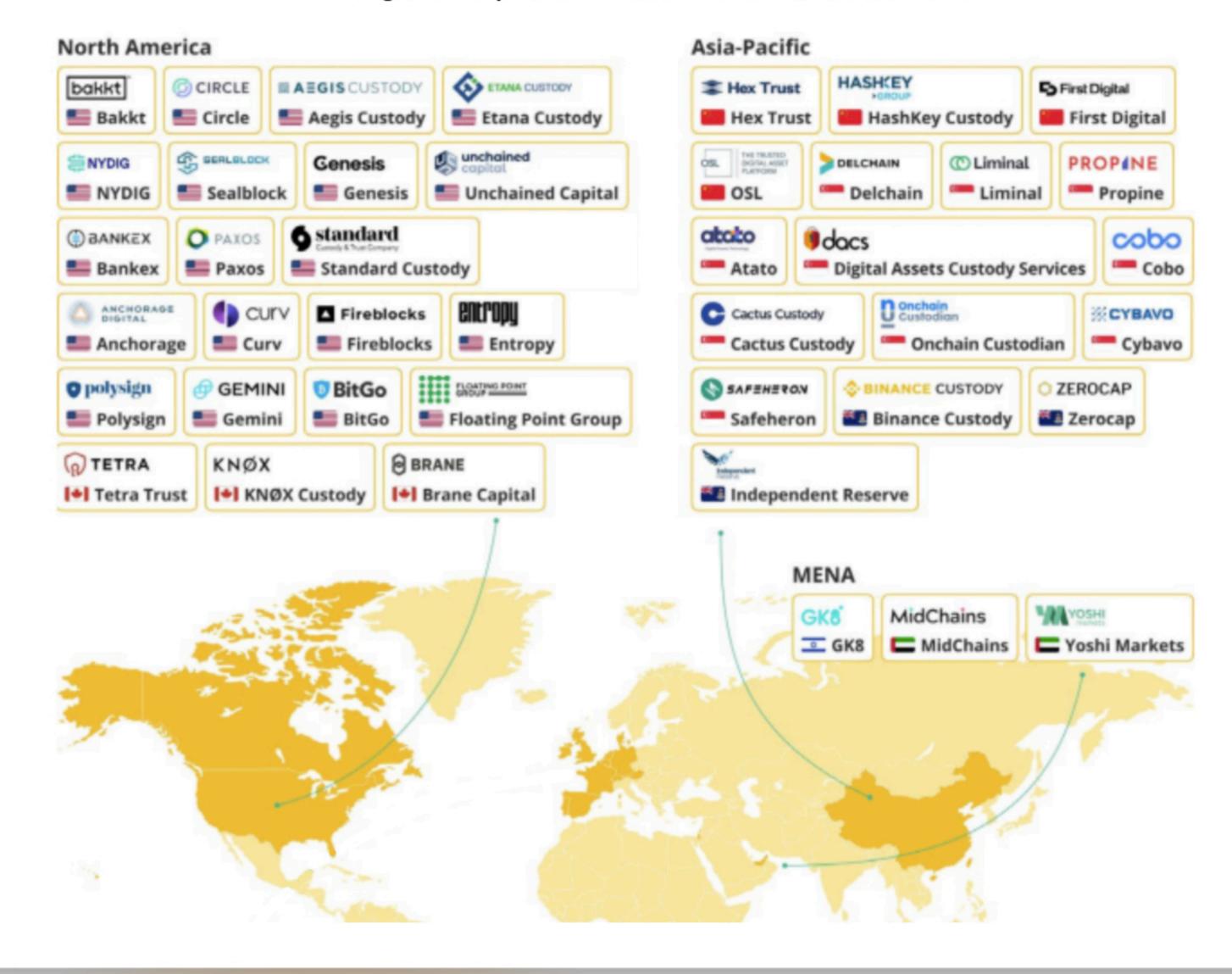


<sup>33</sup> https://www.bitgo.com/newsroom/press-releases/bitgo-announces-over-64-billion-in-auc-and-appoints-cassandra-lentchner-president-for-the-bitgo-trust-companies/

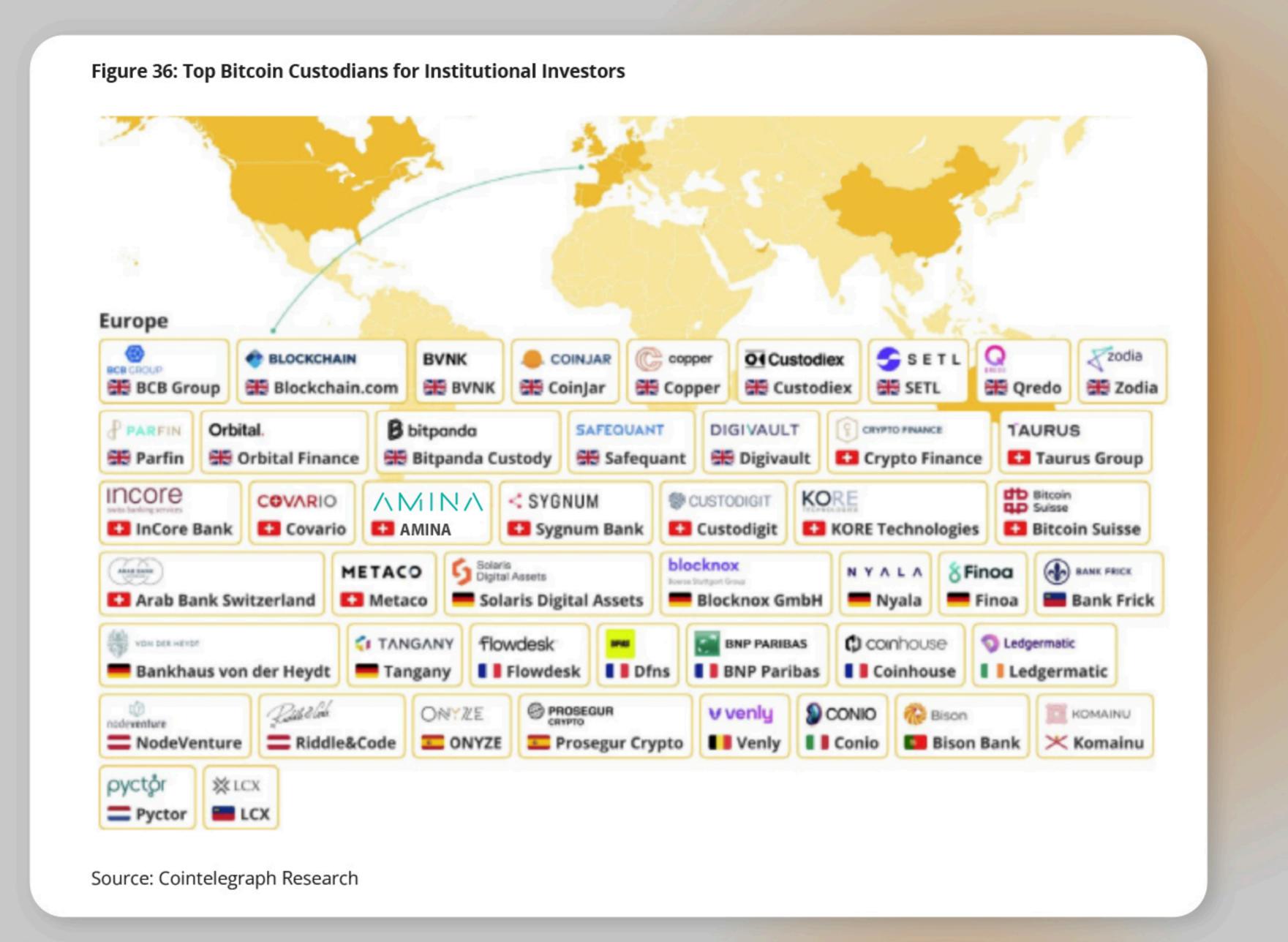
Figure 35: Top Bitcoin Custodians for Institutional Investors

	CUSTODIAN	INCEPTION DATE	DOMICILE
#1	A full-service Swiss-regulated crypto bank for custody, trading, and lending, in both crypto and fiat.	2018	Switzerland
#2	coinbase Custody  An independent, NYDFS-regulated entity built on Coinbase's crypto-first DNA, offering the world's most sophisticated and reliable custody solution.	2012	USA
#3	Fidelity A DIGITAL ASSETS.  A full-service, enterprise-grade platform for securing, trading, and supporting investments in digital assets.	2014	USA
#4	BitGo  Offers end-to-end solutions to store, trade, and lend digital assets.	2013	USA
#5	GEMINI CUSTODY <sup>TM</sup> Known for its regulatory compliance, it provides secure, compliant, and institutional-grade omnibus and segregated crypto asset custody.	2013	USA
#6	ANCHORAGE DIGITAL  Positioning itself as the safest place for institutions to hold digital assets, with solutions that benefit from advanced security and flexibility.	2017	USA

Figure 36: Top Bitcoin Custodians for Institutional Investors









# MINN



#### Insider Insight with Yves Longchamp, Managing Director of AMINA

1. How does AMINA hold digital assets? Do you use Hardware Securities Modules or Multi-Party Computation? What makes AMINA custody unique?

Leading industry standards in crypto custody require taking into account a holistic approach that incorporates regulatory compliance, customer flexibility, and advanced security measures. Our Swiss heritage in financial services, coupled with a strong track record in deploying a compliance-led approach allows AMINA to offer an investment approach expected of a fully regulated and audited Swiss financial institution. AMINA's compliance-led investment approach combines the use of Hardware Security Modules (HSM) and Multi-Party Computation (MPC) for enhanced protection. Our digital asset custody solutions deploy the following measures, including:

- Full Segregation under Swiss Federal Law: AMINA rigorously adheres to Swiss federal law,
  which mandates the full segregation of crypto assets. This segregation provides a robust
  shield against counterparty risk, meaning that our customers' digital assets are entirely
  separate and protected from the bank's balance sheet. This practice embodies the principle:
  "Your Bank, Your Coins!"
- Compliance with FINMA Standards: Our custody solutions are rigorously audited and fully comply with the strict standards set by the Swiss Financial Market Supervisory Authority (FINMA). This commitment to regulatory compliance ensures an enhanced level of safety for clients' digital assets.
- Flexible Custody Solutions: AMINA offers flexible custody options by providing both hot
  and cold custody solutions, allowing clients to choose their preferred level of accessibility
  and security.
- · Institutional Grade Security: We utilise state-of-the-art security measures, including

Institutional Grade Hardware Security Modules (HSMs) and Multi-Party Computation (MPC) for hot custody solutions. These technologies provide a robust defence against unauthorised access and cyber threats..

- Proprietary Cold Custody: We utilise a proprietary cold custody solution, where physical
  access is tightly controlled through a multi-authentication system. This extra layer of
  security ensures that digital assets are safeguarded against physical breaches.
- Redundant Back-Up Keys: To enhance security, we maintain backup keys in multiple secure locations throughout Switzerland, reducing the risk of asset loss or compromise.
- Comprehensive Insurance Coverage: Clients' digital assets held with AMINA are
  protected by professional indemnity, species, and cyber insurance, providing an additional
  layer of reassurance.
- Regular Audits: We conduct yearly ISAE 3402 audits to maintain the highest standards of security and compliance.

In essence, AMINA's digital asset custody aims to employ a holistic approach that includes HSM and MPC technology, compliant with Swiss regulations and leading industry standards. Importantly, clients' assets are entirely segregated from our balance sheet, ensuring optimal security. Regular audits maintain transparency and accountability.

#### 02. Does AMINA do advising and asset management as well as custody?

For a long time, crypto's status as a viable asset class went unrealised owing to an issue of inaccessibility. Traditional banks and asset managers were unable to meet the needs of crypto native businesses, entrepreneurs, and traders in providing the solutions these client groups required to access and manage their wealth — AMINA Bank set out to resolve that.

Our service offering was borne out by identifying a gap in the market based on the challenges traditional investors experienced in accessing crypto assets, stymied by a lack of institutional-grade infrastructure and trustworthy financial partners. Our engagement with



traditional investors and crypto natives, coupled with an understanding of the market ecosystem, allowed AMINA to provide a comprehensive suite of services that incorporates a rigorous approach to custody and asset management services. While we do not offer advisory services, we do hold a license from the Swiss Banking Regulator to act as custodian for Swiss domiciled Mutual Funds.

In summary, AMINA's integrated custody and asset management services offer our client base a holistic solution to manage and grow their digital investments while adhering to strict regulatory standards. We tailor portfolios and design investment strategies according to the customer's unique objectives and risk tolerance levels, ensuring their investments align with their financial goals.

# 03. Certificates are allowed to gain institutional investors exposure to cryptocurrencies like Bitcoin. Does AMINA offer certificates? Are the holdings of the certificates on the balance sheet of AMINA?

Whilst AMINA does not directly offer or hold certificates that provide exposure to cryptocurrencies, these certificates are offered by external issuers who utilise AMINA's custody and trading services. AMINA plays a role in supporting these certificates by performing certain administrative tasks for the issuer, for which a fee is charged. Additionally, AMINA acts as a distributor for these certificates. It's important to note that the coins held in AMINA's custody are not linked to AMINA's balance sheet. From the perspective of investors and issuers, these assets are off the AMINA balance sheet, ensuring that they are securely managed.

AMINA's exchange-based crypto products offer a regulated gateway for institutions to efficiently and securely invest in crypto assets. AMINA's **Single Coin Exchange Traded Product (ETP)** can be bought and sold through banks and brokers, like any other security. These ETPs provide access to the full potential of specific cryptocurrencies and are traded on leading European stock exchanges, including Switzerland's SIX Exchange, Euronext in Paris and

Amsterdam, and the Xetra exchange in Germany. AMINA's ETPs consist of holdings in Bitcoin, Ethereum, and Polkadot.

These offerings demonstrate AMINA's commitment to providing a diverse range of investment products while ensuring the security and segregation of assets in custody from the bank's balance sheet. All our offerings take into consideration robust processes which combine quantitative metrics and in-depth qualitative analysis in line with all regulatory compliance measures.

#### 04. How can investors earn a yield on their digital assets via AMINA?

AMINA deploys a holistic approach to portfolio and investment strategies that sets out to build a bridge from traditional banking to the digital world, through distinct offerings like staking.

#### Staking with AMINA:

Clients can opt for staking, a process where clients lock up their cryptocurrency holdings in a network's staking mechanism. This participation contributes to the security and validation of transactions within the network, and in return, stakers receive additional cryptocurrency rewards. Some of the digital assets available for staking through AMINA include Ethereum, Polygon and Tezos.

In line with guidance on staking services published by FINMA, dated 20 December 2023, AMINA's staking features are based on principles designed to enhance transparency and boost security that includes:

Simplicity: We try to ensure staking with AMINA is as easy and hassle-free as possible.
 Clients define the amount they want to stake, and we handle all the necessary processes, making it as seamless an experience as possible.



- Security: AMINA upholds the highest standards of security to ensure that our clients' assets
  are always protected throughout the staking process.
- Ownership: With AMINA, clients retain full ownership and control of their funds even while earning rewards. Clients' funds always remain segregated from AMINA's balance sheet while they are staked.

By engaging in AMINA's holistic approach to portfolio management, clients can leverage the potential of various strategies while effectively managing their digital asset portfolios. Whether through staking or options trading, AMINA provides clients with versatile opportunities that adhere to an investment philosophy based on diversity and maximising security. A robust approach to portfolio management based on in-depth research and expert analysis provides our clients with the hands-on assistance and market expertise they require to navigate the inevitable ups and downs of the market.

05. If an investor does not want to sell their Bitcoin, but instead they want to use their Bitcoin as collateral for a loan, are cryptocurrencies something that AMINA will accept as collateral? How does a Bitcoin loan work?

At AMINA, we offer a versatile range of financial services based on flexibility. Investors who wish to hold their Bitcoin, while gaining access to liquidity may use their Bitcoin as collateral for a loan.

Investors can leverage the following market strategies when using their Bitcoin as collateral:

- Collateralised Loans: These provide both fixed-term and roll-over loans that are secured
  against a variety of assets, including traditional and crypto assets. This collateralisation
  allows you to access capital without needing to liquidate your Bitcoin holdings.
- **Financial Agility**: AMINA's loans offer you the financial agility to explore new investment opportunities, cover short positions, or release cash for day-to-day expenses. It provides

 you with the flexibility to manage your finances in a way that aligns with your investment goals.

In addition to these specific lending options, AMINA's comprehensive financial services bring additional advantages:

- One-Stop-Shop: AMINA serves as a one-stop-shop for a wide array of financial services including trading, custody, lending, staking, investment solutions, and banking services.
   This integrated approach simplifies your financial management.
- Regulatory Compliance: As a FINMA-licensed and supervised bank, AMINA adheres strictly to the regulatory framework required of a Swiss banking and securities dealer. This regulatory oversight ensures that your assets are managed with the highest standards of security and compliance.

In summary, AMINA's diverse service offering empowers investors to leverage their Bitcoin holdings to access capital and liquidity through collateralised loans. AMINA's commitment to regulatory compliance makes us a trusted partner for investors seeking to harness the full potential of their assets while maintaining ownership of their cryptocurrencies.



#### 2.2.2 Fiat Custodians That Work with Bitcoin

Fiat custodians typically hold traditional currencies and may offer services for converting fiat to crypto and vice versa. The main difference between Bitcoin custodians and fiat custodians is that fiat custodians are licensed banks, whereas most Bitcoin custodians are not licensed banks. A notable exception to this is AMINA, which is both a Bitcoin custodian and a licensed bank.

Figure 37: Top Bitcoin Fiat Custodians for Institutional Investors

	CUSTODIAN	INCEPTION DATE	DOMICILE
#1	> BNY MELLON BNY Mellon . The Bank of New York Mellon Corporation has signaled interest in acting as a fiat custodian in the crypto space.	2007	USA
#2	State Street. Another major traditional financial entity that's shown interest in the crypto realm	1792	USA
#3	Fidelity A DIGITAL ASSETS*  Fidelity Digital Assets. A trusted financial institution with dedicated Bitcoin custody and execution services.	2018	USA
#4	BitGo.  BitGo. A pioneer in institutional crypto custody, known for advanced security features for Bitcoin.	2013	USA
#4	JPMORGAN CHASE & CO.  JP Morgan Chase. One of the largest global financial institutions provides crypto-friendly banking services to exchanges and digital asset firms such as Gemini.	1871	USA

Figure 38: Banks that Work with Bitcoin and Bitcoin Businesses Russia/Eurasia **North America** SBER Morgan Stanley usbank Vast.bank Morgan Stanley Vast Bank U.S. Bank Sber/Sberbank Goldman Sachs © ONYX COWEN Cowen IP Morgan Chase Goldman Sachs Asia MUFG > BNY MELLON ✓ SMBC BNY Mellon Customers Bank SMBC ally KB Kookmin Bank Custodia ( WELLS FARGO Mank Ally Bank **USAA** Wells Fargo E Custodia Bank / Avanti Kookmin Bank citi **DIJUNO** QUONTIC SYGNUM **MDBS** Quontic Bank Citigroup Sygnum Bank







#### 2.2.2.1 Insurance

Typically, major custodians (like Coinbase Custody, Fidelity Digital Assets, and BitGo) offer some form of insurance coverage for their clients' Bitcoin holdings. For example, BitGo maintains a \$250M insurance policy on digital assets whereas BitGo Trust Company maintains all of the keys. Specifically, the policy covers copying and theft of private keys, insider theft or dishonest acts by BitGo employees or executives, and a loss of keys. Traditional insurers such as Aon and Lloyd's of London have ventured into the crypto space, providing policies for crypto custodians and other businesses.

Figure 39: Insurance for Bitcoin Custodians

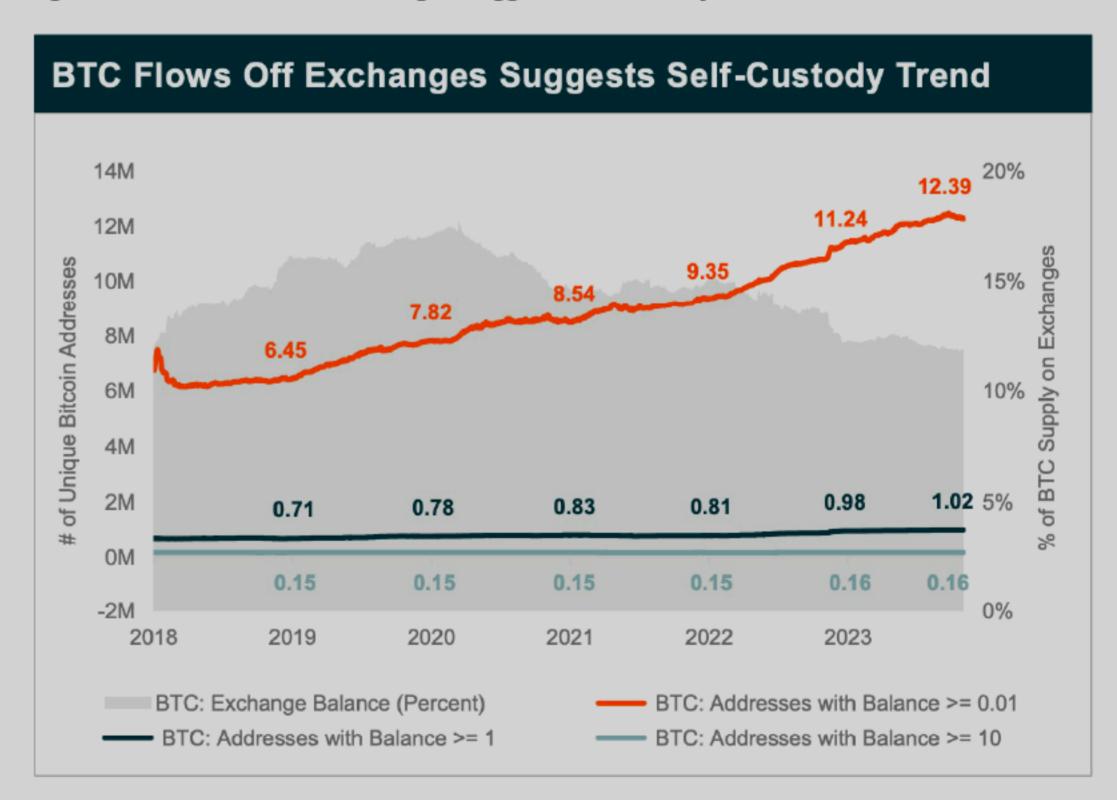
	CUSTODIAN	INCEPTION DATE	DOMICILE
#1	Offering a crime policy to protect against the loss, damage, destruction or theft of digital assets in secure premises or in transit or transmission and also internal and external fraud, including electronic theft, which would include hot wallet protection.	1982	USA
#2	LLOYD'S OF LONDON Insuring the largest custodians in the Bitcoin space for years including BitGo and Crypto.com.	1688	UK
#3	Munich RE  Protects against theft and permanent loss of digital assets. Provides insurance for the cryptocurrency staking service offered by Boerse Stuttgart Digital, the crypto-focused arm of the Stuttgart Stock Exchange	1880	Germany

Source: Cointelegraph Research, CryptoResearch.Report

## 2.2.3 Self-custody Industry Best Practices

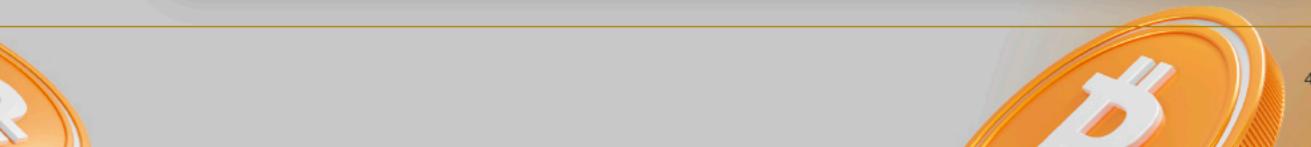
Since 2020, a noticeable downward trend can be seen in the exchange balance of Bitcoin, indicating that Bitcoin owners remove their Bitcoin from the exchange after making a purchase instead of leaving their Bitcoin in the exchange. The amount of Bitcoin on exchanges is currently at a 5-year low.

Figure 40: BTC Flows Off Exchanges Suggest Self-custody Trend



Source: Global X by Mirae Asset





Besides black-hat hacking, 2022 was also riddled with collapses and bankruptcies of centralized service providers, including Celsius and FTX. These events highlighted that funds are not safe unless they are in self-custody. In response, more and more users are purchasing hardware wallets. After FTX went down, wallet manufacturer Trezor posted a 300% growth in revenue figures and sold more devices than at the height of the bull market.35 This trend is set to continue and market researchers project that the market for hardware wallets will grow from \$285M to over \$1.4B by 2030.

#### Figure 41: 2022 - 2023 Crypto Bankruptcies

Despite a significantly larger market and potential B2B exposure, the industry is perceived as highly risky, as numerous bankruptcy events over the course of last year were observed. These mainly happened due to inability to follow appropriate risk management practices while achieving high APYS.

	VOYAGER	C Celsius	VAULD	BlockFi	Genesis
Bankruptcy Date	6 July, 2022	13 July, 2022	13 July, 2022	28 Nov, 2022	19 Jan, 2023
Peak AUM / \$, B	3.3	25	1	10.4	35.7
Assets in bankruptcy / \$, B	1.8	2.6	0.33	0.26	5.1
Liabilities in bankruptcy / \$, B	5.7	5	0.4	1-10	5.3
APY before bankruptcy	Up to 18%	Up to 22%	Up to 12%	Up to 12%	Up to 7.4%

Source: Cointelegraph Research

#### 2.2.3.1 Wallets

For institutions that prefer to manage their own keys, they need to choose a wallet that suits their unique needs. The main options include:

<sup>36</sup> https://glacierprotocol.org/





Figure 42: Multi-signature Wallets

	MULTI-SIGNATURE WALLET PROVIDER	INCEPTION DATE	DOMICILE
#1	LEDGER ENTERPRISE  Borrows some of the principles of multisignature to create a quorum of administrators for institutional clients.	2014	France
#2	©Casa  Known for its multi-signature and geographically distributed key storage solution.	2016	USA
#3	Unchained capital  Offers collaborative custody, a blend of user and third-party multi-signature keys.	2017	USA

Source: Cointelegraph Research, CryptoResearch.Report

- 1. Multi-signature Wallets: Requires multiple private keys to authorize a Bitcoin transaction. Provides a balance between security and accessibility. Notable multi-signature wallet providers include:
- 2. Hardware Wallets: Physical devices such as Trezor or Ledger that securely store private keys offline.
- 3. Air-gapped (Cold) Storage: Keeping a reserve of Bitcoin offline. Provides the most security but lacks immediacy for trading. The gold standard for cold storage that is self-custodied is the Glacier Protocol. Available at glacierprotocol.org, the Glacier Protocol is a 78-page PDF36 that gives step-by-step instructions for how to self-store large amounts of Bitcoin.



The step-by-step protocol for storing bitcoins in a highly secure way

Version 0.94 Beta

Check the latest version (https://glacierprotocol.org/)

<sup>35</sup> https://cointelegraph.com/news/trezor-reports-300-surge-in-sales-revenue-due-to-ftx-contagion

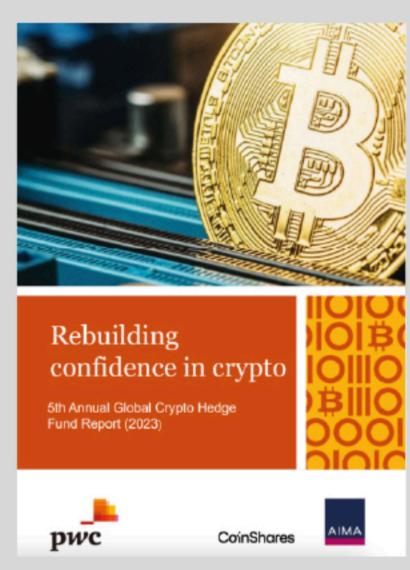
# 2.3 Alternatives to Directly Owning Bitcoin

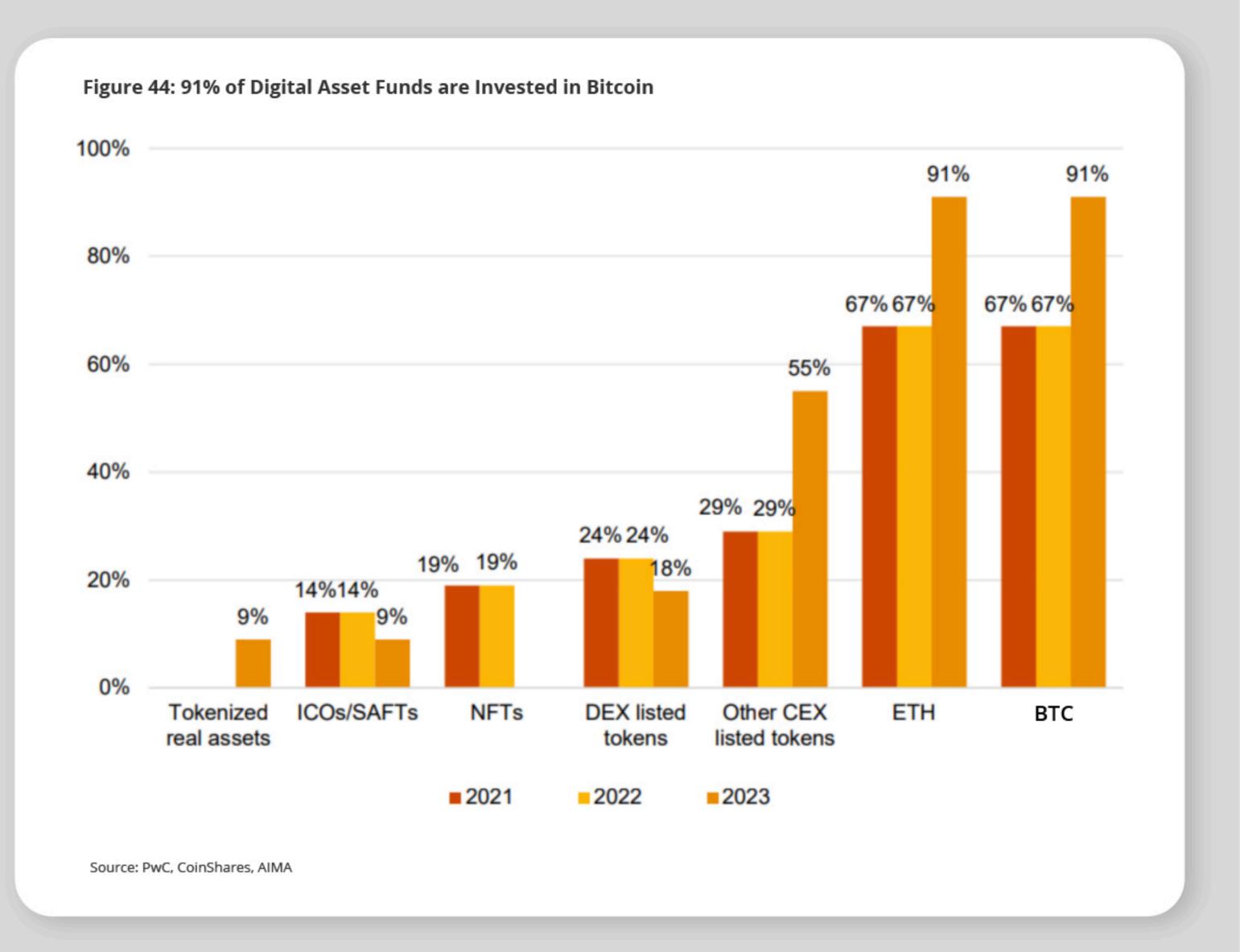
From a niche for blockchain enthusiasts, Bitcoin continues to grow and gain acceptance as a mainstream financial instrument. As the adoption has risen, different ways are arising to own the asset other than the traditional way of buying the asset directly such as ETFs, ETPs, Trusts, etc.

According to the 5th Annual Global Crypto Hedge Fund Report (2023) by PwC, CoinShares, and AIMA, over two-thirds (69%) of all participants in the survey are engaging in crypto-asset investments through spot trading, a notable increase from 43% in the previous year's report. The survey was conducted in Q1 2023 across a sample of 131 crypto-native hedge funds. In contrast with directly investing in the spot market of cryptocurrencies, several alternatives exist such as derivatives, venture capital, and

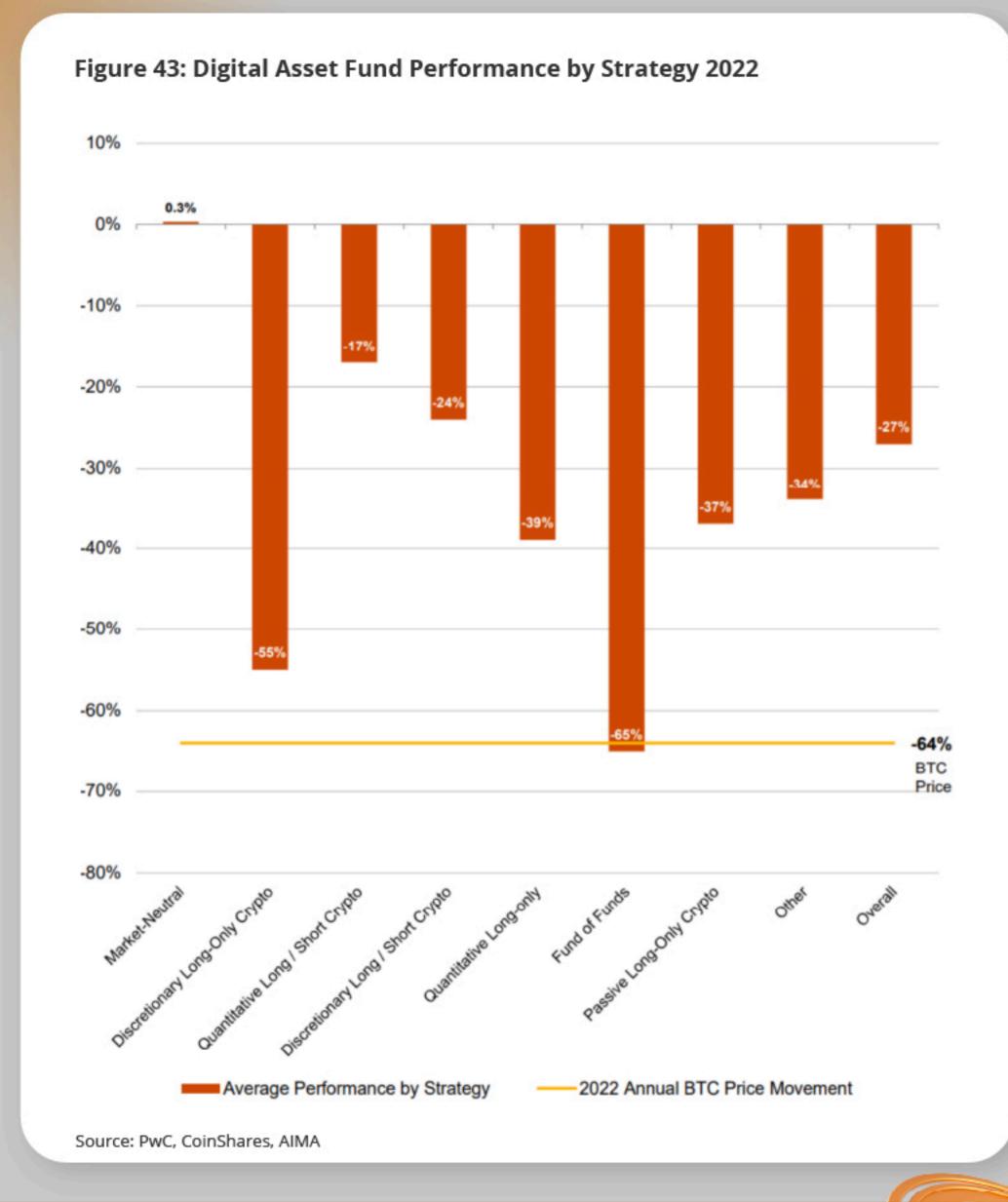
structured products.

According to the PwC report, the proportion of respondents investing in crypto-assets via derivatives declined to 38% in 2023, down from 52% in 2022, possibly due to a heightened awareness of risks associated with counterparties such as Genesis and FTX.









The majority of crypto hedge funds performed significantly better than the price of BTC during 2022. While Bitcoin' performed -64% from 31 December 2021 to 31 December 2022, most strategies handled the bear market better than the benchmark (with the exception of fund of funds).

Regarding investment strategies, 31% of respondents in 2023, up from 2022's 10%, are taking a passive approach. The complexity of the technology in this sector can be challenging for those not deeply immersed in it. Consequently, a growing number of fund managers seem to be opting for passive strategies to access this market despite passive strategies returning a loss of 37% on average in 2022.

In the realm of hedge funds, 23% report utilizing actively managed funds or funds of funds for their crypto-asset investments. Additionally, 15% indicate their involvement through venture capital investments in this sector.

For investors that want exposure to Bitcoin without handling their own private keys, there are several alternatives such as passive funds, active funds, mining stocks, and venture capital. This section dives into some of the household names in the Bitcoin ecosystem.

<sup>20</sup> https://www.pwc.com/gx/en/new-ventures/cryptocurrency-assets/5th-annual-global-crypto-hedge-fund-report-july-2023.pdf



## 2.3.1 Passive Bitcoin-Only Funds and Structured Products

For institutional investors who opt to buy Bitcoin directly, the first question is, "Where should I buy Bitcoin?" Although we cannot give financial advice in this report, we can provide information on the largest centralized exchanges, OTC desks, and brokers that sell Bitcoin to institutional investors around the world.

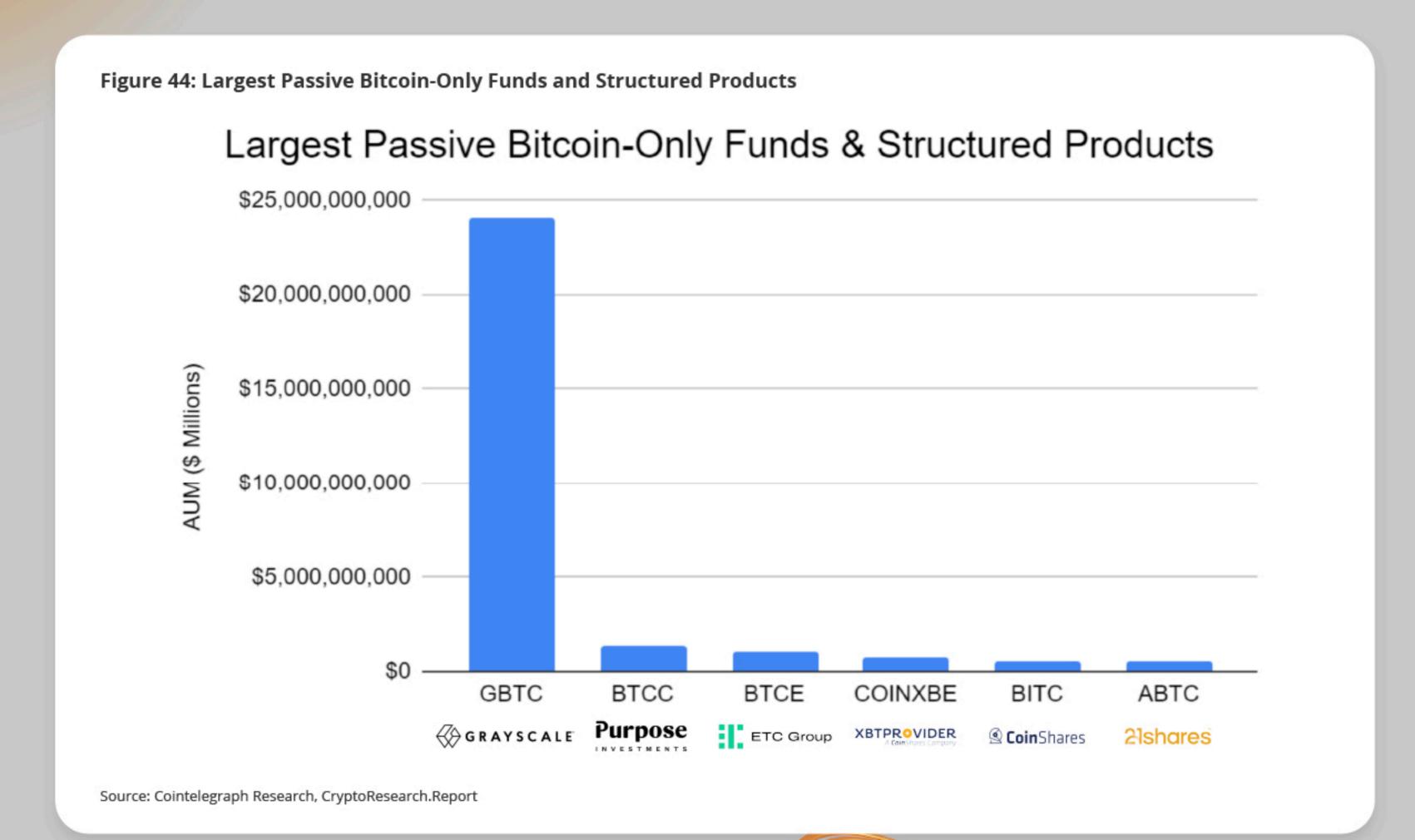






Figure 45: Assets Under Management of Largest Bitcoin Passive Products

	CUSTODIAN	AUM (\$) <sup>38</sup>	INCEPTION DATE	EXPENSE RATIO	DOMICILE
#1	Grayscale Bitcoin Trust (GBTC) <sup>39</sup> Grayscale is the world's leading crypto asset manager in assets under management with around \$24 billion just under their Bitcoin Trust. It has similar trust for other cryptocurrencies like Ethereum, Litecoin, Solana, etc.  The investors are issued shares against the capital they invest and the trust purchases BTC with the invested money. The price of a share reflects the value of Bitcoin held per share. However, the price of a share may not reflect the true value of the Bitcoin held as it may be sold at a premium or discount. Additionally, it is not available for exchanges and only over-the-counter (OTC).	\$24.05B	25/09/2013	2.00%	United States
#2	Purpose Bitcoin ETF (BTCC) <sup>40</sup> BTCC is the world's first and largest spot Bitcoin ETF with \$1.4 billion in assets under management. Based out of Canada, it provides investors an opportunity to own BTC without going through the hassle of creating an account or wallet for purchasing Bitcoin.	\$1.4B	09/11/2021	1.49%	Canada
#3	Based out of Germany, BTCE is the largest spot Bitcoin ETP in Europe with \$1.04 billion in assets under management. It is also the first European Bitcoin ETP to offset its carbon emissions. 100% physically backed by Bitcoin, it offers the investors an alternative to selling on the exchange by letting them redeem the ETP for actual Bitcoin.	\$1.04B	08/06/2020	2.00%	Germany

	CUSTODIAN	AUM (\$) <sup>38</sup>	INCEPTION DATE	EXPENSE RATIO	DOMICILE
#4	Launched in 2015, XBT Bitcoin ETP is the world's first Bitcoin-based security available on a regulated exchange, allowing for convenient exposure to the leading digital asset <sup>43</sup> . Based out of Sweden, it has \$778 million in assets under management and it closely tracks the price of actual Bitcoin.	\$778M	18/05/2015	2.50%	Sweden
#5	CoinShares Physical Bitcoin (BITC) <sup>44</sup> CoinShares  CoinShares physical Bitcoin ETP offers investors a straightforward alternative to directly buying Bitcoin.  Domiciled in Jersey, it has \$531 million in assets under management. Users can also redeem the fund units for actual Bitcoin.	\$531M	19/01/2021	0.98%	Jersey
#6	21Shares Bitcoin ETP (ABTC)⁴⁵ 21S H ∧ RES  21Shares Bitcoin ETP (ABTC) is 100% physically backed by BTC.  It tracks the performance of BTC and offers investors a simple and secure way to gain BTC exposure in their portfolio. Based out of Switzerland, it has \$519 million in assets under management.	\$519M	24/02/2019	1.49%	Switzerland

#### 38 AUM as of 1st Dec'23



<sup>39</sup> https://www.grayscale.com/crypto-products/grayscale-Bitcoin-trust

<sup>40</sup> https://www.purposeinvest.com/funds/purpose-Bitcoin-etf

<sup>41</sup> https://etc-group.com/products/btcetc/

<sup>42</sup> https://etp.coinshares.com/xbt/Bitcoin-tracker-euro

<sup>43</sup> https://etp.coinshares.com/xbt/Bitcoin-tracker-euro

<sup>44</sup> https://etp.coinshares.com/physical/Bitcoin

<sup>45</sup> https://21shares.com/product/ABTC

# 2.3.2 Active Bitcoin-Only Funds and Structured Products

BlackRock is exploring ways to offer our clients access to Bitcoin, reflecting the increasing demand from institutional investors.



Larry Fink, CEO of BlackRock

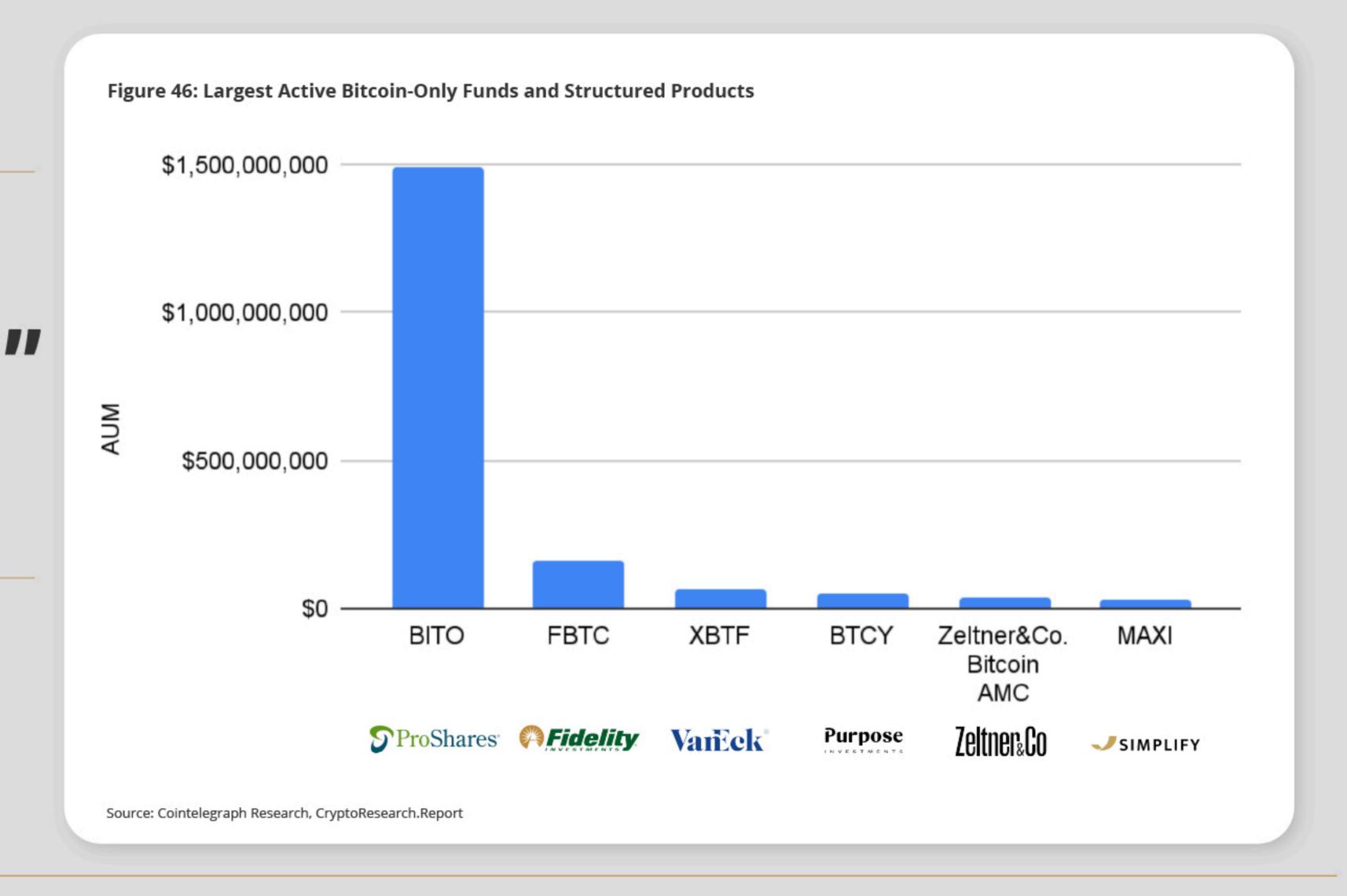




Figure 47: Assets Under Management of Largest Bitcoin Active Products

	FUND	AUM(\$) <sup>46</sup>	INCEPTION DATE	MANAGEMENT FEE EXPENSE RATIO	DOMICILE
#1	ProShares' ProShares Bitcoin Strategy ETF (BITO) <sup>47</sup> ProShares' BITO fund is by far the world's largest actively managed Bitcoin futures ETF with \$1.49 billion assets under management. It actively invests in Bitcoin futures contracts with a tiny portion also used for investments into other money-market products such as T-bills.	\$1.49B	18/10/2021	0.95%	United States
#2	Fidelity Advantage Bitcoin ETF (FBTC) <sup>48</sup> One of the largest asset managers in the world, Fidelity offers FBTC, an actively managed Bitcoin ETF based out of Canada. It has over \$160 million in assets under management and invests directly in Bitcoin with the security of Fidelity's in-house storage services.	\$160.4M	30/09/2021	0.95%	Canada
#3	VanEck  VanEck Bitcoin Strategy Fund (XBTF) <sup>49</sup> XBTF is an actively managed fund launched in 2021. It provides exposure to Bitcoin by majorly investing in Bitcoin futures contracts, while a small portion of the fund may be invested in Treasuries and cash. One of the advantages offered by XBTF over other ETFs is its structure, it is structured as a C-Corp which provides tax efficiency since it does not need to distribute long-term capital gains as dividends to investors.	\$66.19M	15/11/2021	0.66%	United States



<sup>46</sup> AUM as of 01 Dec'23

<sup>&</sup>lt;sup>47</sup> https://www.trackinsight.com/en/fund/BITO

<sup>48</sup> https://www.fidelity.ca/en/products/etfs/fbtc/

<sup>&</sup>lt;sup>49</sup> https://www.vaneck.com/us/en/investments/Bitcoin-strategy-etf-xbtf/overview/

Figure 47: Assets Under Management of Largest Bitcoin Active Products

	FUND	AUM(\$) <sup>46</sup>	INCEPTION DATE	MANAGEMENT FEE EXPENSE RATIO	DOMICILE
#4	Purpose Purpose Bitcoin Yield ETF (BTCY) <sup>50</sup> BTCY is another offering from Purpose Investments, Canada. It is an alternative to their passive BTC fund for investors who are looking to earn extra yield over exposure to Bitcoin. The Fund seeks to achieve its investment objectives by investing indirectly in long-term holdings of Bitcoin primarily through investment in units of the Purpose Bitcoin ETF and by implementing an option writing strategy. <sup>51</sup>	\$54.15M	02/12/2021	1.29%	Canada
#5	Zeltner & Co. Bitcoin Volatility Premium AMC <sup>52</sup> Based in Switzerland, Zeltner & Co. is a boutique investment firm offering its clients investment opportunities through multiple avenues with its 'Lift' (investment boutique) and 'Leap' (family office) firms. It has over \$40 million in assets under management in its Bitcoin Volatility Premium AMC fund.	\$40M	11/12/2023	1.5%	Switzerland
#6	SIMPLIFY Simplify Bitcoin Strategy PLUS Income ETF (MAXI) <sup>53</sup> Launched in 2022, MAXI ETF is one of the most recently launched funds. It is an actively managed fund that aims to provide capital appreciation by investing in BTC futures. However, it also uses short-dated put or call spreads on global equity indices to help generate income for its investors. <sup>54</sup>	\$32.95M	29/09/2022	11.18%	United States



<sup>50</sup> https://www.purposeinvest.com/funds/purpose-Bitcoin-yield-etf

<sup>51</sup> https://www.morningstar.com/etfs/xtse/btcy/quote

<sup>52</sup> https://www.zeltnerco.com/products/crypto-currency-frontier-amc

<sup>53</sup> https://www.simplify.us/etfs/maxi-simplify-Bitcoin-strategy-plus-income-etf

<sup>54</sup> https://www.forbes.com/advisor/investing/cryptocurrency/best-Bitcoin-etfs/

# 2.3.3 Publicly Listed Bitcoin Mining Stocks

Since the first crypto mining firms went public in 2017, their stock has been a proxy for direct investments into BTC for both retail and institutional investors. However, investors in mining firms had to deal with even higher volatility compared to the underlying asset, explains Lukas Pfeiffer, founder and Managing Director of Crypto Oxygen, an M&A advisory in the digital asset space:

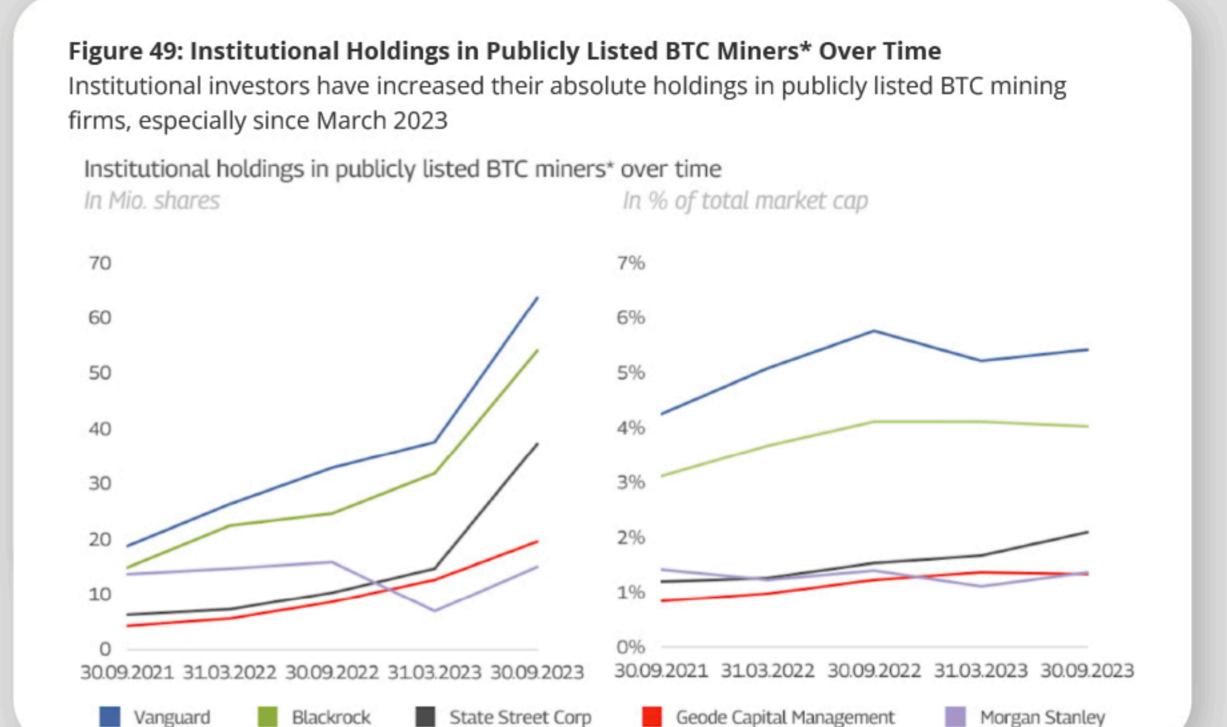
Investing in crypto mining firms is like a leveraged bet on BTC price. In the bull market, mining firms' stock prices have outperformed the BTC price, however, in bear markets, the same firms' stock prices underperformed BTC price movements. Between November 2022 and September 2023, stock prices surged by 180%, while BTC price only rose by 79%.

Lukas Pfeiffer, Founder and

Managing Director of Crypto Oxygen



Over the last two years, institutional investors have increased their investments in BTC mining firms. Especially since March 2023, Vanguard, Blackrock, and others kept on aggregating mining shares, potentially profiting from relatively low stock prices and an expectation of an ETF-induced bull cycle. "Investing in crypto mining firms is like a leveraged bet on BTC price. In the bull market, mining firms' stock prices have outperformed the BTC price, however, in bear markets, the same firms' stock prices underperformed BTC price movements



Source: Crypto Oxygen, December 2023

"

"Institutional investors currently hold about 18% - 20% of the BTC mining stocks aggregated", says Lukas Pfeiffer. "Especially Marathon, Riot, and BIT Digital seem to be the institutions' picks, with 25%+ allocation of shares." Bit Digital is favored by institutional investors, showing approximately 25% institutional ownership. Institutional investors' preference for Bit Digital likely stems from its strategic alignment towards the prevailing developments in the BTC mining industry & its robust financial stability, boasting a low debt ratio and a substantial cash balance.



Bit Digital is a US-based Bitcoin mining and AI infrastructure company with operations in the United States, Canada, and Iceland. In addition to Bitcoin mining, Bit Digital has diversified its revenue streams with a substantial AI infrastructure business and ETH staking in 2023. Therefore, Bit Digital holds not just 642.6 BTC but also 17,399.3 ETH and an AI contract providing more than \$35 million of revenue for a period of 3 years as of December 31, 2023. With a current market cap of \$384 million and a hashrate of 3.7 EH/s at maximum processing capacity, Bit Digital ranks in both categories' midfield among publicly listed Bitcoin mining companies. Recently, Bit Digital announced the objective to double its operating fleet, increasing its hashrate to approximately 6.0 EH/s in 2024.

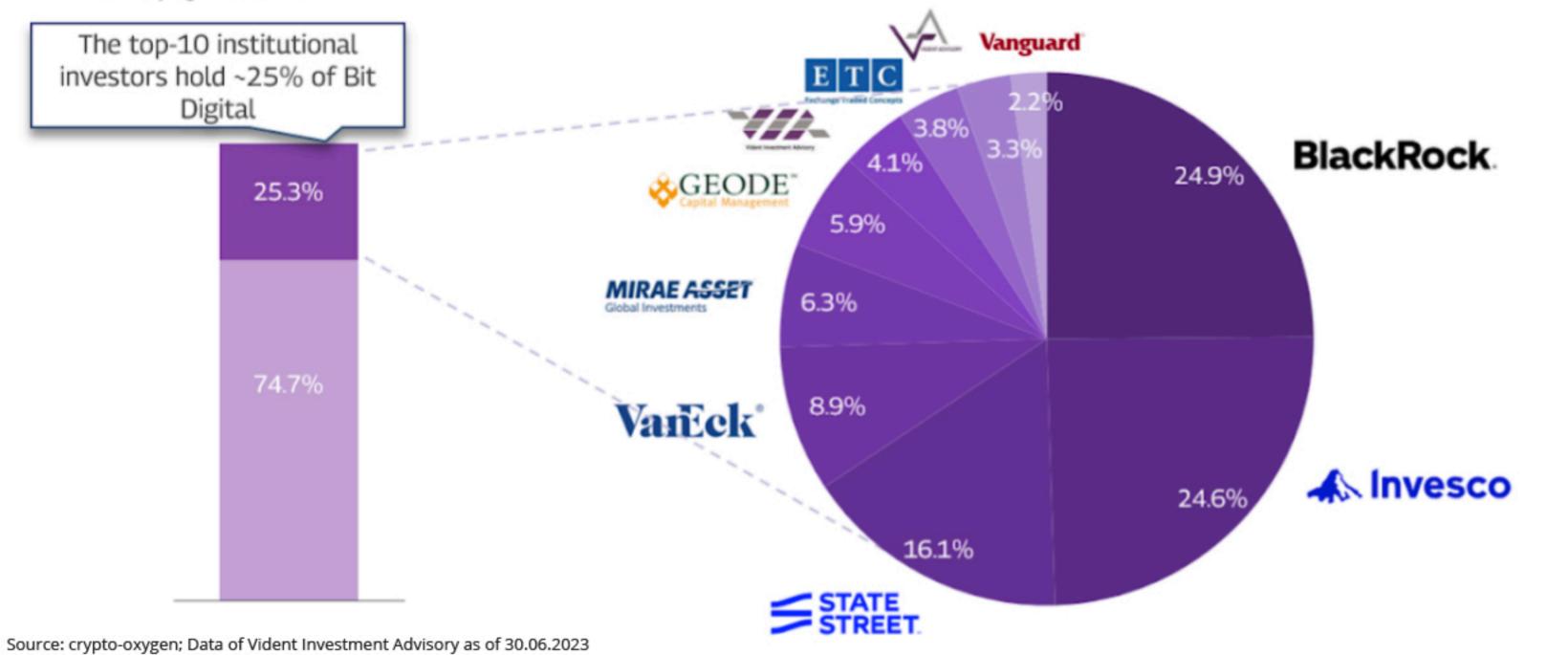


#### Figure 1: Institutional Holdings in Bit Digital

Bit Digital's 25% share in institutional portfolios underscores its appeal as a top choice for inst. investors exploring opportunities within BC mining companies

# Institutional holdings in Bit Digital

In %, Q3 2023



## Insights

With a sizable ~25% of shares held by institutional investors, Bit Digital asserts its prominence as a leading choice among institutional portfolios in the BTC mining sector

**Blackrock** and **Invesco** jointly account for **50**% of Bit Digital's institutional investors, underscoring their major role in the company's stock



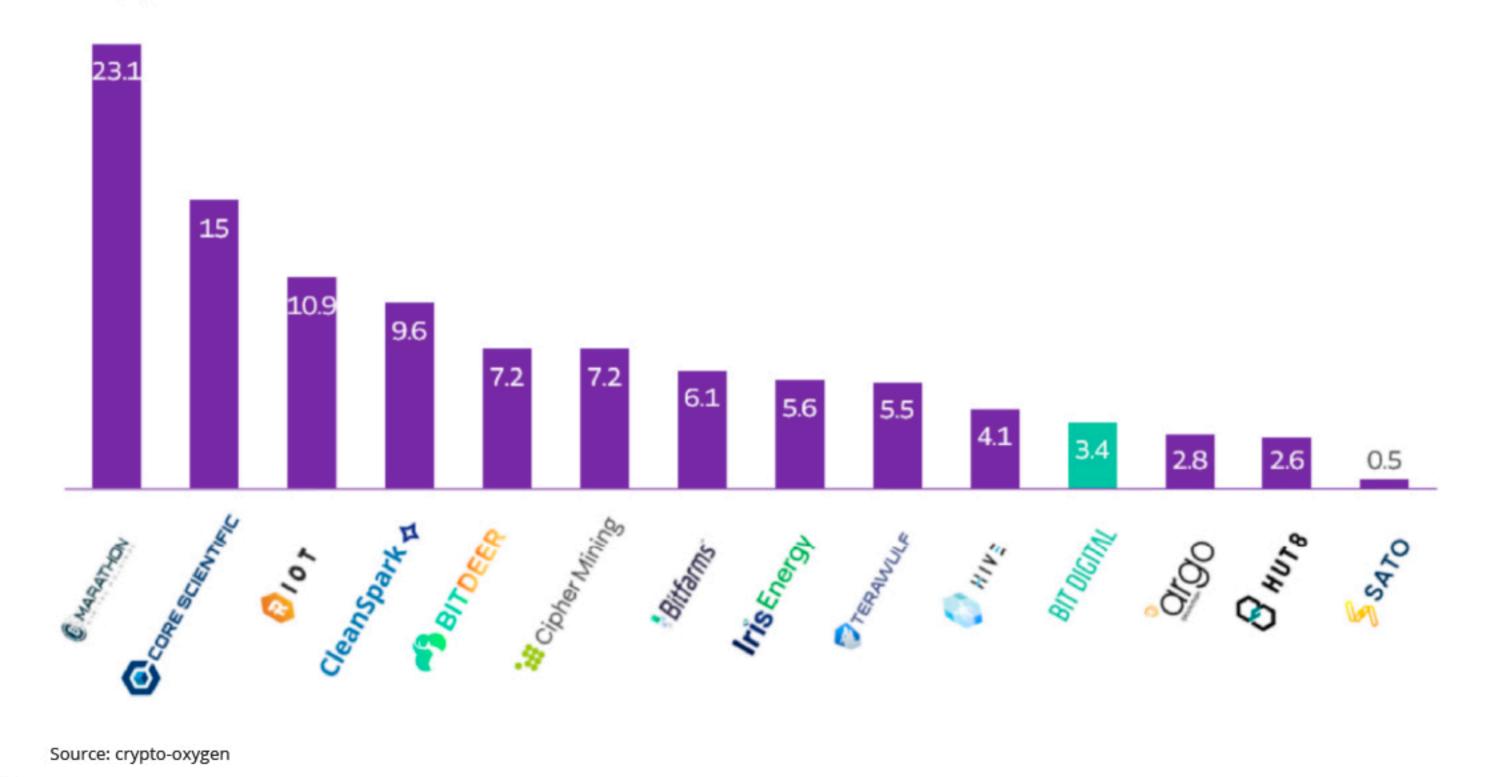
It's intriguing to note that Bit Digital has become a preferred choice among institutional investors in the publicly listed BTC mining stocks, even though it falls in the midfield for several key performance indicators (e.g. self-mining hashrate) compared to its peers.

© CRYPTO OXYGEN

With approximately 25% held by institutional investors, Bit Digital stands among the BTC mining stocks with the highest institutional holdings, closely aligning with top peers such as Marathon Digital and Riot Platforms.

Figure 2: Self-mining hashrate of publicly listed BTC miners

Self-mining hashrate of publicly listed BC miners In EH/s, Q3 2023



The institutional interest in Bit Digital could likely be fueled by several factors. Firstly, its low debt ratio of 5% and substantial cash holding of \$16.9 million (December 31, 2023) contribute to a financially stable profile, appealing to risk-averse investors. Secondly, the innovative Bit Digital Flywheel utilizes BTC mining rewards to purchase ETH to stake, creating cyclical growth by reinvesting the ETH staking rewards back into its Bitcoin mining operations. Thirdly, Bit Digital's revenue and risk diversification into AI infrastructure adds another layer of attractiveness.

With a robust fleet of Bitcoin miners spanning across the United States, Canada, and Iceland, utilizing 99% carbon-free renewable energy, a pristine balance sheet with zero debt, a non-correlated revenue stream in one of the largest AI businesses amongst its peers, and a diversified revenue stream in Ethereum staking, Bit Digital is positioned very well going into Bitcoin's 4th halving





**Lukas Pfeiffer** and **Silas Seus** of Crypto Oxygen



This table displays the 17 largest Bitcoin miners by market capitalization, totaling \$19.38 billion as of December 2023.

Figure 50: Largest Publicly Listed Bitcoin Miners

	PUBLICLY LISTED BITCOIN MINING STOCKS55		MARKET CAP	PRICE	P/E RATIO	DOMICILE
#1	"Marathon Digital Holdings (MARA)"	@ MARATHON	\$5.22 B	\$23.49	-6.5	United States
#2	"Riot Blockchain (RIOT)"	(;) ІОТ	\$3.64 B	\$17.64	-9.53	United States
#3	"Hut 8 Mining (HUT)"	<b>⊖</b> нит8	\$2.85 B	\$12.88	-23	Canada
#4	"CleanSpark (CLSK)"	CleanSpark <b>♦</b>	\$2.09 B	\$11.36	-5.89	United States
#5	"Cipher Mining (CIFR)"	Cipher Mining	\$1.00 B	\$3.90	-71.8	United States
#6	"Bitfarms (BITF)"	Bitfarms	\$0.94 B	\$2.93	-4.71	Canada
#7	"Bitdeer Technologies Group (BTDR)"	BITDEER	\$0.93	\$8.40	-11.7	Singapore
#8	"TeraWulf (WULF)"	TERAWULF	\$0.51 B	\$2.15	-2.64	United States

#9	"Canaan (CAN)"	🗘 canaan	\$0.51 B	\$2.99	-1.79	China
#10	"Core Scientific (CORZQ <sup>56</sup> )"	CORE SCIENTIFIC*	\$0.42 B	\$1.09	-0.4755	United States
#11	"Iris Energy (IREN)"	IrisEnergy	\$0.38 B	\$5.81	-0.5579	Australia
#12	"HIVE Blockchain Technologies (HIVE)"	HIVE NacdaqUisted	\$0.37 B	\$4.30	-2.03	Canada
#13	"Bit Digital (BTBT)"	BIT DIGITAL	\$0.31 B	\$3.52	-3.22	United States
#14	"Argo Blockchain (ARBK)"	argo	\$0.11 B	\$2.20	-1.43	United Kingdom
#15	"BIT Mining (BTCM)"	ВТСМ	\$59.45 M	\$5.35	-0.3455	China
#16	"Stronghold Digital Mining (SDIG)"	STRONGHØLD ——DIGITAL MINING——	\$53.48 M	\$6.05	-0.2075	United States
#17	"Greenidge Generation Holdings (GREE)"	GREENIDGE GENERATION	\$38.42 M	\$5.22	-0.1314	United States

<sup>55</sup> https://companiesmarketcap.com/Bitcoin-mining/largest-Bitcoin-mining-companies-by-marketcap/

Source: CompaniesMarketCap.com, Cointelegraph Research, CryptoResearch.Report



<sup>56</sup> Traded OTC as the company went in Chapter 11 and is currently restructuring. The company is expected to emerge of chapter 11 before end of Q1 2024.

<sup>\*</sup> Data from Dec 2023

Publicly listed Bitcoin mining stocks are companies that own and operate the massive computer networks needed to "mine" new Bitcoin. They generate revenue by selling the newly minted coins on the market, and their stock prices generally track the price of Bitcoin, but with some key differences.



The Bitcoin halving, currently expected to happen the 12th of April 2024, will reduce the block reward from 6.25 Bitcoin per block (excluding transaction fees) to 3.125 Bitcoin. As a result, Bitcoin miners earnings will be reduced and lead to shrinking margins. Miners have all had a different and specific approach to prepare for the halving. Some of them have opted for a more vertically integrated model (Marathon, hut8 Mining), while some have relocated some operations in other countries offering lower operational expenses (Bitfarms). Some others have been diversifying their sources of income by entering the AI business (such as Hive, hut8, Iris energy, bit digital and Bitdeer). Finally, most miners have been upgrading their equipment with the most efficient/latest generation of mining machines.



Here's a breakdown of the pros and cons to help you decide whether investing in such stocks might be a better fit for you than buying Bitcoin directly:

#### **Pros of Bitcoin mining stocks:**

**Higher volatility:** For investors looking for high beta exposure to Bitcoin, mining stocks tend to be more volatile than Bitcoin. This is because their revenue streams are diversified, coming not just from the sale of Bitcoin but also from things like hosting fees and equipment sales.

**Potential for dividends:** Unlike Bitcoin, some mining companies may choose to pay out a portion of their profits as dividends to shareholders. This can provide an additional source of income alongside any potential price appreciation. Although, this is not that common. There is one small Canadian miner that pays dividends currently called Digihost that has paid dividends in Bitcoin itself in the past.

**Diversification:** Investing in mining stocks allows you to indirectly gain exposure to the Bitcoin market while also diversifying your portfolio across different companies and industries. This can help to mitigate risk and potentially improve your overall portfolio performance.

**Easier access:** Bitcoin requires you to set up a digital wallet and navigate cryptocurrency exchanges, which can be intimidating for some. Mining stocks, on the other hand, can be bought and sold just like any other stock through traditional brokerage accounts.

#### Cons of Bitcoin mining stocks:

**Indirect exposure:** While you benefit from Bitcoin's price appreciation, you also miss out on potential gains during bull runs. Mining stocks are typically more volatile than Bitcoin itself, both up and down. This can also be an opportunity to provide alpha compared to holding Bitcoin directly as a benchmark.

**Higher operational risks:** Mining companies face operational risks like equipment failures, energy price fluctuations, and regulatory changes, which can negatively impact their profitability and stock price.

**Dependent on Bitcoin:** Ultimately, the success of mining companies is still heavily tied to the price of Bitcoin. If Bitcoin experiences a sustained decline, mining stocks are likely to follow suit.

In conclusion, whether to invest in Bitcoin mining stocks or Bitcoin directly depends on your individual risk tolerance and investment goals. If you prioritize stability and diversification, mining stocks might be a good option. If you are comfortable with higher volatility and want to maximize your potential upside, buying Bitcoin directly might be a better choice. Ultimately, it's important to do your own research and understand the risks before making any investment decisions.



<sup>57</sup> https://www.fool.ca/2022/01/06/btcs-this-crypto-mining-firm-pays-investors-dividends-in-Bitcoin/

# 2.3.4 Venture Capital and Private Equity Bitcoin-Only Funds

Finding venture capital funds that exclusively invest in Bitcoin companies is somewhat challenging, as most prominent venture capital firms in the cryptocurrency space tend to have a diversified investment approach. They usually invest in a range of blockchain technologies, cryptocurrencies, and crypto-related companies, not just those focused solely on Bitcoin. However, there are a small number of VCs and Private Equity investors that focus only on Bitcoin companies.

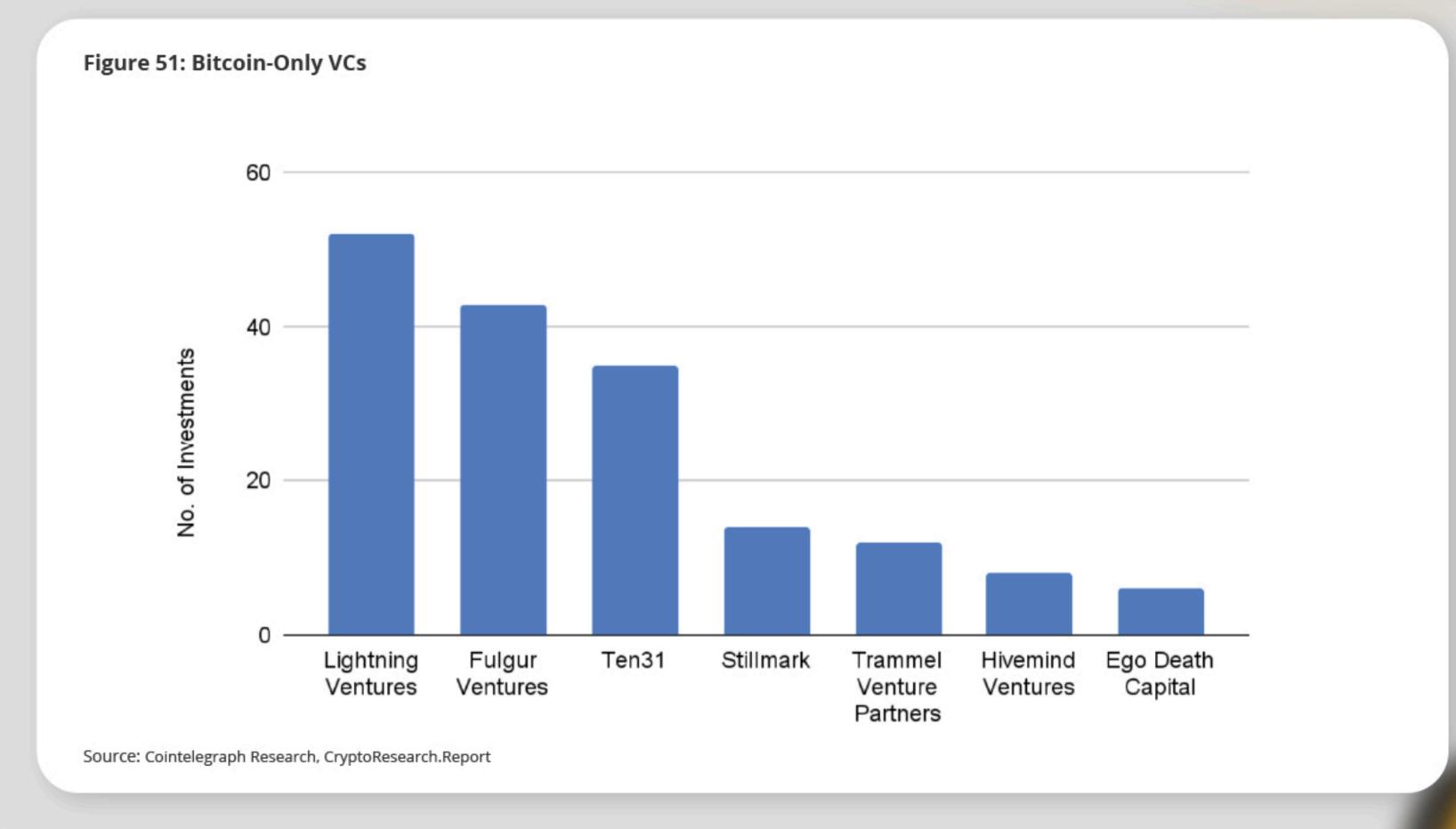




Figure 52: Bitcoin-Focused Venture Capital Funds

	FUND	INCEPTION	NO OF INVESTMENTS
#1	Lightning Ventures 4 LIGHTNING VENTURES		
	Lightning Ventures is a Bitcoin-focused VC fund that invests exclusively in early-stage, seed-stage, and later-stage businesses in the BTC ecosystem developing foundational technologies and services that benefit from and support the ecosystem, such as mining operations, financial empowerment tools, node infrastructure, wallet solutions, and free and open-source technologies. The most notable companies in their portfolio include Swan Bitcoin, BlockFi, Bitstack. 58	2021	52
#2	Fulgure Ventures is a VC firm based out of Delaware, Washington. Launched in 2019, the company believes in Bitcoin as a next-generation politically neutral monetary system, the foundation for decentralized finance of the future. They have 43 companies in their portfolio, which includes a unicorn - Blockstream.	2019	43
#3	Ten31 - Ten31 -  Ten31 is a Bitcoin-focused investor and partner of choice to companies building technology and infrastructure for the Bitcoin ecosystem, as well as complementary freedom-oriented technologies including open source software, AI, and nostr" 60. Their most notable investments include - Strike, River Financial, Fold, etc. 61	2019	35

	FUND	INCEPTION	NO OF INVESTMENTS
#4	Stillmark Stillmark  Based in Los Angeles, California, Stillmark is a VC firm focused solely on investments in the Bitcoin ecosystem. Their most notable investments include - Lightning Labs, Voltage, Satoshi energy, etc. One of the company's founding partners is the toxic maximalist Alyse Killeen.	2019	14
#5	Trammel Venture Partners  Trammel Venture Partners (TVP) is an Austin-based VC firm that invests in early-stage Bitcoin start-ups. They have a similar ideology to other Bitcoin-focused funds. Their most notable investments include - ZEBEDEE, The Graph, and Unchained Capital.	2016	12
#6	HIVEMIND VENTURES  Hivemind Ventures is a San Francisco-based VC firm that invests in L2 and L3 Bitcoin startups focused on finance, communication, and energy. Their most notable investments include - Wavlake, NCC, and Fedi.	2021	8
#7	Founded by Jeff Booth, Andi Pitt, and Nico Lechuga, Ego Death has invested in companies such as Relai, Fedi, Synota, Breez, and Wolf. Advisors to the company include Lyn Alden, Preston Pysh, and Pablo Fernandez.	2022	5

https://tracxn.com/d/venture-capital/lightning-ventures/\_\_qjcm8UnxJ4aBX0Na9Mwh4IiqBmRxneXi1\_ayb-dhHZw/portfolio







<sup>59</sup> https://fulgur.ventures

<sup>60</sup> https://ten31.vc/home

<sup>61</sup> https://startups.eithealth.eu/investors/ten31\_1

Source: Cointelegraph Research, CryptoResearch.Report

### 2.4 Market Makers

The trend in the last few years has been market makers from traditional asset classes, such as equities and forex, opening up Bitcoin and cryptocurrency market-making divisions. For example, two of the largest traditional market makers in the Netherlands, IMC and Flow Traders have both moved into market making for digital assets spot markets and digital asset financial products such as structured products and listed funds. There are digital asset market makers such as IMC that trade over \$1 trillion in annual volume, but this is still a drop in the bucket compared to market makers in traditional assets. For example, Jane Street, a firm standing ready to buy and sell ETFs, options, and bonds, does around \$17 trillion a year in trading volume.

Figure 53: Largest Bitcoin Market Makers

	MARKET MAKER	NO. OF INTEGRATED EXCHANGES <sup>63</sup>	YEAR ESTABLISHED	LIQUIDITY PROVIDED
#1	IMC is one of the world's most active proprietary trading firms and a key market maker in various products listed on TradFi and Crypto exchanges throughout the world.	>20 (Crypto only)	1989	>\$1 trillion in Crypto in 2023
#2	G-2⊌ G-20 has been active since 2010 as an Asset Manager and Advisor. Based in Switzerland, their team of professionals brings decades of experience in market making, derivatives, and proprietary trading.	No answer	2011	No answer
#3	Flowdesk  Founded in 2020, Flowdesk aims to offer TradFi expertise in conjunction with algorithm trading in the crypto market. It is one of the leading crypto market makers providing liquidity on more than 120 integrated exchanges. Its various digital asset services include - OTC trading, digital asset custodial service, and treasury management.  Flowdesk uses an AI-driven approach to fulfill market orders. There's no traditional order book or bid/ask spread like exchanges, instead, it relies on AI-driven algorithms that automatically match and execute buy and sell orders.	>120 <sup>64</sup>	2002	Prefers not to disclose
#4	Based out of the British Virgin Islands, ZM Quant (ZMQ) offers market-making and trading services to the cryptocurrency market. It is a designated market maker for more than 120+ exchanges and 1100+ issued tokens. On average, it provides a daily volume of around \$1-3 billion. Some of the services offered by ZMQ include - market making, asset management, portfolio investment, and advisory.	>120 <sup>65</sup>	2016	No answer
#5	KAIRON Founded in 2019 by two lifelong friends, Jens Willemen and Mathias Beke, Kairon Labs offers market-making services along with advanced algorithmic trading software providing liquidity to traders and investors. It serves more than 100 integrated exchanges and has provided a cumulative trading volume of more than \$200 billion. Kairon Labs' suite of services includes - market making, advisory services, exchange listing, and IP licensing.	>100	2017	>\$200,000,000 Cumulative Trading Volume <sup>66</sup>

<sup>62</sup> https://www.ft.com/content/81811f27-4a8f-4941-99b3-2762cae76542

<sup>66</sup> https://kaironlabs.com/



<sup>63</sup> https://airtable.com/appBQB7FgXR7c1qx4/tbls1nLjb4FJnK81d/viwBxxaEMSE5O7l6L?blocks=hide

<sup>64</sup> https://www.flowdesk.co/

<sup>65</sup> https://zmquant.com/

	MARKET MAKER	NO. OF INTEGRATED EXCHANGES	YEAR ESTABLISHED	LIQUIDITY PROVIDED
#6	QODEN  Qoden is the only market maker in the list which is based out of Russia. Founded in 2008, Qoden Technologies has been focused on providing institutional-grade financial products to consumers. Their flagship product 'Qodex' provides users with a white-label exchange. It is a turnkey solution that has everything an exchange might need to function efficiently. Their other offerings include - trading, liquidity & market making, and digital asset management.	>100	2008	No answer
#7	Acheron Trading is one of the leading crypto market makers which is led by a team of experienced traders and domain experts in the fields of pure and applied mathematics, computer science, risk management, etc. The combination of trading algorithms and rigorous human oversight ensures maximum accuracy and efficiency for investors and traders. Acheron Trading provides liquidity to over 85 integrated exchanges for more than 400 listings. Their range of services includes designated market making, principal market making, trading, etc.	>95 <sup>67</sup>	2019	No answer
#8	KEYROCK Founded in 2017, Keyrock is one of the leading market makers in the digital asset space. It provides liquidity to more than 85 integrated exchanges in 400+ markets. Its proprietary trading algorithms help traders to gauge the market efficiently. The services provided by them include - market making, OTC trading, and VC funding.	>85	2017	No answer
#9	A crypto-native market maker, Pulsar Trading is one of the early adopters in the digital assets space. It provides liquidity to more than 80 integrated exchanges while trading 650+ assets with an average daily volume of more than \$1 billion. Pulsar's multi-algorithm execution engine helps traders and investors access liquidity from various exchanges just with a single click. Its integrated risk management also helps users to mitigate risk.	>80 <sup>69</sup>	2014	No answer
#10	GSR has over 10 years of expertise in providing liquidity and trading solutions to the cryptocurrency market. It aims to provide a high level of price accuracy accompanied by abundant liquidity to traders and investors. GSR separates itself from other market makers by offering tailor-made liquidity solutions as per the requirement of a digital asset exchange. Some of the services offered by them include - market making, OTC trading, risk management, cryptocurrency options, and algorithmic trading. It provides liquidity to more than 60 integrated cryptocurrency exchanges which includes DEXs as well.	>60	2013	No answer
#11	[α] alpha_lab Alphalab Capital Group was one of the first movers in quantitative trading on blockchain. It provides liquidity on 54 integrated exchanges with an average daily volume of over \$2 billion. Their range of services includes - market making, trading, and venture funding	>54	2017	\$730,000,000,000 Annual Volume <sup>70</sup>
#12	Empirica Founded in 2010, Empiricia has been building its algorithmic trading engine which runs on the Warsaw stock exchange, ING, and Credit Agricole. Six years back, in 2017 they got involved in the cryptocurrency market as well providing liquidity through cutting-edge technology and machine learning-driven automated algorithms. They provide liquidity to more than 50 integrated exchanges in 200+ markets. E.g They help reduce the average spread on MEXC exchange from 0.30% to 0.14%.71	>50	2010	No answer
#13	WINTERMUTE A leading cryptocurrency market maker, providing liquidity, stability, and innovation to the digital asset ecosystem.	No answer	2017	No answer

<sup>71</sup> https://empirica.io/



<sup>67</sup> https://acherontrading.com/

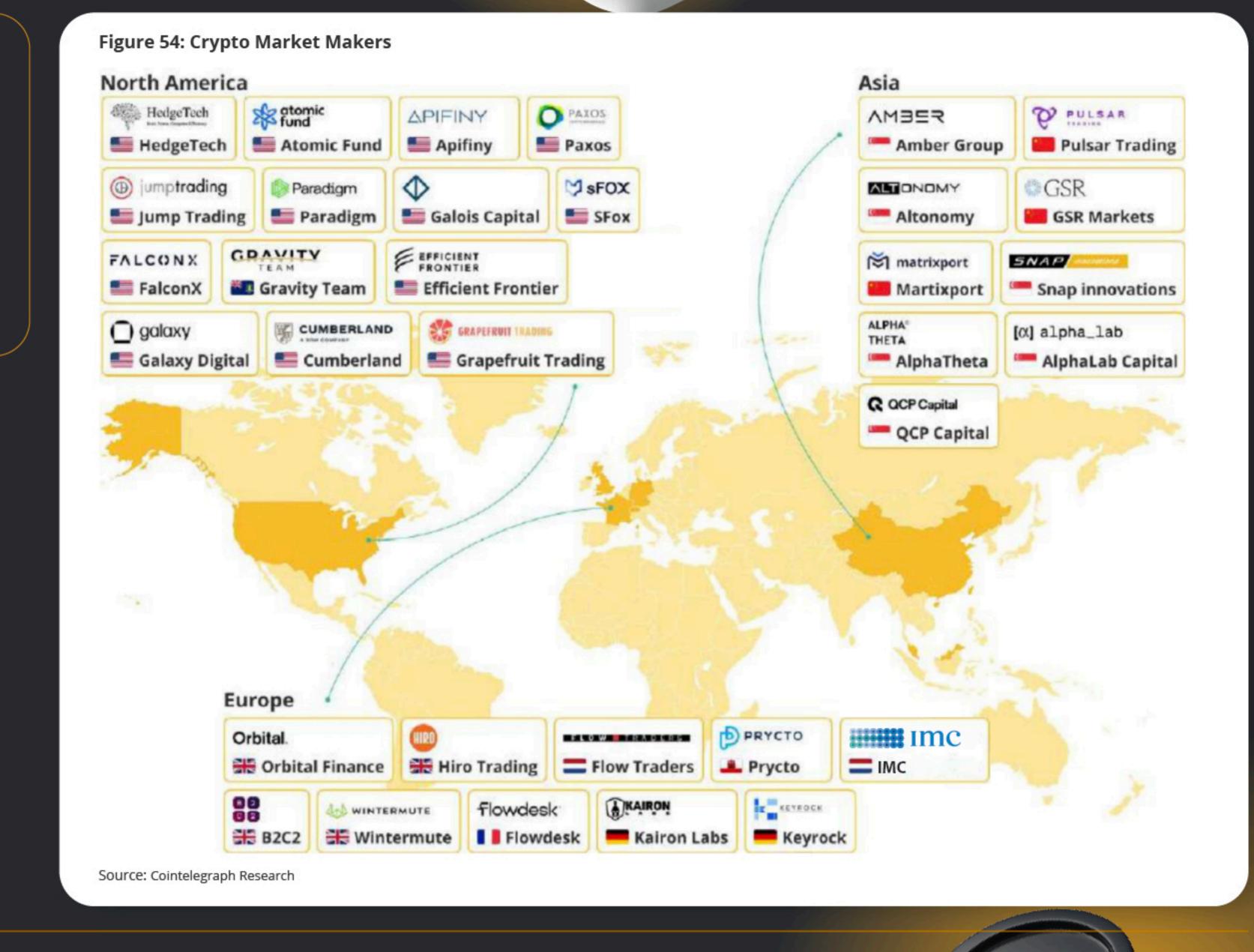
<sup>68</sup> https://medium.com/@Deepakamirtharaj/the-ultimate-guide-to-the-top-20-crypto-market-makers-1f39cc3c6a1e

<sup>69</sup> https://pulsar.com/

<sup>70</sup> https://www.alphalab.capital/

#### WHAT IS A BITCOIN MARKET MAKER?

A Bitcoin market maker is an individual or an organization that puts liquidity in the market by buying and selling Bitcoins on an exchange. In the realm of cryptocurrencies, it becomes even more important for market makers to provide liquidity since it is not as prevalent as TradFi which has way more market participation from individuals. Thus, projects and exchanges must sustain liquidity for successful growth and gain market traction.





In this dynamic realm of AI, Web3, and future-proof technology,
Bitcoin has played a crucial role in the world markets. Hence, it has
become even more important for entrepreneurs, businesses,
enthusiasts, etc., to be present in the right place to get the most out
of this space.

We have created a list of the top fifteen Bitcoin-friendly jurisdictions globally and rated them based on their taxation policies, regulatory framework, ease of registering a Bitcoin business, and opening a Bitcoin-friendly bank account. All the jurisdictions mentioned in the article are some of the most friendly Bitcoin places and vary marginally in their scores.



Figure 55: Cointelegraph's Friendliest Bitcoin Government Ranking

COUNTRY	TAXATION	REGULATORY FRAMEWORK	REGISTERING A CRYPTOCURRENCY BUSINESS	BITCOIN BANK A/c	COINTELEGRAPH COMPENDIUM SCORE
El Salvador	10	10	9	8	4.7
<b>™ ®</b> Bermuda	10	10	7	8	4.5
Estonia	9	10	7	8	4.3
UAE	9	10	7	8	4.3
Singapore	8	10	8	9	4.3
Slovenia	8	10	8	8	4.2
★ Hong Kong	8	10	6	8	4.0
Gibraltar	8	10	6	7	3.9
Switzerland	6	10	8	9	3.9
Malta	7	10	5	10	3.9
Germany	6	10	7	10	3.9
<b>■</b> Canada	7	10	6	8	3.8
Luxembourg	7	10	6	7	3.7
Japan	5	10	6	10	3.6
Portugal	5	10	7	7	3.4

Figure 56: 15 Countries with the Best Taxation Laws for Bitcoin - Average Tax on Crypto in EU - 15%

TAXATION	CORPORATE INCOME TAX	CAPITAL GAINS TAX	TREATMENT	SPECIAL EXEMPTIONS	SCORES
Malta	35%	No Tax on long term capital gains when asset considered as a store of value; 15-35% on short term gains	Like fiat currency (0-35%); Low progressive tax structure on part-time mining;		7
Germany	period is more than one year		Crypto assets are considered other economic goods. The sale counts as a private disposal transaction, profits must therefore be taxed at the personal income tax of upto 45%	Crypto income below 256€ (earned from lending/staking)	6
Singapore	17%	0%	Commercial activities such as income from trading is taxed. Income tax is at 17%	No taxes on income from lending or staking below 300 SGD	8
Estonia	0%	No direct tax on capital gains. Capital gains in Estonia are also treated as ordinary income and taxed accordingly.	20% flat rate on any income	No taxes on retention and reinvestment of profits for crypto firms	9
Luxembourg	25%	0-25%; No tax on long term capital gains (held for more than 6 months)	22-25% when person considered as a speculator; 0% for investor (holding for a min. of 6 months)		7
El Salvador	0%	No capital gains tax on exchanges in bitcoin or any legal tender		Any crypto related income is exempted from taxes in El salvador. No capital gains tax for foreign investors on cryptocurriences	10
Portugal	14.5% - 48%	28% on short term capital gains for individuals (Held for less than a year); For crypto businesses, the capital gains tax is at 35%;	Income from crytoactivties such as trading, staking, mining, etc. will be taxed at 14.5% - 48%		5
Switzerland	12-21%	No capital gains tax when held crypto is considered as a private asset but are subject to wealth tax	Income form Mining and Staking and salary recived in crypto in taxed as per regular income tax rates. Maximum 11.5% tax at federal level and maximum 41% at cantonal level		6
Japan	30% tax for corporations holding crypto whether sold or unsold	No flat capital gains tax; Gains are accounted for in the income	15-55% tax; Income from selling crypto, earning crypto is taxed under alternative income	No tax on alternative income if is below 200,000 JPY	5
Canada	28-38%%	No flat rate for capital gains; 50% of capital gains are taxed under the income tax regime	15-33% income tax rate. 100% of the income earned through crypto is taxed and 50% of the capital gains are taxed		7
UAE	0% tax in free zones. 9% corporate tax if the business income is higher than 375,00 AED in other zones	0%	There is no income tax for UAE residents		9
L Glbraltar	12.50%	0%	Fixed 10% tax on activities such as crypto trading		8
Hong Kong	16.50%	0%	Income from crypto activities such as trading is taxable, capped at 16.5%		8
Slovenia	20%	0%	Source Tax - Income from crypto can be taxed as high as 25%; There is a 0.25% tax on every crypto transaction		8
8ermuda	0%	0%	There is no income tax in Bermuda		10



## Figure 57: Bitcoin Regulatory Framework

COUNTRY	KEY ASPECTS	POLICIES / LEGISLATION	AML / CFT REQUIREMENTS	SCORE
Malta	Legal Clarity - Investor Protection - Innovation Friendly	Virtual Financial Assets Act (VFAA) - Innovative Technology Arrangements and Services Act (ITAS) - Malta Digital Innovation Authority Act (MDIA)	Yes	10
Germany	BaFin Licensed entities can deal in crypto. The Act defines cryptocurrencies as 'crypto assets' Legal clarity and defined framework is present with investor protection measures	German Banking Act German Federal Financial Supervisory Authority (BaFin)	Yes	10
Singapore	Regulatory and Legal Clarity - Investor Protection - Innovation Friendly	Payment Services Act Monetary Authority of Singapore (MAS)	Yes	10
Estonia	Prevention of unscrupulous use of cryptocurrencies is kept in check	Money Laundering and Terrorist Financing Prevention Act (MLTFPA) Financial Supervision Authority	Yes	10
Luxembourg	Legal Clarity Investor Protection	7363 Bill - Blockchain Bill CSSF – The Commission de Surveillance du Secteur Financier		10
El Salvador	Bitcoin declared as legal tender. Legal clarity and better regulatory framework present	National Commission for Digital Assets Bitcoin Funds Administration Agency		10
Portugal	Relaxed Regulatory Framework; Favourable Environment for Businesses	Decree Law No.67 of July 30 - National Innovation Agency	Yes	10
Switzerland	Regulatory Framework present and Legal Clarity Investor Protection Innovation Friendly	Blockchain Act Swiss Financial Market Supervisory Authority (FINMA)	Yes	10
<ul><li>Japan</li></ul>	Legal Clarity - Investor Protection	Payment Service Act - Financial Service Agency		10
<b>∳</b> Canada	Legal Clarity Investor Protection	Proceeds of Crime (Money Laundering) and Terrorist Financing Act (PCMLTFA) Canadian Securities Administrator	Yes	10
<b>U</b> AE		Securities and Commodities Authority (SCA) Financial Services Regulatory Authority (FSRA)	Yes	10
Glbraltar	One of the first jurisdictions to develop regulatory framework for blockchain and Distributed Ledger Technology; Investor Protection and AML laws present	Gibraltar Financial Services Commission (GFSC) - Proceeds of Crime Act 2015 (POCA)	Yes	10
Hong Kong	Clear Legislation and Regulatory Framework Present	Securities and Futures Commission (SFC) - Hong Kong Monetary Authority (HKMA)	Yes	10
Slovenia	Innovation Friendly towards DLT	Slovenian Prevention of Money Laundering and Terrorist Financing Act (ZPPDFT-2) - ATVP - Slovenian  Yes Office for Money Laundering Prevention - Bank of Slovenia		10
Bermuda	Clear Legislation and Regulatory Framework Present. Innovation Friendly towards DLT	Digital Asset Business Act (DABA) - Digital Asset Issuance Act (DAIA) - Bermuda Monetary Authority (BMA)	Yes	10

Source: Cointelegraph Research, CryptoResearch.Report / \*Data source for Japan, Switzerland, Luxembourg, Estonia, Singapore, Germany, Portugal and Malta is the Cointelegraph blockchain regulations database



Figure 58: Ease of Registering a Bitcoin Business

Country	Timeline for License (in months)	Licensing Fee	Annual Supervision Fee	Physical Office	Local Staff	Accounting Audit	Score
* Malta	9	\$26,400	\$55,000.00	Yes	Yes	Yes	5
Germany	6	\$11,825	Subjective; Can reach up to \$500,000	Yes	Yes	No	7
Singapore	6	\$3,740		Yes	Yes	Yes	8
Estonia	6	\$11,000	\$0.00	Yes	Yes	Yes	7
Luxembourg	9	\$15,000.00		Yes	Yes		6
El Salvador	0.67	\$5,475	\$3,650.00		Preferabble		9
Portugal	5	\$10,000	\$0.00	Yes	Yes	Yes	7
Switzerland	3	\$2,200	\$3,850.00	Yes	Yes	Yes	8
Japan					Yes	Yes	6
<b>■</b> Canada							6
UAE	3	\$27,500	\$0.00				7
GIbraltar	6	\$12,980	\$12,980.00	Yes	Yes	Yes	6
★ Hong Kong					Yes		6
Slovenia	2	\$5,500					8
<b>™</b> Bermuda	4	\$15,000.00		Yes	Yes	Yes	7

	MEDIAN	
TIME (MONTHS)	LICENSING FEES	ANNUAL SUPERVISION FEES
5,5	\$11,413	\$3,650.00

<sup>\*</sup>Licensing fees does not include any consultation or advisory fee



<sup>\*\*</sup>An assumed score of 6 is taken for the countries where the information was not available regarding the fees, timeline, etc.

<sup>\*\*\*</sup>Since physical office, local staff, and accounting audit requirement is almost required by every jurisdiction, it is not taken into consideration while rating the countries

Figure 59: Ease of Opening a Bitcoin Bank Account

COUNTRY	BITCOIN BANK A/C	NO. OF CRYPTO FRIENDLY BANKS	BANK A/C SCORE	CRYPTO FRIENDLY BANKS SCORE	FINAL SCORE
Malta	Yes	5	5	5	10
Germany	Yes	6	5	5	10
Singapore	Yes	4	5	4	9
Estonia	Yes	3	5	3	8
Luxembourg	Yes	1	5	2	7
El Salvador	Yes	3	5	3	8
Portugal	Yes	1	5	2	7
Switzerland	Yes	4	5	4	9
Japan	Yes	7	5	5	10
<b>■</b> Canada	Yes	3	5	3	8
UAE	Yes	2	5	3	8
Glbraltar	Yes	1	5	2	7
★ Hong Kong	Yes	3	5	3	8
Slovenia	Yes	3	5	3	8
<b>™</b> Bermuda	Yes	2	5	3	8





No. of Banks	Score
1	2
2-3	3
4-5	4
>5	5

Bitcoin Bank A/c	Score
Yes	5
No	0







the first nation in the world to deem Bitcoin (BTC) a legal tender alongside USD. The Salvadoran government is determined to re-stabilise the country's economy by lowering its dependence on USD and promoting BTC. Recently, in April 2023, the government removed all taxes related to tech innovation to fuel growth in the sector. Additionally, there is no capital gains tax on exchanges in Bitcoin or any legal tender. In order to attract foreign investments, the government has removed the capital gains tax on Bitcoin speculation for them as well. For businesses, it is easy and quick (20 days) to obtain the necessary licenses for setting up a crypto company. There are around 214 BTC ATMs as well in the country (as per coinatmradar). Apart from the macroeconomic factors of a reviving economy, El Salvador has everything required to be the biggest hotspot for Bitcoin in the future.

## Bermuda 🎫

The British island territory in the North Atlantic has always been famous for being a tax haven. It's no surprise that it has followed a similar course for Bitcoin as well. There are no taxes on corporate income or individual income in Bermuda. It was one of the first nations to provide a regulatory framework and legal clarity on cryptocurrencies when it passed the Digital Asset Business Act (DABA) in 2018 and the Digital Asset Issuance Act in 2020.

#### 🌑 Estonia 💳

Estonia is considered one of the most advanced digital societies. It is also one of the most sought-after nations for crypto enthusiasts in Europe and worldwide due to its relaxed taxation policies, forward-looking regulatory framework, and e-residency program. There is no direct capital gains tax, and it is directly accounted for in the income tax, which stands at a flat 20%.

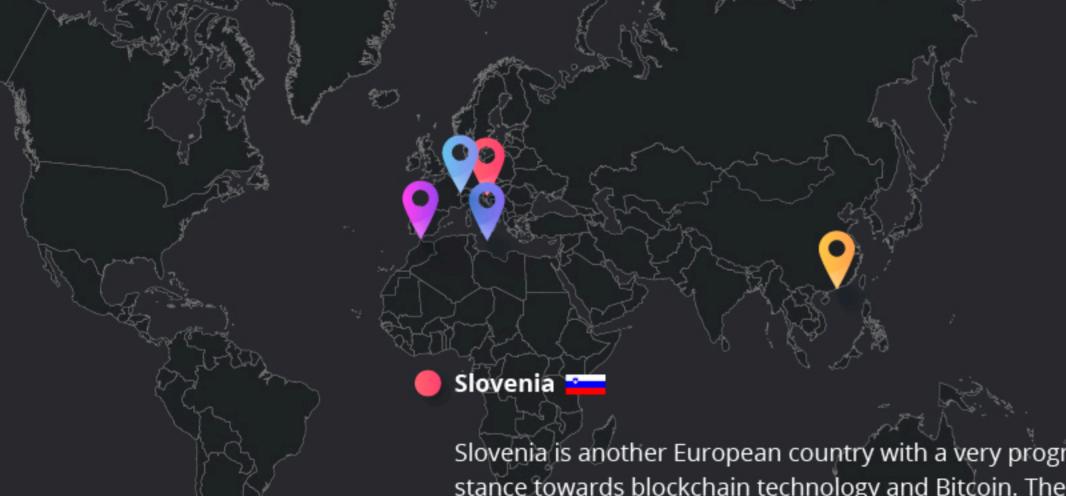
#### UAE 💳

In recent years, the UAE has taken significant strides forward and brought itself ahead in the crypto space. Securities and Commodities Authority (SCA) and Financial Services Regulatory Authority (FSRA) in Dubai and Abu Dhabi have played a key role in setting up the right policies and creating the required framework. Other Emirates are also following the same course. With no income taxes and zero corporate taxes in the free zones, Dubai has always been one of the most attractive places for businesses to set base.

# Singapore 📒

A global financial hub, Singapore has always been a pioneer in the fintech space and the government has always had a progressive stance toward the crypto space. The Monetary Authority of Singapore (MAS) has built a robust licensing framework for virtual asset providers and organizations providing other services in the crypto space. Additionally, the government extended support to make the environment more innovation-friendly by launching the Singapore Blockchain Innovation Program (SBIP) in 2020. For individuals as well, it is an attractive place with no capital gains tax for investors. However, speculators attract an income tax of 17%.





Slovenia is another European country with a very progressive and supportive stance towards blockchain technology and Bitcoin. The capital city Ljubljana is considered the most crypto-friendly destination<sup>72</sup> in Europe, with around 137 businesses and 584 different locations that accepted payments in crypto assets in 2022. Even the largest shopping mall in the city is called 'BTC City' and is one of the major tourist attractions. Slovenia imposes no tax on capital gains in cryptocurrencies. However, there is a 0.25% tax on each crypto transaction. Additionally, the government is also planning to impose a flat 10% on the exchange of cryptocurrency with fiat or purchase of goods and services with crypto.<sup>73</sup>

#### 🛑 Hong Kong 😘

With a ban on cryptocurrencies in the mainland (China), Hong Kong is setting up to be a crypto hotspot in Asia. Recently, HashKey and OSL became the first exchanges to offer retail crypto services in Hong Kong after a new licensing law was passed, which allowed the companies to serve retail investors as well. The financial regulatory authority for crypto, the Hong Kong Monetary Authority (HKMA), has been very progressive toward blockchain technology. As per reports in April 2023, HKMA has been pursuing banks to provide support to crypto firms<sup>74</sup> since a lot of them were denying clients involved in the space due to its high-risk nature. Like other crypto havens, Hong Kong does not have any capital gains taxes on cryptocurrencies.



Situated right between Africa and Europe, Gibraltar has long been a tax haven for businesses and individuals. Similarly, it has welcomed the crypto industry as well with its relaxed taxation policies (no tax on capital gains) and regulatory framework around distributed Ledger Technology (DLT).

# Switzerland +

Home to the infamous 'Crypto Valley', Switzerland has always been at the forefront of the blockchain and crypto space with lax taxation policies and a diverse suite of financial services. The Blockchain Act of 2021 facilitated legal clarity and a robust framework for cryptocurrencies. Additionally, there is no capital gains tax for investors. However, they might be liable to a wealth tax. Income from activities such as trading is taxed as per the regular income tax rates.

# Malta

'The Blockchain Island', has one of the most robust frameworks and policies framed around digital assets. The three acts that have made it possible by providing legal clarity, investor protection and a boost in innovation are - the Virtual Financial Assets Act (VFAA), Innovative Technology Arrangements and Services Act (ITAS) and the Malta Digital Innovation Authority Act (MDIA). However, it is not completely tax-free. There is a 15-35% tax on short-term gains. Assets are tax-free when they are considered a store of value. Setting up a crypto company might also be on the expensive side due to high licensee fees and annual supervision fees.



https://timesofindia.indiatimes.com/business/cryptocurrency/blockchain/slovenia-is-the-most-crypto-friendly-nations-in-the-world-first-private-iet-study/articleshow/91122910.cms

<sup>&</sup>lt;sup>73</sup> https://wts.com/global/publishing-article/20220207-slovenia-fs-nl-publishing-article

<sup>&</sup>lt;sup>74</sup> https://cointelegraph.com/news/hong-kong-government-pressures-bank-giants-accept-crypto-clients



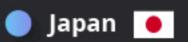
Germany might be one of the most unexpected entrants on the list. It resulted from a clear legal framework and tax treatment of cryptocurrencies as private assets. As private assets, crypto assets only attract a short-term gains tax (assets not held for more than a year) if the gains are more than 600 €. It is also home to one of the highest number of Bitcoin ATMs (13575) in Europe.

#### 🛑 Canada 🛂

Home to the 2nd largest number of Bitcoin ATMs (2892<sup>76</sup>), Canada has taken an opposite stance to its neighbor, the United States, towards cryptocurrencies, allowing it to be an attractive spot for the space. There are no stringent laws or regulations against cryptocurrencies. This lack of regulation allows the entry barriers to be very low. The Tax structure is also friendly, with only 50% of capital gains to be taxed.

## Luxembourg

Luxembourg passed the bill 7363 regulating the cryptocurrencies in the final sector in 2019. The industry is less regulated, but there is no legislation against the use of cryptocurrencies. The industry fosters due to lax taxation policies such as no capital gains tax on crypto assets if held for more than six months. CSSF regulates the crypto market in Luxembourg.



Japan has always been one of the most advanced countries in terms of innovation and technology. It was one of the first nations to embrace crypto space in full. Even after the fall of Mt. Gox (once the biggest crypto exchange), the Japanese government didn't ban cryptocurrencies and instead worked extensively toward regulating the industry. But it is regulated very strictly now. However, Japan's notoriously high tax rate is the one factor holding it back. There is no flat capital gains tax for crypto investments, but since crypto assets are considered 'miscellaneous income,' they are taxed heavily under the income tax regime, even as high as 55%.<sup>77</sup> Even corporations have to pay a 30% tax on crypto assets, whether sold or unsold.



Portugal was deemed as one of the most crypto-friendly nations in Europe. It was always buzzing with crypto and blockchain events. Once completely tax-free for crypto investors, the government introduced a 28% tax on short-term gains (assets held for less than a year) from 1st January 2023. Companies providing services related to cryptocurrencies have to pay a capital gains tax of up to 35%. Income from activities such as trading, staking, and mining attract taxes ranging from 14.5% to 48%.<sup>78</sup>



<sup>75</sup> https://coinatmradar.com/country/80/Bitcoin-atm-germany/

https://coinatmradar.com/country/38/Bitcoin-atm-canada/

<sup>77</sup> https://tokentax.co/blog/crypto-taxes-in-japan

<sup>78</sup> https://www.ibanet.org/New-Portuguese-personal-income-tax-framework-%20crypto-assets

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**EXCHANGES & LPS** 

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**EXECUTED** 

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Total notional value traded since 2020

See The Market. Trade Smarter. Supercharge your Crypto Trading.

**REQUEST DEMO** 



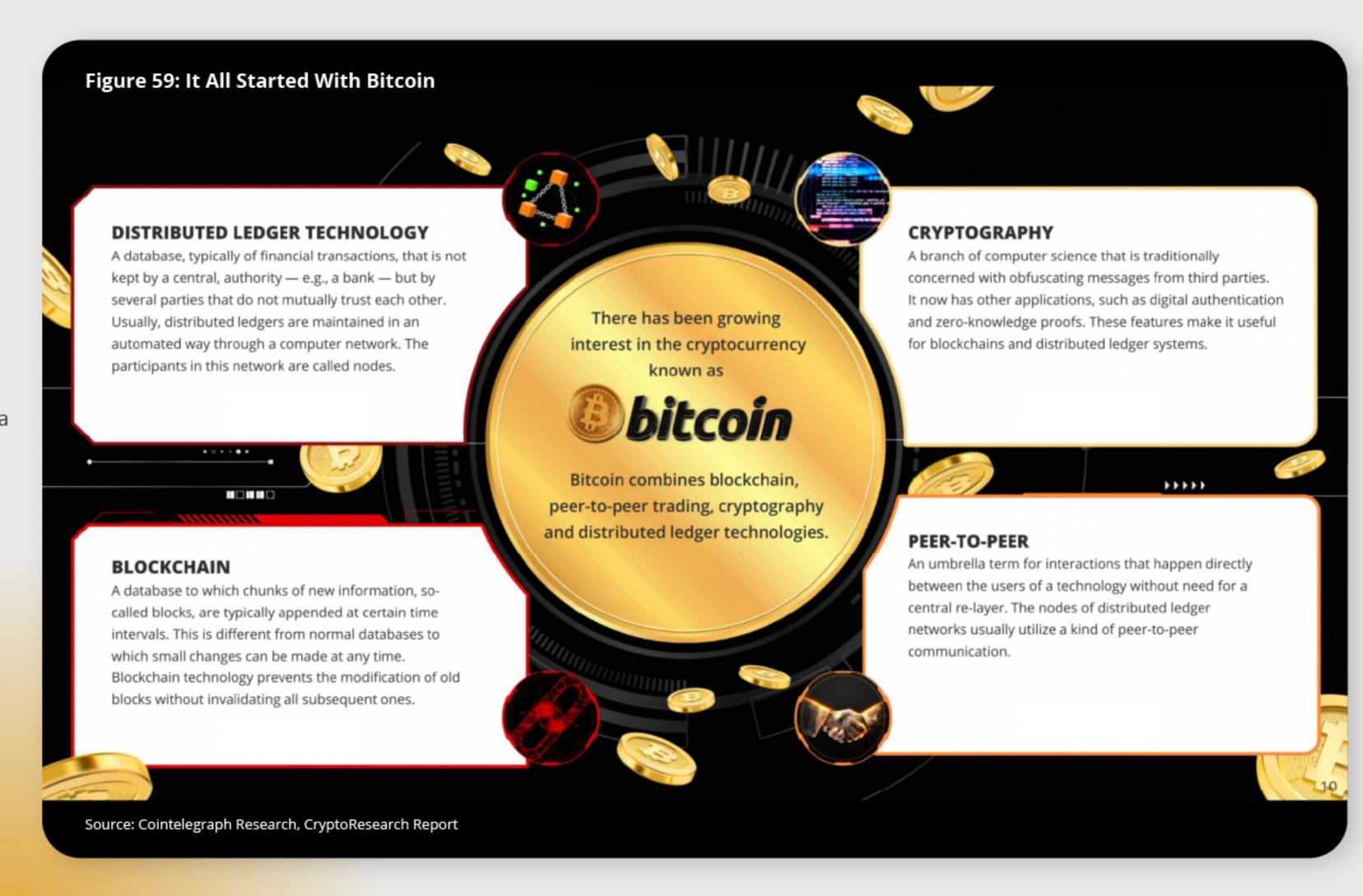
# Why Should Institutional Investors Learn About Bitcoin?

#### 3. Why Should Institutional Investors Learn About Bitcoin?

Bitcoin was the first non-confiscatable asset created in history. Bitcoin is neutral and outside of the control of any government, corporation, artificial intelligence, or individual. Unlike stocks and bonds, Bitcoin operates on a decentralized network of computers, which validates and records transactions on a public ledger called the blockchain. Its decentralized nature and finite supply make it an attractive proposition for investors looking for diversification from assets that have traditional governance models and are susceptible to seizure and confiscation.

This chapter discusses the use cases and adoption of Bitcoin. The next section discusses the main uses of Bitcoin and how the price of Bitcoin is derived from the subjective valuations of each individual holder. The second section of this chapter investigates empirical data to understand how much Bitcoin is being adopted.



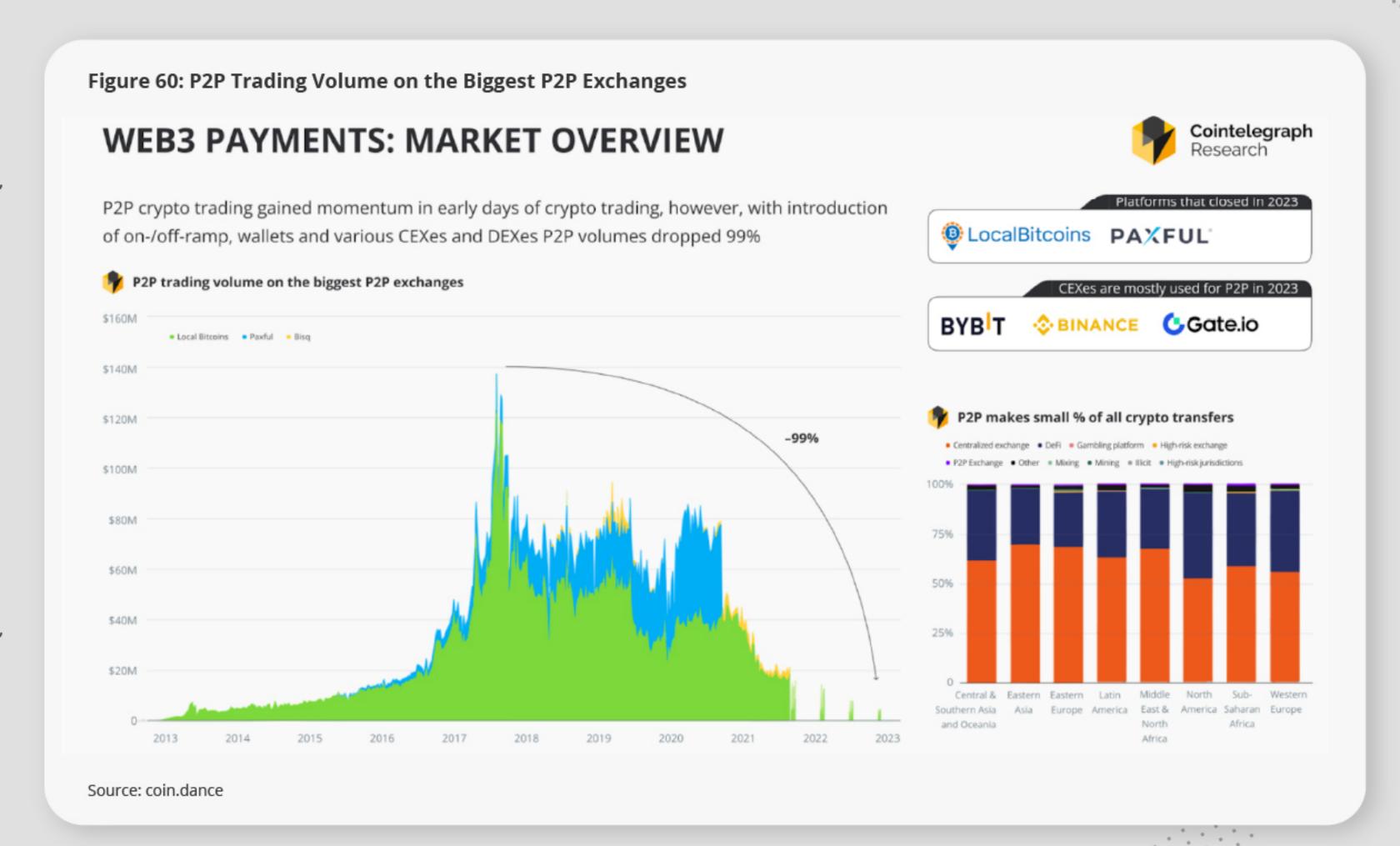


#### 3.1 Bitcoin's Use Cases

Bitcoin's main use case has evolved from being a medium of exchange to a store of value over the last decade. Originally, Bitcoin was touted as "electronic cash" and was even referred to as such in Satoshi Nakamoto's whitepaper. However, over time due to high fees and network latency, the narrative gradually shifted to "digital gold." The primary use cases of Bitcoin are debated by "big blockers" and "small blockers" as well as NFT advocates and "Bitcoin maximalists". Despite the various viewpoints, Bitcoin is a neutral technology that can be used by anyone for their own purpose. Regardless of opinions on Crypto X (formerly Crypto Twitter), data from the Bitcoin blockchain can be used to analyze what are the most popular uses of Bitcoin.

#### 3.1.1 Exchanges

Bitcoin's main use case has evolved from being a medium of exchange to a store of value over the last decade. Originally, Bitcoin was touted as "electronic cash" and was even referred to as such in Satoshi Nakamoto's whitepaper. However, over time due to high fees and network latency, the narrative gradually shifted to "digital gold." The primary use cases of Bitcoin are debated by "big blockers" and "small blockers" as well as NFT advocates and "Bitcoin maximalists". Despite the various viewpoints, Bitcoin is a neutral technology that can be used by anyone for their own purpose. Regardless of opinions on Crypto X (formerly Crypto Twitter), data from the Bitcoin blockchain can be used to analyze what are the most popular uses of Bitcoin.



<sup>79</sup> https://Bitcoin.org/Bitcoin.pdf



#### 3.1.1 Exchanges

#### RESEARCH IN FOCUS

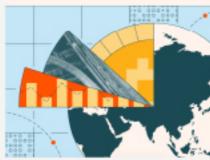
Chainalysis

The 2023 Geography of

Cryptocurrency Report

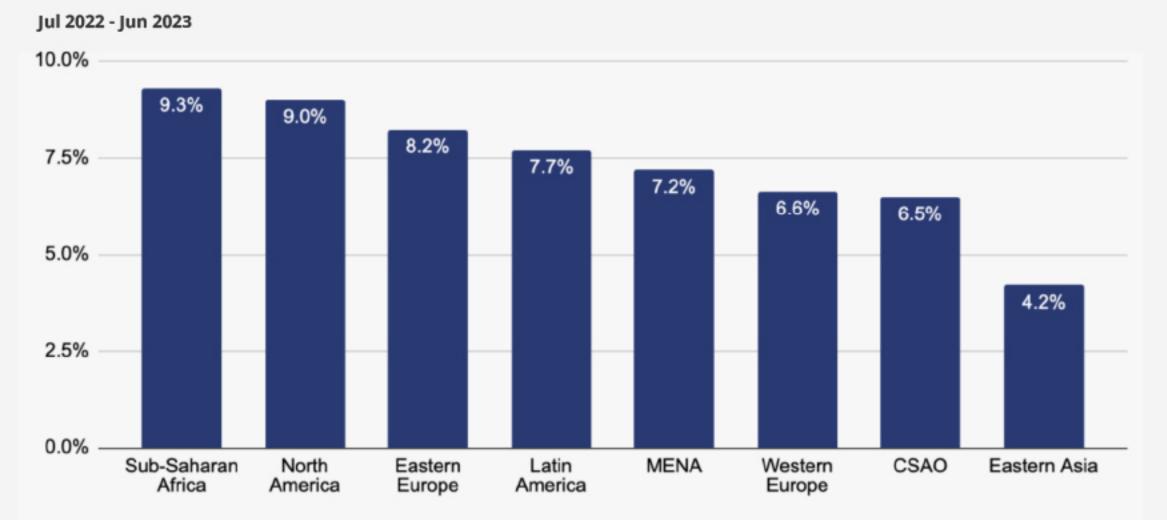
Everything you need to brove about regional breeds
in crypto adoption.

According to the Chainalysis report, "The 2023 Geography of Cryptocurrency Report," Bitcoin's share of regional cryptocurrency transaction volume ranges from 9.3% in Sub-Saharan Africa to 4.2% in Eastern Asia.<sup>80</sup>



80 https://go.chainalysis.com/geography-of-cryptocurrency-2023.html

Figure 61: Bitcoin's Share of Regional Transaction Volume

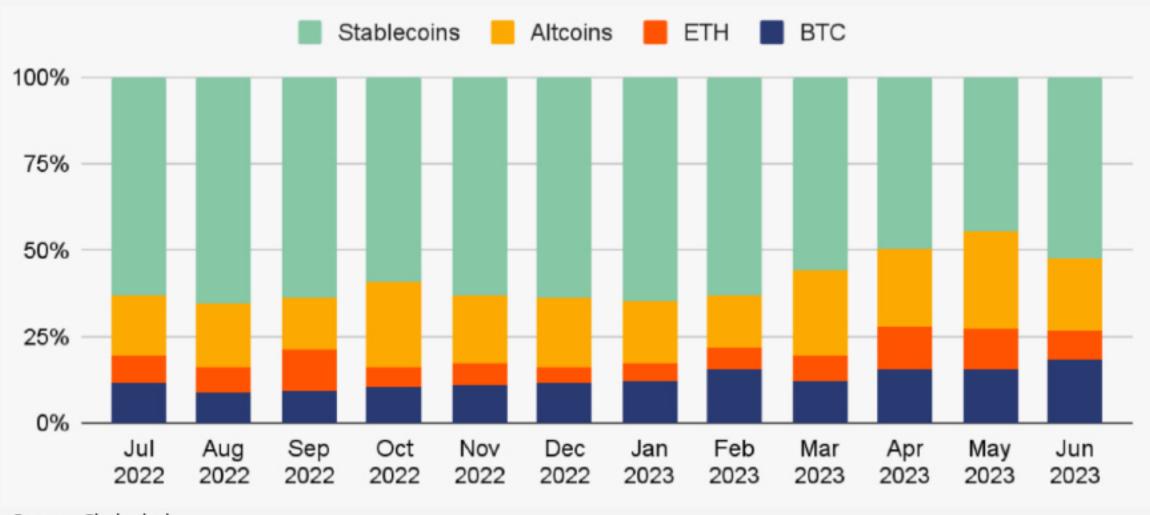


Source: Chainalysis

#### RESEARCH IN FOCUS

The study explains that the bulk of daily transaction volume is due to stablecoin activity. Chainalysis interview Moyo Sodipo, the Co-Founder and CPO of Nigeria-based cryptocurrency exchange Busha on the topic of stablecoin activity in Africa. Busha stated, "When Busha gained popularity around 2019 and 2020, there was a big frenzy for Bitcoin. A lot of people were not initially keen on stablecoins. Now that Bitcoin has lost a lot of its value, there is a desire for diversification between Bitcoin and stablecoins. However, market shifts aren't dampening activity. People are constantly looking for opportunities to hedge against the devaluation of the Naira and the persistent economic decline since COVID."

Figure 62: Share of Monthly Cryptocurrency Value Sent by Sub-Saharan Africa by Asset Type

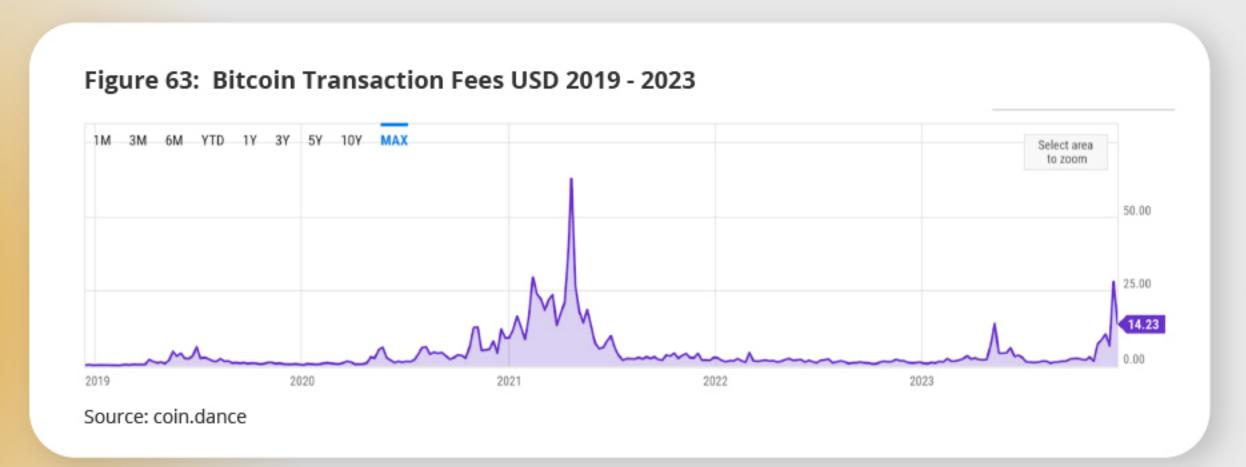


Source: Chainalysis



#### 3.1.1 Exchanges

On-chain analysis and practitioner experience from entrepreneurs in the payments industry present evidence that Bitcoin is being used less as electronic cash and more as digital gold. Transaction fees are around \$14.23 but hit as high as \$38 in mid-December 2023.



However, this trend may reverse if low denomination transactions can be executed without high transaction costs. Several companies are building on top of Bitcoin to enable payments that have low transaction fees such as Visa and Lightspark. Alfred F. Kelly Jr., Executive Chairman and Former CEO of Visa (July 2023), indicates Visa's proactive stance: "Visa is actively exploring ways to integrate Bitcoin and other digital currencies into our payments network, anticipating increased institutional usage in 2024."<sup>81</sup> Other entrepreneurs such as Jack Mallers, CEO and founder of Chicago-based Bitcoin payment provider Strike, allow users to send fiat around the world using Bitcoin. If an American wanted to send money to a person in Europe, the U.S. dollars would be debited from the Strike account and there would be a Bitcoin-to-USD conversion where Bitcoin is purchasing U.S. dollars. A Bitcoin-to-Bitcoin payment is then made using the Lightning Network to escrow and achieve cash finality of a bearer instrument. A Bitcoin-to-euro conversion then takes place where Strike is selling Bitcoin for Euros.<sup>82</sup> If Bitcoin is able to process payments affordably again, the world's unbanked will have access to financial services for the first time.

Bitcoin is a very exciting development, it might lead to a world currency.

I think over the next decade, it will grow to become one of the most important ways to pay for things and transfer assets.



Kim Dotcom, Founder of **MEGAUPLOAD** 



Bitcoin is a powerful tool for financial inclusion and institutional adoption could significantly amplify its reach and impact.





Dan Schulman, CEO of





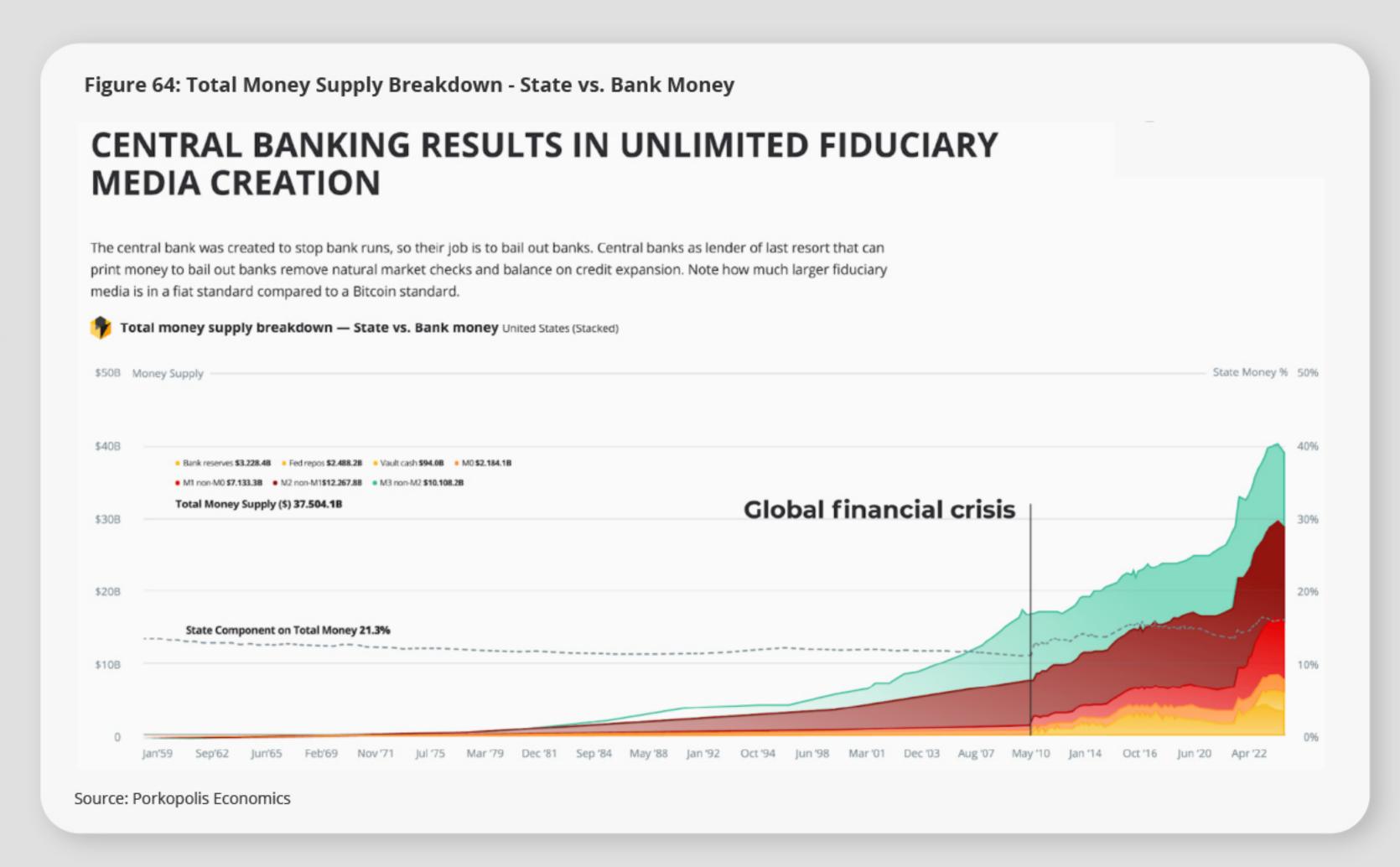


<sup>\*1</sup> https://s1.q4cdn.com/050606653/files/doc\_presentations/2020/02/Visa-Inc-2020-Investor-Day-Full-Presentation.pdf

<sup>82</sup> https://Bitcoinmagazine.com/business/jack-mallers-strike-Bitcoin-agility

#### 3.1.2 Store of Value

Although Bitcoin is not being used heavily as a medium of exchange or "money", it is being used as a long-term store of wealth. Since the end of the gold standard, central banks around the world have gradually debased their currencies through base money and fiduciary media leading to a loss of purchasing power. The Society for Worldwide Interbank Financial Telecommunication, (S.W.I.F.T.) is a Belgian banking cooperative that facilitates the execution of financial transactions and payments between certain banks worldwide. In 2023, the SWIFT system was weaponized by Western governments to enforce sanctions against Russia.<sup>83</sup> SWIFT was also been used to freeze the assets of other sovereign governments such as Afghanistan.<sup>84</sup>



<sup>83</sup> https://www.reuters.com/business/finance/iran-russia-link-banking-systems-amid-western-sanction-2023-01-30/

<sup>84</sup> https://foreignpolicy.com/2022/07/21/afghanistan-taliban-economy-reserves-central-bank-finance/



#### RESEARCH IN FOCUS



Research in Focus: The 2024 outlook published by Global X by Mirae Asset, "Charting Disruption," shows how Bitcoin is a globally accessible, verifiably scarce, and censorship-resistant digital store of value that is location-agnostic to national borders and uncorrelated to domestic issues, making it a powerful wealth preservation tool. 5 The report calculates Bitcoin's total return against reference currencies such as the Argentine peso, Turkish Lira, Lebanese pound, and U.S. dollar. The worst offender was the Lebanese pound. During the five-year period between 2018 and 2023, Bitcoin had a return of 3592.7% measured in Lebanese pounds, highlighting the immense potential of Bitcoin to help individuals store wealth outside of a collapsing fiat currency regime.

Figure 65: Bitcoin Total Return vs. Reference Currencies



	Argentina	Turkey	Lebanon	United States
Annualized Change in Consumer Prices (September 2018–September 2023)	29.6%	34.0%	99.9%	3.7%
Total Change in Consumer Prices Since (September 2018–September 2023)	266.0%	332.6%	3093.0%	21.9%
BTC Performance (September 2018–September 2023)	3252.2%	1423.2%	3592.7%	268.6%

Notes: The Lebanese economic crisis caused an 80 - 90% devaluation of the Lebanese Pound (LBP) against the USD. Despite an official exchange rate pegged at 1,507.50 LBP - USD since 1997, at least three alternative LBP - USD exchange rates emerged to reflect true market value between 2018 and 2023. In February 2023, the official peg was changed to 15,000 LBP - USD. BTC = Bitcoin, ARS = Argentinian Peso, and TRY = Turkish Lira.

Source: Global X

85https://globalxetfs.com/content/files/Charting-Disruption-2024-Full-Report.pdf?utm\_source=Charting+Disruption&utm\_medium=Website&utm\_term=Full+Report&utm\_content=Charting+Disruption+2024+Full+Report&utm\_campaign=Charting+Disruption+2024+Full+Report

Sovereign nations that want to maintain trade relations with the U.S. and China, but do not want to hold their nation's reserves in fiat currencies that can be debased or in treasuries that can be frozen by the SWIFT system may look to neutral reserve assets such as Bitcoin as an alternative. For example, Russia is considering accepting Bitcoin for oil and gas purchases<sup>86</sup> and Qatar's sovereign wealth fund is rumored to be exploring what could be one of the biggest institutional investments into Bitcoin ever – to the tune of up to \$500 billion.<sup>87</sup> His Highness, The Emir of Qatar, Tamim bin Hamad Al Thani, met with President Nayib Bukele to strengthen bilateral relations in September.<sup>88</sup> President Bukele is a well-known Bitcoin advocate that made Bitcoin legal tender in 2021.<sup>89</sup>



While this section discussed the main use cases of Bitcoin, the next section presents the empirical data available on Bitcoin's adoption and extrapolates the growth trajectory based on the compound average growth rate.



<sup>86</sup>https://www.bbc.com/news/business-60870100

<sup>87</sup>https://blockonomi.com/huge-if-true-100k-Bitcoin-god-candle-qatar-eyes-multi-billion-dollar-Bitcoin-investment/

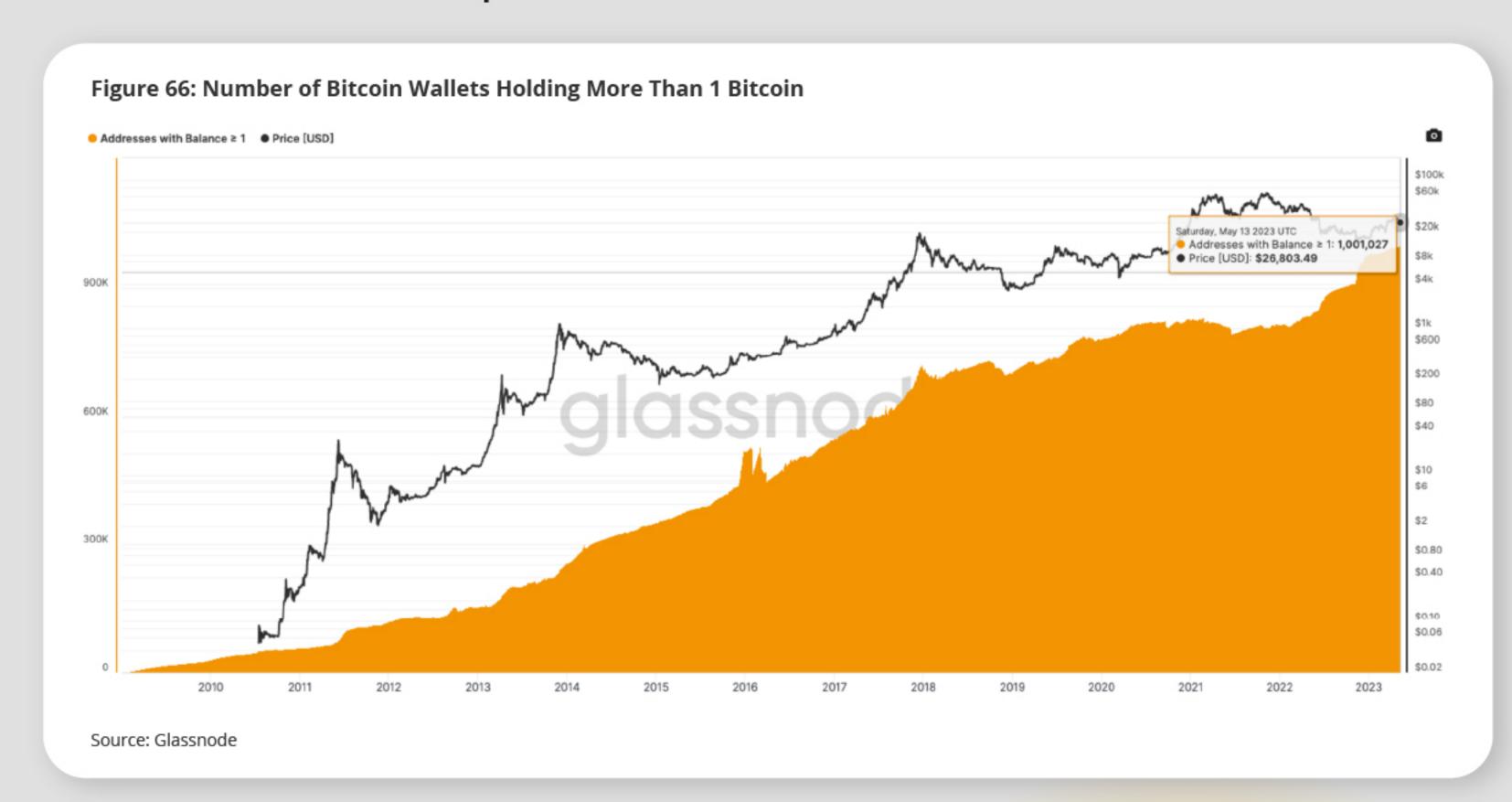
<sup>\*\*</sup>https://elsalvadorinenglish.com/2023/09/13/emir-of-qatar-meets-with-president-nayib-bukele-tostrengthen-bilateral-relations/

<sup>89</sup>https://www.pwc.com/gx/en/financial-services/pdf/el-salvadors-law-a-meaningful-test-for-Bitcoin.pdf

#### 3.2 Global Adoption and Growth

There are several ways to empirically study the adoption of Bitcoin. This section looks at on-chain metrics, surveys, government sentiment, and venture capital investment in Bitcoin companies to understand if the number of Bitcoin users is growing globally.

#### 3.2.1 Blockchain Data on Adoption

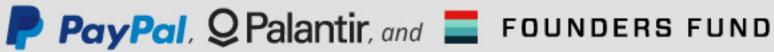


The least noisy evidence of Bitcoin's adoption is presented by analyzing the Bitcoin blockchain's data. The number of Bitcoin wallet addresses holding one whole BTC or more surpassed the one million mark on May 13, 2023, according to data from Glassnode. Over 4.5 million unique wallet addresses hold .1 BTC or more, which is worth approximately \$4.250 at the time of writing. The last quarter of 2023 had 19.5 million addresses active on average per month.90

I do think Bitcoin is the first [encrypted money] that has the potential to do something like change the world.



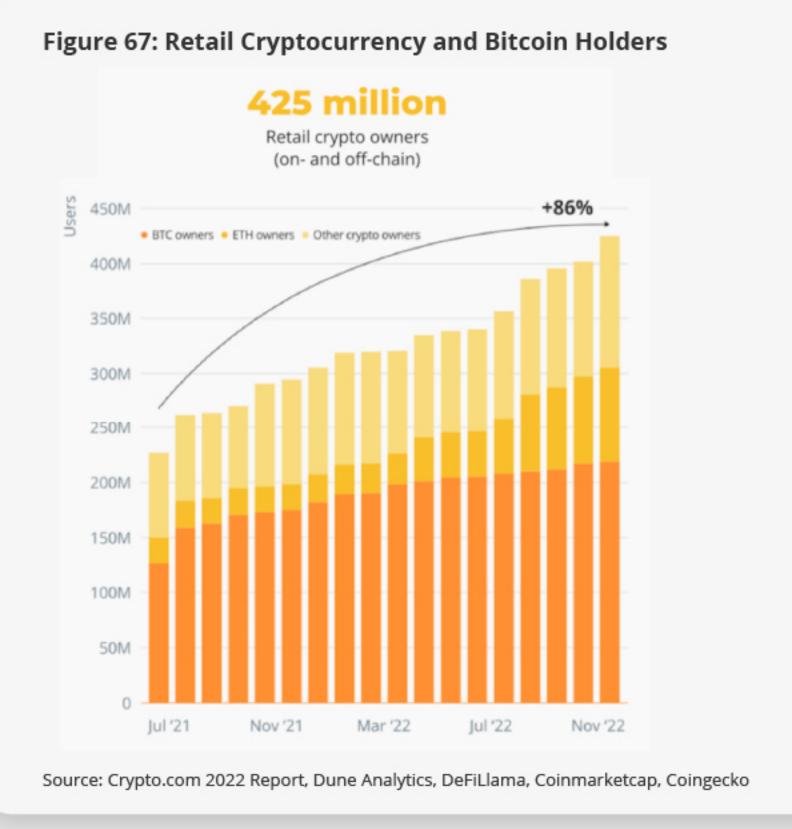
Peter Thiel, Co-founder of

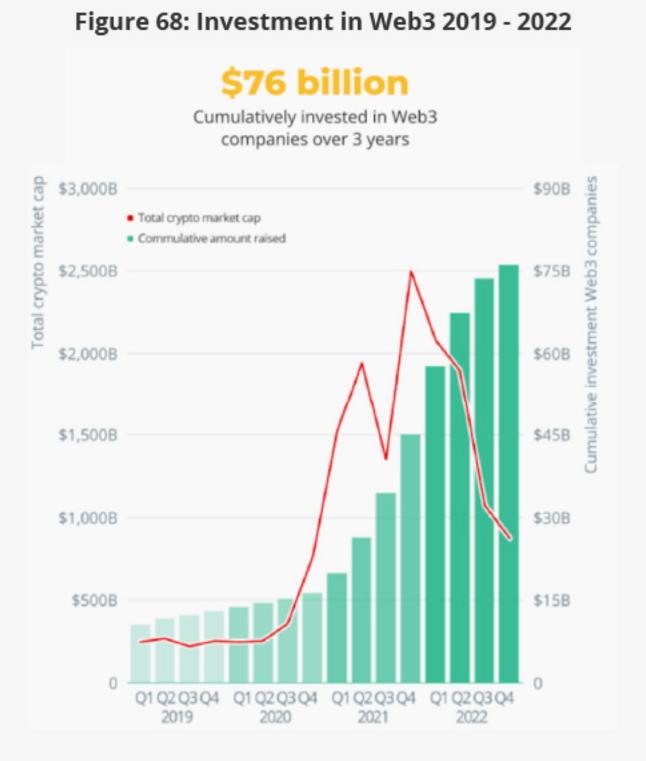


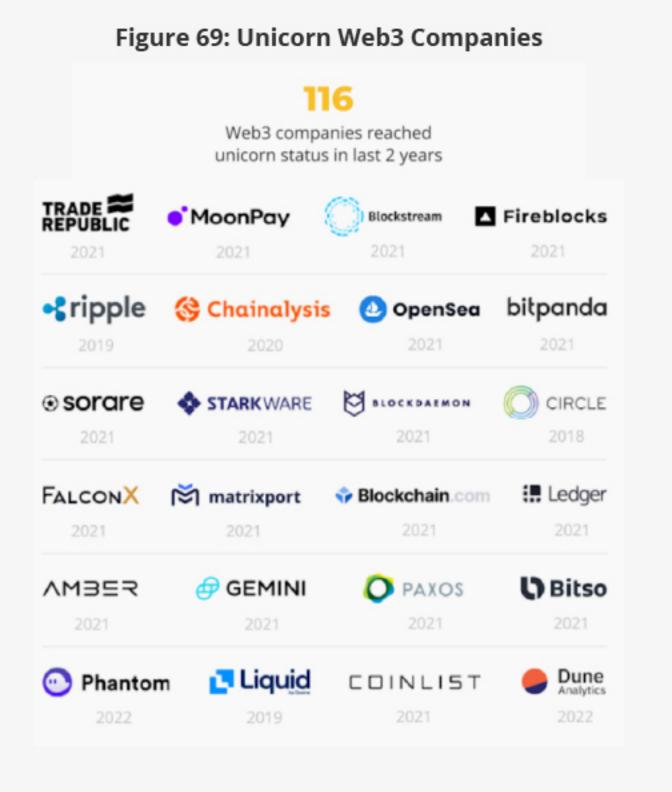
90https://studio.glassnode.com/metrics?a=BTC&category=Addresses&m=addresses.MinPoint1Count



#### 3.2.1 Blockchain Data on Adoption







#### 3.2.2 Surveys on Bitcoin Acceptance

In addition to studying the on-chain data, Bitcoin's adoption can be studied by surveys that ask governments, companies, and individuals if they own Bitcoin. There has been an 86% increase in digital asset holders over the last two and a half years, according to proprietary surveys and field research conducted by Cointelegraph. The Cointelegraph research estimates that approximately 175 million or 2% of the world's population, own or have used Bitcoin. However, the ETC Group reports that recent surveys for retail adoption in 2023 point to a much higher global adoption rate of around 18%. So, approximately every 5th individual on earth currently holds some type of crypto asset. The latest figures for the United States suggest a retail adoption rate of approximately 16%. From the handful of surveys available, institutional adoption appears to be significantly higher than retail adoption.

91 https://etc-group.com/blog/special-reports/ETC-Group-Crypto-Market-Outlook-2024/



#### 3.2.2 Surveys on Bitcoin Acceptance



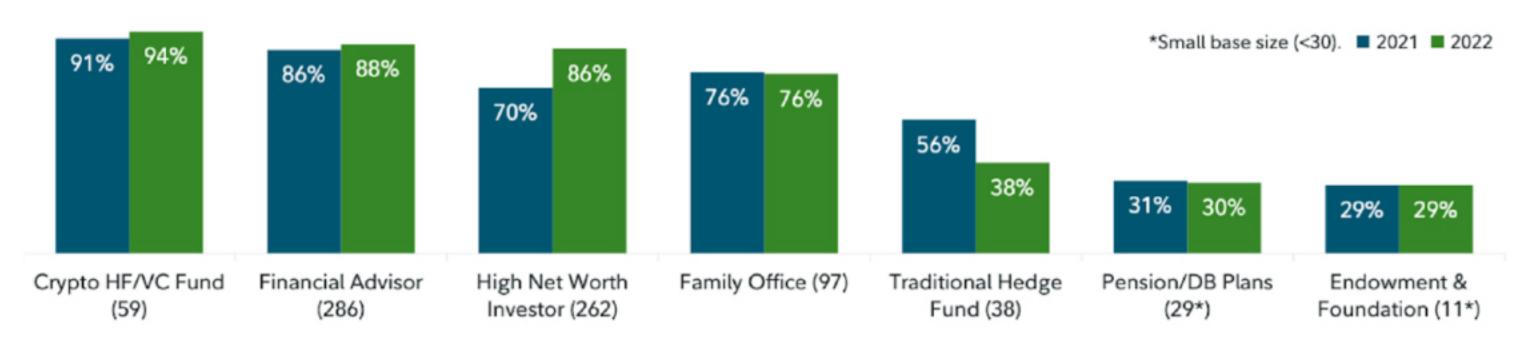
Fidelity's 2022 survey estimates that 58% of institutional investors are invested in digital assets such as Bitcoin. Fidelity's figure was substantially higher than the result found by Cointelegraph's survey of Institutional Investors done in 2022. Cointelegraph's Institutional Demand for Cryptocurrencies Global Survey 2022 reported that 43% of the surveyed investors currently held digital assets.<sup>92</sup> However, both surveys indicate that institutional adoption is higher than retail.

#### RESEARCH IN FOCUS



Since 2018, Fidelity Digital Assets has conducted an annual study to better understand institutional investors' perceptions of and approach to digital assets. The 2022 survey was conducted between Jan. 2, 2022, and June 24, 2022, with a total of 1,052 blind interviews of professionals, including high-net-worth (HNW) individuals, financial advisers, family offices, crypto hedge and venture funds, traditional hedge funds, endowments and foundations, as well as pension funds and defined benefit plans.<sup>93</sup> The most recent Fidelity Digital Asset survey found that almost six in ten institutional investors surveyed (58%) are invested in digital assets globally and that 74% of investors plan to buy or invest in digital assets in the future, up slightly from 71% in 2021.

Figure 70: Investors Expressing Future Preference to Buy Digital Assets



Numbers in parentheses indicate the 2022 base count. Source: Fidelity Digital Assets SM 2022 Institutional Investor Digital Assets Study.

**Fidelity** A DIGITAL ASSETS

Source: Fidelity Digital Assets



<sup>92</sup>https://assets-global.website-files.com/6441468b190b45fb7c5b26b0/64f633a1ae43f9167ef 9bb23\_institutional-demand-report.pdf

<sup>93</sup>https://www.fidelitydigitalassets.com/sites/default/files/documents/2022\_Institutional\_Investor\_Digital\_Assets\_Study.pdf

#### 3.2.3 Surveys on Bitcoin Acceptance

In addition to the retail holders, several governments and corporations have also accumulated extensive BTC holdings. This is often visible on the blockchain as certain corporate wallets have been identified. When the corporation's wallet addresses are unknown, it is possible to see Bitcoin holdings in financial reports of publicly traded companies. In some cases, the corporations report their holdings directly to the public, such a MicroStrategy (MSTR). The most comprehensive list of treasuries that hold Bitcoin is available at buyBitcoinworldwide.com. In addition, Cointelegraph's public data set tracks the identities of the largest Bitcoin wallet holders and changes in their holdings.



ENTITIES	# OF BTC	VALUE TODAY	% OF 21M	LAST UPDATED
71	1,976,802	\$85,085,037,252	9.413%	December 27, 2023
Totals by C	Category			
Category	# of BTC	Val	ue Today	% of 21m
		**		3.901%
ETFs &	819,125	\$3	5,256,581,660	3.90170
ETFs & Countries &	819,125 451,968		9,453,498,184	2.152%
	451,968	\$19		
Countries ☑	451,968 276,328	\$19 \$11	9,453,498,184	2.152%



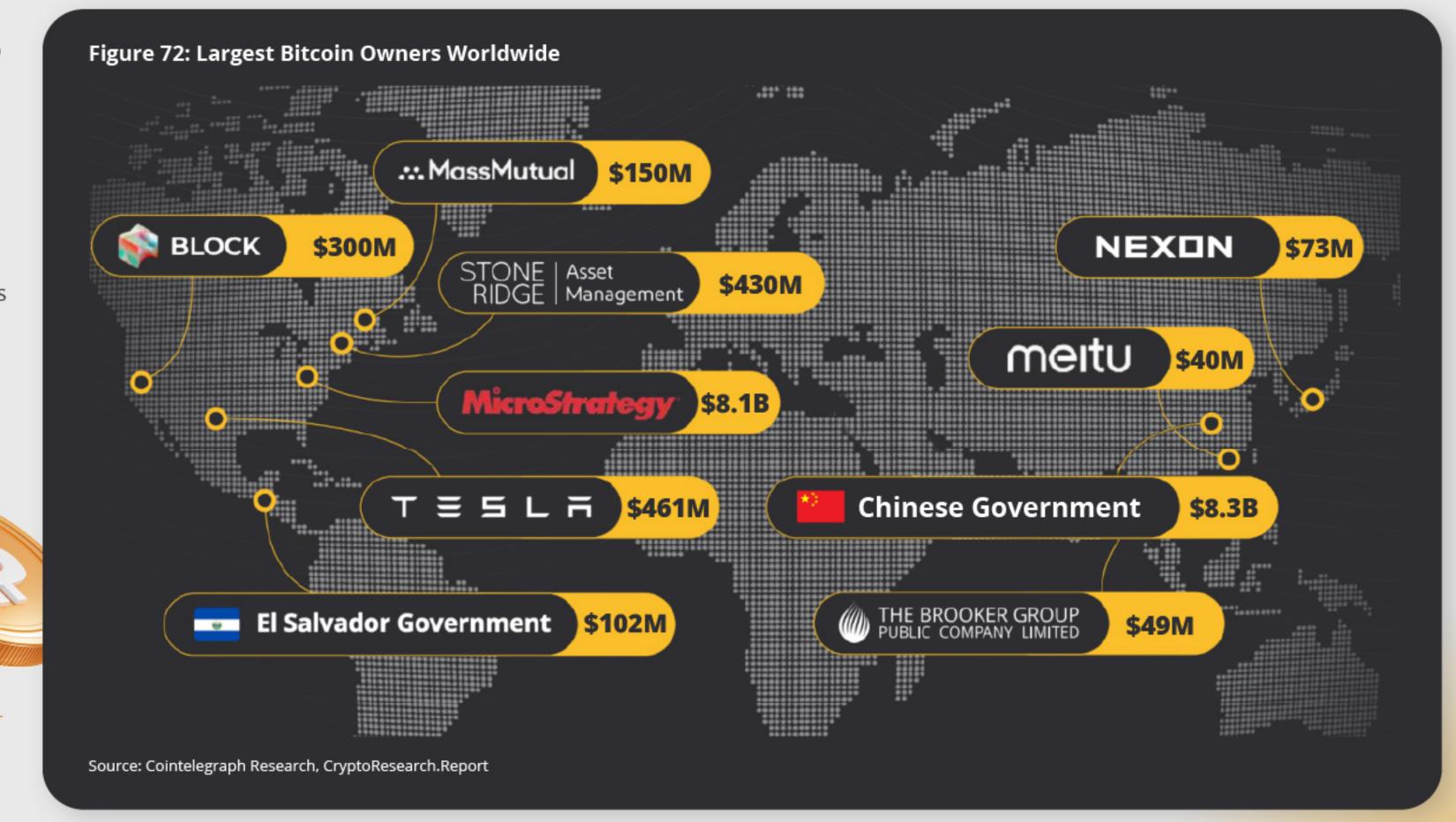
<sup>94</sup> https://buyBitcoinworldwide.com/treasuries/

<sup>95</sup> https://research.cointelegraph.com/databases/institutional-crypto-holdings-database

#### 3.2.3 Surveys on Bitcoin Acceptance

Almost 10% of Bitcoin's supply is owned by ETFs, governments, and public and private companies. The top 10 largest known Bitcoin holders worldwide include the dormant Satoshi Nakamoto wallets with approximately 1.1 million BTC, Coinbase with 958,225 BTC, Grayscale Bitcoin Trust with 643,572 BTC, Binance with 584,373 BTC, Bitfinex with 212,423 BTC, the Chinese government with 194,000 BTC, MicroStrategy with 189,150 BTC, Block.one with 140,000 BTC, OKX with 133,263 BTC, and the US government with 69,640 BTC. There are several wallet addresses storing tens of thousands of Bitcoin that have unknown owners. Those pseudonymous whale wallet addresses are tracked by Arkham for further details.

Outside of exchanges that custody Bitcoin on the behalf of their clients, the leading holder is the Grayscale Bitcoin Trust with over 3% of Bitcoin's supply. In terms of government holdings, the Chinese government is a "Bitcoin whale" with even more Bitcoin than MicroStrategy. In 2019, Chinese officials seized 194,000 Bitcoin from the company PlusToken. An often-forgotten fact is that the U.S. government is also one of the largest governmental holders of Bitcoin with 69,640 Bitcoin. Although buyBitcoinworldwide.com reports the U.S. government holding 207,189 Bitcoin, Sachin Jaitly's 2023 doctoral thesis at the University of Florida and Jameson Lopp's record of the U.S. government's seized and sold Bitcoin show that the U.S. Government has 69,640 Bitcoin. The largest Bitcoin holder that is a publicly traded company is MicroStrategy with 189,150 BTC and the largest private company is Block.One, founded by Brock Pierce and well-known for the EOS blockchain.



<sup>96</sup>https://www.benzinga.com/markets/cryptocurrency/22/11/29582013/china-holds-6-billionworth-of-crypto-could-kill-crypto-markets-if-it-wishes-analyst

<sup>98</sup> https://jlopp.github.io/us-marshals-Bitcoin-auctions/



<sup>97</sup>https://acrobat.adobe.com/link/review?uri=urn%3Aaaid%3Ascds%3AUS%3A58467558-b61 b-4166-8ce3-de588fdef9a3

#### 3.2.4 Global Political Leaders' Perspectives on Bitcoin

This section delves into the stances of various international political leaders on Bitcoin, highlighting their views and policies from making Bitcoin legal tender to advocating for its broader adoption. These leaders' positions are shaping the global landscape.

This list is not exhaustive, but it provides a glimpse into the diverse political leaders engaging with Bitcoin and blockchain technology. It's important to note that their stances can vary considerably, and their support often focuses on the broader potential of blockchain rather than specifically endorsing Bitcoin. Nevertheless, their interest in this technology signals its growing importance on the global stage.

Bitcoin is absolutely the Wild West of finance, and thank goodness. It represents a whole legion of adventurers and entrepreneurs, of risk takers, inventors, and problem solvers. It is the frontier. Huge amounts of wealth will be created and destroyed as this new landscape is mapped out.









NAYIB BUKELE, PRESIDENT OF EL SALVADOR: Made Bitcoin legal tender in El Salvador in 2021, the first country to do so. Continues to invest in Bitcoin and promote its adoption.





JAVIER MILEI, PRESIDENT OF ARGENTINA: Strong advocate for Bitcoin and a critic of central banks. Has proposed a number of pro-Bitcoin policies, including making Bitcoin legal tender.





JAIR BOLSONARO, PRESIDENT OF BRAZIL: Bolsonaro has expressed interest in Bitcoin and has discussed the possibility of making it legal tender in Brazil. However, the Brazilian government has not yet taken any concrete steps to regulate cryptocurrencies.





VOLODYMYR ZELENSKYY, PRESIDENT OF UKRAINE: Ukraine has emerged as a hub for crypto activity and has legalized Bitcoin. Zelenskyy has expressed his support for blockchain technology and its potential to help Ukraine's economy.





PIERRE POILIEVRE, LEADER OF THE CONSERVATIVE PARTY OF CANADA: Has expressed support for Bitcoin and blockchain technology. Has proposed a number of pro-Bitcoin policies, including making Bitcoin legal tender.





#### SHEIKH MOHAMMED BIN RASHID AL MAKTOUM, RULER OF DUBAI: In

2023, Dubai established VARA to regulate the virtual assets market, including Bitcoin. Dubai has positioned itself as a global hub for innovation and blockchain technology. Sheikh Mohammed has actively promoted this vision, highlighting the potential of blockchain to revolutionize various industries.





BORIS JOHNSON, FORMER PRIME MINISTER OF THE UK: While Johnson has not explicitly endorsed Bitcoin, he has called for the UK to become a global leader in the crypto space. The UK government has taken some steps to attract crypto businesses, such as granting tax exemptions for certain crypto activities.





JOHANA OBANDO, COSTA RICAN POLITICIAN AND FORMER PRESIDENTIAL CANDIDATE: STRONG ADVOCATE FOR BITCOIN AND A CRITIC OF THE TRADITIONAL FINANCIAL SYSTEM. HAS PROPOSED A NUMBER OF PRO-BITCOIN POLICIES, INCLUDING MAKING BITCOIN LEGAL TENDER.





#### **GABRIEL SILVA, PANAMANIAN POLITICIAN AND PRESIDENTIAL CANDIDATE:**

Supports Bitcoin and blockchain technology. Has proposed a number of pro-Bitcoin policies, including making Bitcoin legal tender.





#### 3.2.5 Bitcoin-focused Venture Capital, Private Equity, and M&A

Outside of on-chain data, surveys, corporate filings, and sentiment from government officials, a final sign of adoption can be seen by venture capital and private equity investment in the ecosystem and mergers and acquisitions by traditional companies. Since 2020, \$76 billion has been invested in Web3 companies, and in the last two years, 116 blockchain companies have reached unicorn status, i.e., they are worth over \$1 billion. However, not all of the Web3 companies are focused on Bitcoin. The most notable Bitcoin-focused unicorns include:

Figure 73: Bitcoin-Focused Private Companies Worth Over \$1 Billion

RANK	COMPANY	VALUATION	DOMICILE	INCEPTION
1	BITMAIN	\$40B <sup>99</sup>	China	2013
2	mkraken	\$10.8B <sup>100</sup>	US	2011
3	& Chainalysis	\$8.6B <sup>101</sup>	US	2014
4	Plockchain.com	\$7B <sup>102</sup>	UK	2011
5	Blockstream	\$3.2B <sup>103</sup>	Canada	2014
6	<sup>®</sup> BitGo.	\$1.8B <sup>104</sup>	US	2013

Source: Cointelegraph Research, CryptoResearch.Report

Many unicorn companies work with Bitcoin such as Stripe. However, we were looking for the highest-valued Bitcoin-centric firms. We did not include Digital Currency Group because they are generally focused on cryptocurrency. The same could be said for all of the companies listed on our top 5 Bitcoin-focused unicorn ranking. Bitmain produces hardware for AI applications as well as mining equipment for other cryptocurrencies. Kraken allows investors to buy and sell hundreds of different cryptocurrencies. Chainalysis does blockchain analytics on various blockchains, not only Bitcoin. Blockchain.com offers Ethereum wallets in addition to Bitcoin wallets, and BitGo offers custody for several different cryptocurrencies. Therefore, there aren't any Bitcoin-only firms that have become unicorns yet. A notable company that is extremely close to becoming the first "Bitcoin Unicorn" that focuses entirely on Bitcoin is Lightspark, founded by Facebook's Libra creator, David Marcus. The company has a valuation of just under \$1 billion.



The U.S. has an opportunity to be a leader in establishing the frameworks for Bitcoin financial products and regulations and a hub for innovation.





Alex Adelman, CEO and Co-founder of





<sup>99</sup> https://www.investopedia.com/news/crypto-mining-giant-bitmain-going-public-4050-billion-valuation/

<sup>100</sup> https://www.forbes.com/sites/stevenehrlich/2022/10/19/cracks-at-kraken-cryptos-near-empty-c-suite/?sh=7844d30b41b4

<sup>101</sup> https://www.reuters.com/technology/chainalysis-raises-170-mln-6th-funding-round-with-86-bln-valuation-2022-05-12/

https://www.theblock.co/post/263079/blockchain-com-raises-110-million-in-series-e-funding

<sup>103</sup> https://www.coindesk.com/business/2023/01/24/crypto-infrastructure-firm-blockstream-raises-125m-for-Bitcoin-mining/

<sup>104</sup> https://www.bitgo.com/newsroom/press-releases/bitgo-secures-usd100m-series-c-funding-at-usd1-75b-valuation/

<sup>105</sup> https://www.theblock.co/post/225538/Bitcoins-lightning-network-paypal?utm\_source=CryptoNews&utm\_medium=app

#### 3.2.5 Bitcoin-focused Venture Capital, Private Equity, and M&A

In conclusion, the multifaceted approach to studying Bitcoin's adoption offers a comprehensive view of its impact and growth. The analysis of the Bitcoin blockchain data reveals a significant increase in wallet addresses, indicating a broader acceptance and utilization of Bitcoin among individuals. The surpassing of one million wallet addresses holding a whole BTC or more underscores this trend. Furthermore, the surge in retail adoption rates, with estimates suggesting that nearly one in five individuals globally holds some form of cryptocurrency, highlights the widespread nature of Bitcoin's reach.

The involvement of governments and corporations adds another layer to Bitcoin's adoption narrative. With substantial holdings by entities like Grayscale Bitcoin Trust, the Chinese government, and MicroStrategy, Bitcoin's role in both public and private sector finance is increasingly evident. These trends are visible through blockchain analysis, financial reports, and public disclosures, providing a clear picture of institutional engagement with Bitcoin.

Moreover, the growth of Bitcoin-focused companies to unicorn status, alongside significant venture capital and private equity investments in the Web3 ecosystem, reflects the burgeoning interest and confidence in Bitcoin and its underlying technology. This financial backing and the creation of substantial valuations for companies like Bitmain, Kraken, and Chainalysis demonstrate the vibrant and evolving nature of the Bitcoin ecosystem.

Overall, the adoption of Bitcoin, as evidenced through on-chain data, surveys, government and corporate holdings, and venture capital activity, paints a picture of a dynamic and expanding landscape. This growth signifies a shift in how financial transactions and investments are viewed and highlights Bitcoin's potential role in shaping the future of finance and technology. As Erik Voorhees aptly puts it, Bitcoin is the "Wild West of finance," a frontier where risks, innovations, and immense opportunities coexist, continuously redefining the boundaries of digital currency and its impact on the world.



As an educator of future blockchain professionals, I can tell you that many of these future business leaders are looking to accept Bitcoin as a form of payment and are thinking of how to build on the network itself. Bitcoin's provides many different avenues for entrepreneurs to leverage the 'Bitcoin Revolution, not just for payments, but for DeFi, and quick settlement layer for global business.



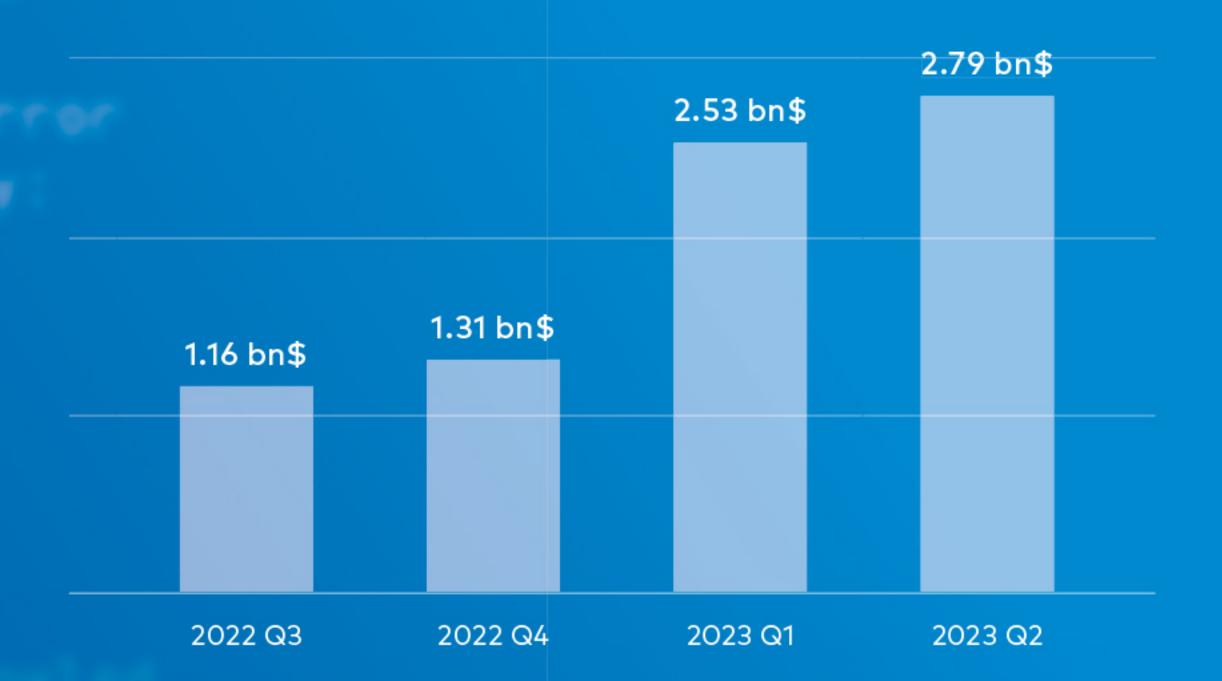


**Dr. Michael Tabone**, Professor of Global Business with Blockchain Technology, University of the Cumberlands









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# Challenges

#### 4. Why Should Institutional Investors Learn About Bitcoin?

As we venture into the realm of integrating Bitcoin into institutional portfolios, it is imperative to navigate both the seas of opportunity and the undercurrents of risk with equal dexterity. This section of our research report, embarks on a candid exploration of the challenges that institutional and professional investors from traditional finance might encounter in this new financial frontier.

Bitcoin, a pioneering force in the world of cryptocurrencies, presents a paradigm shift in how we perceive and interact with financial assets. Its decentralized nature, absence of traditional financial intermediaries, and the potential for high returns make it an enticing addition to diversified portfolios. However, these very characteristics also give rise to a spectrum of challenges that must be thoroughly understood and strategically managed.

This section delves into a range of critical considerations. From the environmental, social, and governance (ESG) implications of Bitcoin mining to the intricacies of custody services and the risks inherent in centralized dependencies. Each challenge is dissected to reveal its nuances and potential impacts on institutional investment strategies.

Moreover, we extend our analysis to encompass the dynamic realms of market volatility, regulatory landscapes, and the global economic factors that influence Bitcoin's performance. These facets are crucial for investors accustomed to the more predictable nature of traditional financial markets. Understanding these elements is key to unlocking Bitcoin's potential while safeguarding against its volatility and regulatory uncertainties.

In navigating these waters, it is also vital to recognize the cybersecurity and operational risks unique to digital assets like Bitcoin. As we explore these challenges, we also highlight the remarkable strides in technology and security protocols that are continually elevating the resilience and reliability of cryptocurrency investments.



PayPal had these goals of creating a new currency. We failed at that, and we just created a new payment system. I think Bitcoin has succeeded on the level of a new currency, but the payment system is somewhat lacking. It's very hard to use, and that's the big challenge on the Bitcoin side.









Lastly, we touch upon the challenges of interoperability between Bitcoin and traditional financial systems. This aspect is particularly pertinent as it paves the way for innovative financial solutions that bridge the gap between the established and the emerging, creating a cohesive financial ecosystem.

While this section underscores the various challenges associated with incorporating Bitcoin into institutional portfolios, it is designed not as a deterrent but as a beacon guiding informed decision-making. Each challenge, when carefully managed and strategically approached, opens the door to unparalleled opportunities. It is with this balanced perspective that we invite you to delve into the depths of the challenges, armed with the knowledge to turn potential risks into avenues for growth and innovation in the dynamic landscape of institutional investing.



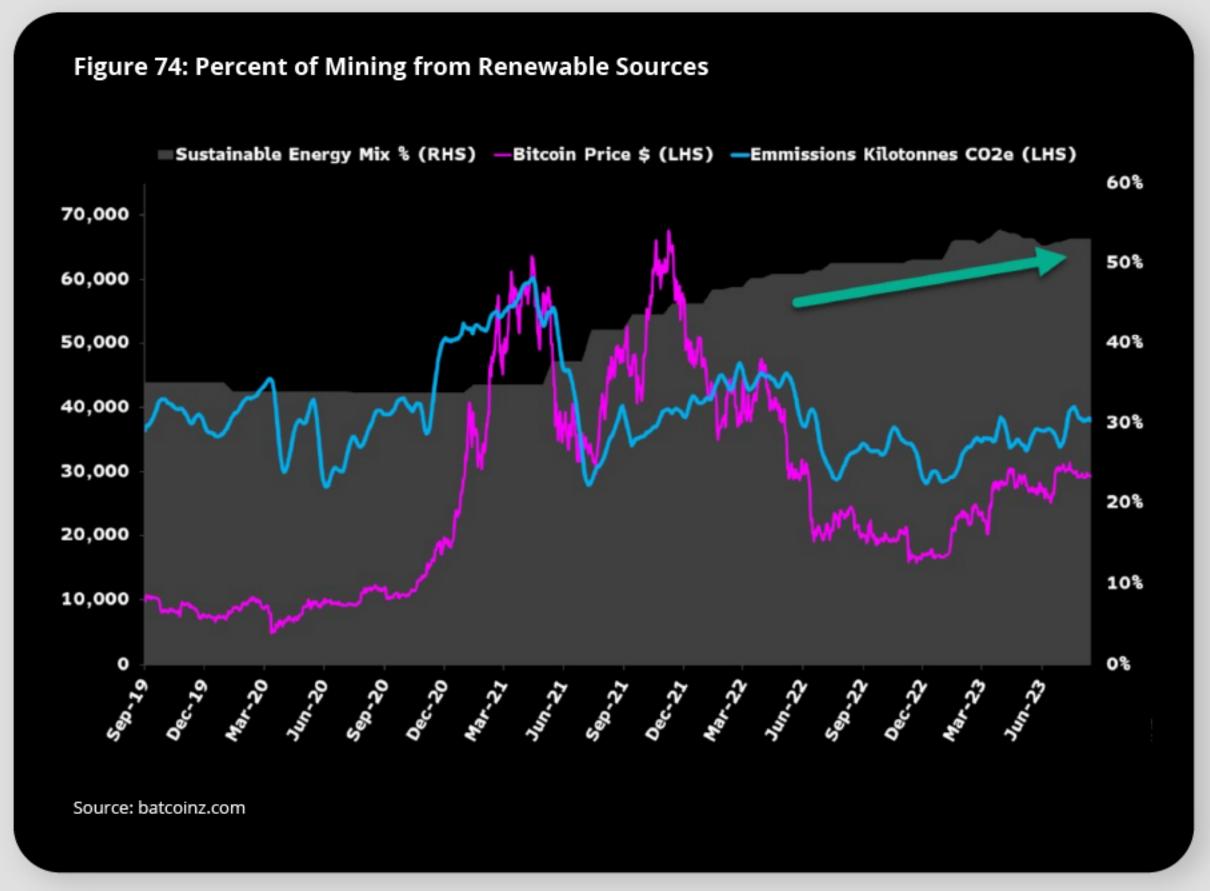
#### 4.1 Environmental, Social, and Governance (ESG) Concerns

The integration of Bitcoin into institutional portfolios intersects significantly with Environmental, Social, and Governance (ESG) considerations, presenting both challenges and innovative solutions. This section explores these aspects, incorporating recent research and developments that shed new light on Bitcoin's ESG impact.

#### **ENVIRONMENTAL IMPACT OF BITCOIN MINING**

Historically, Bitcoin mining has been criticized for its substantial energy consumption, often linked to non-renewable sources. However, recent developments suggest a more nuanced picture. A report by KPMG highlights Bitcoin's potential ESG benefits, such as stabilizing power grids, driving investment in renewables, monetizing stranded energy, and capturing methane. 106 Supporting this perspective, research from Cambridge University and Bloomberg Intelligence indicates that Bitcoin's environmental impact may be considerably less than previously thought.107 In an exclusive interview for this report with the CEO of Marathon Digital, Fred Thiel, he stated that their research indicates that more than 50% of Bitcoin's power mix now comes from renewable sources, a significant improvement partly attributed to China's ban on Bitcoin mining. This ban led to a redistribution of mining activities, with the United States, a leader in sustainable Bitcoin mining, absorbing a considerable portion of these operations.





<sup>107</sup> https://twitter.com/Jamie1Coutts/status/1702232759866163351



<sup>106</sup> https://kpmg.com/us/en/articles/2023/Bitcoin-role-esg-imperative.html

#### 4.1 Environmental, Social, and Governance (ESG) Concerns

**SOCIAL IMPLICATIONS:** Beyond its financial applications, Bitcoin is emerging as a tool for social empowerment. By providing access to financial services for unbanked populations, Bitcoin is aligning with the 'Social' component of ESG principles, promoting financial inclusion and equity.

GOVERNANCE IN DECENTRALIZED FINANCE: The decentralized nature of Bitcoin introduces a novel governance structure. Unlike traditional finance systems, Bitcoin operates on a model governed by consensus, offering increased transparency and reduced centralized risks. This shift is pioneering new governance paradigms in finance.

**THE BIGGER PICTURE:** The environmental case for Bitcoin is gaining momentum, with institutions like BlackRock, Fidelity, and ARK Invest interested in issuing spot Bitcoin ETFs. Such developments signal a growing recognition of Bitcoin's ESG potential. An ETF approval could channel billions of dollars into Bitcoin, emphasizing the need for education to correct outdated narratives around Bitcoin and the environment. Recognizing Bitcoin's emerging use cases as an ESG technology marks the beginning of a significant shift in perception.

As institutional investors increasingly prioritize ESG compliance, understanding these evolving aspects of Bitcoin is crucial. This changing landscape presents not only challenges but also opportunities for investors to contribute to the responsible evolution of Bitcoin. By addressing ESG concerns proactively, institutional investors can play a pivotal role in shaping a sustainable, inclusive, and well-governed financial future.



We live in an era of technologies. Bitalo is digitizing the world of finance and enabling investors access to investments that were traditionally reserved for professional investors. We are democratizing the financial markets and make sure that returns go where they belong: to the investor. We stand for security, transparency and simplicity in a increasingly digitalized, complex world of capital investments.





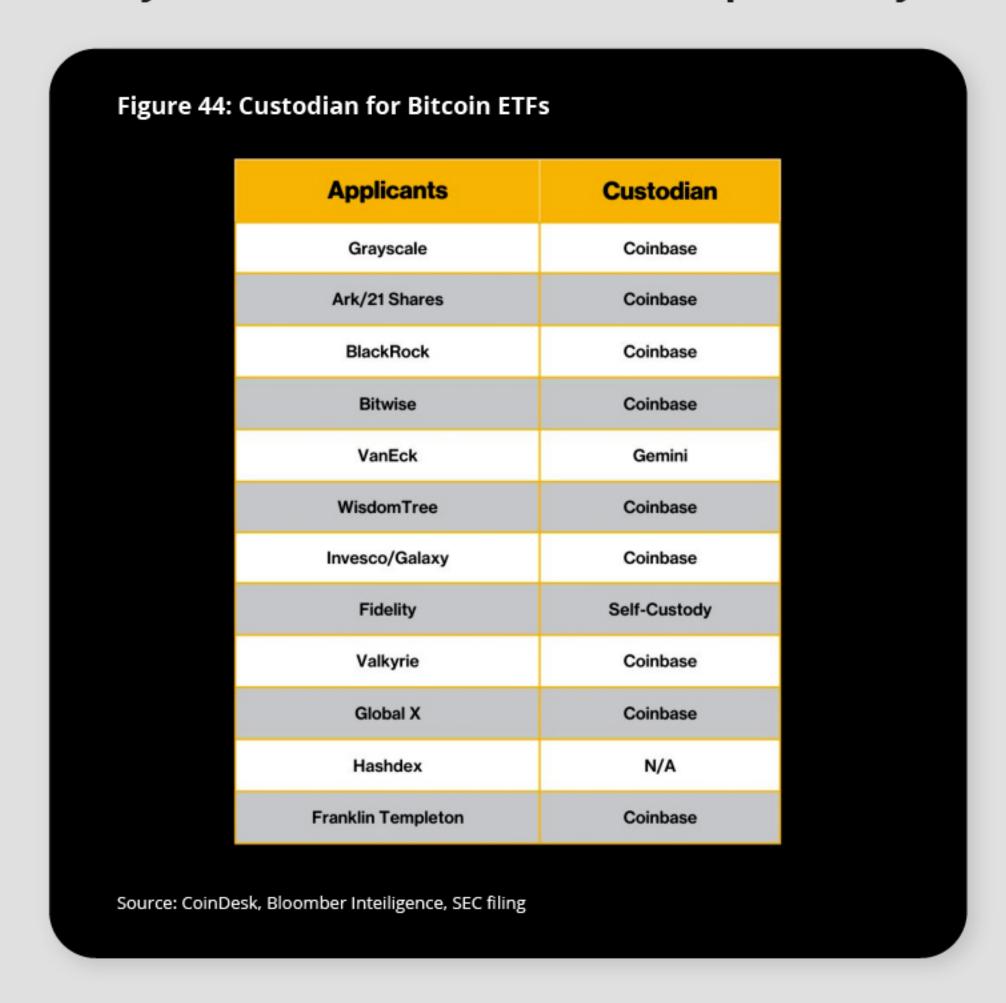
Christian Heinz, Chief Revenue Officer,







#### 4.2 Custody Services and Centralized Dependency Risks



In the burgeoning world of Bitcoin investment, custody services play a pivotal role, especially for institutional investors. This section delves into the intricacies of these services, focusing on the challenges of centralized dependencies and the avenues for mitigating these risks.

**DOMINANCE OF MAJOR CUSTODIANS:** Currently, the landscape of Bitcoin custody for institutional investors is notably skewed towards a few key players, with Coinbase being a prime example. A significant number of prospective issuers for Bitcoin ETFs have chosen Coinbase as their custodian. This centralized approach to custody creates a dependency that could pose risks. Centralization in custodial services might lead to points of vulnerability, such as heightened risk of systemic failures, regulatory impacts on a single entity affecting a large segment of investors, and potential security risks concentrated in one organization.



Having so much Bitcoin concentrated in one custodian is not exactly ideal, and I think it would be beneficial for other quality exchanges to participate as custodians for ETFs.





Brian D. Evans, Founder and CEO of BDE Ventures

**CENTRALIZED DEPENDENCY RISKS:** The reliance on a single or limited number of custodians introduces a central point of failure in the otherwise decentralized ethos of Bitcoin. This centralization can potentially undermine one of Bitcoin's core advantages - its resistance to centralized control and manipulation. Furthermore, operational risks, such as the custodian's internal security protocols, management decisions, and financial health, become critical factors that could disproportionately impact a broad swathe of the market.



#### 4.2 Custody Services and Centralized Dependency Risks

**DIVERSIFICATION AS A MITIGATION STRATEGY:** To address these concerns, there is a growing call for diversification in custody solutions. By spreading custodial responsibilities across multiple entities, the risks associated with centralization can be significantly reduced. This diversification not only enhances the resilience of Bitcoin investments but also aligns with traditional investment wisdom that advocates for not putting all eggs in one basket.

**THE BIGGER PICTURE:** The challenge of centralized dependency in Bitcoin custody services presents an opportunity for innovation and development in the sector. As awareness of this issue grows, it is likely to spur the creation of more decentralized and secure custodial solutions. This evolution could lead to a more robust and diversified custody landscape, offering institutional investors enhanced security and peace of mind. Moreover, this diversification can potentially unlock new investment opportunities and strategies within the Bitcoin space, further enriching the ecosystem.

In conclusion, while the current dominance of certain custodians and the associated centralized dependency risks present challenges, they also catalyze the development of more sophisticated and diversified custodial solutions. Such advancements will not only mitigate risks but also contribute to the maturation and stability of Bitcoin as a viable asset class for institutional investors.

#### 4.3 Market Volatility and Liquidity Concerns

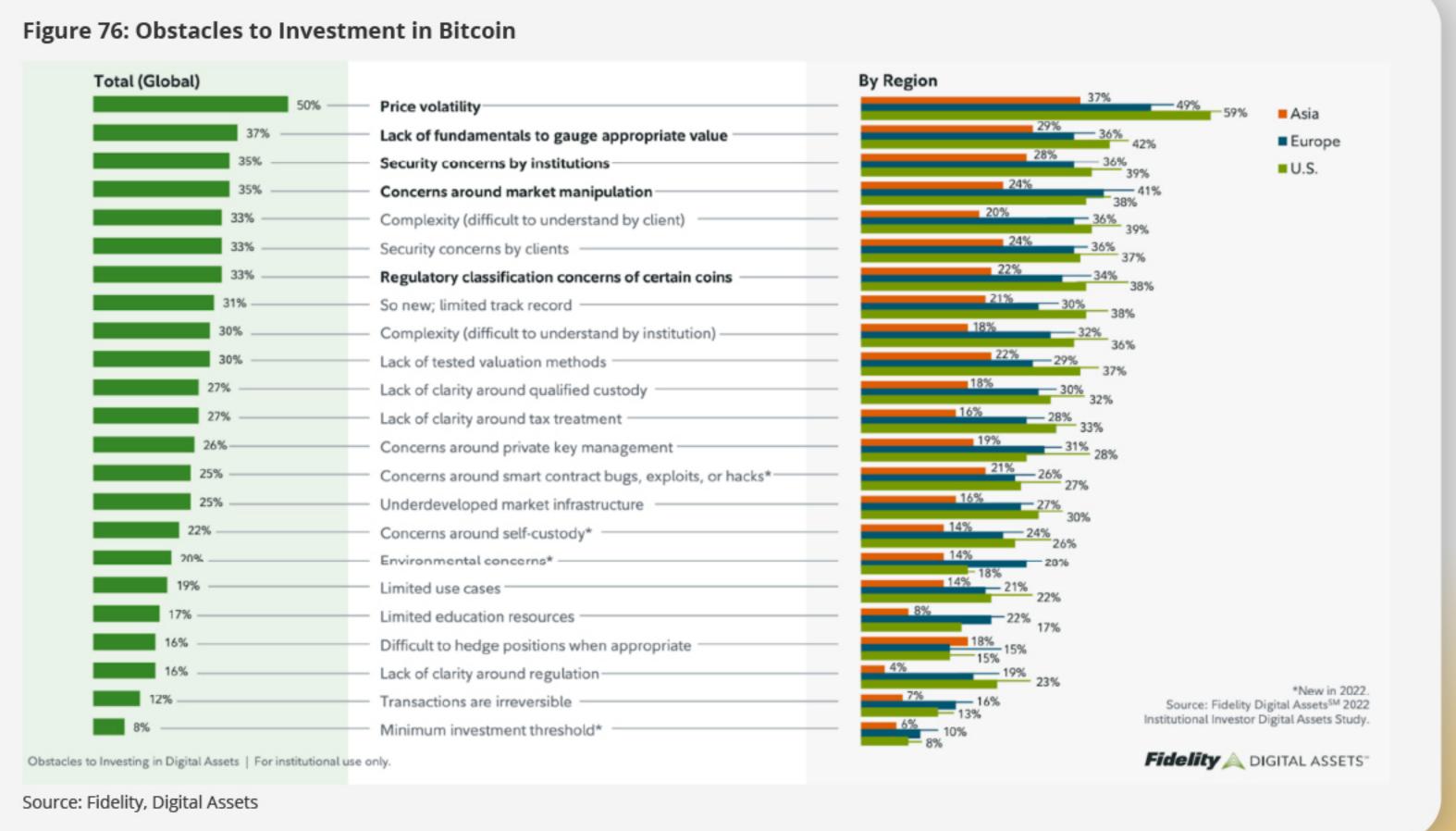
In the context of institutional investment in Bitcoin, understanding and navigating market volatility and liquidity concerns is paramount. This section addresses these two interrelated aspects, offering insights into their implications and strategies for managing them.

MARKET VOLATILITY: Bitcoin is renowned for its price volatility, a feature that has been both alluring for its high return potential and daunting due to its unpredictability. According to the most recent Fidelity Digital Assets survey of institutional investors, price volatility is the greatest overall barrier to investment reported by investors surveyed (50%), consistent with prior years of the study. Other concerns cited by investors surveyed include lack of fundamentals to gauge appropriate value (37%), concerns around security (35%) and market manipulation (35%), and concerns around regulatory classification of certain coins as unregistered securities (33%). This volatility stems from various factors including market sentiment, regulatory news, technological developments, and macroeconomic trends. For institutional investors, accustomed to the relatively stable dynamics of traditional asset classes, Bitcoin's price fluctuations present a unique challenge. Managing this volatility requires a nuanced understanding of the cryptocurrency market and a strategic approach to portfolio allocation. Diversifying investments and employing hedging strategies can help in mitigating the risks associated with Bitcoin's volatility.



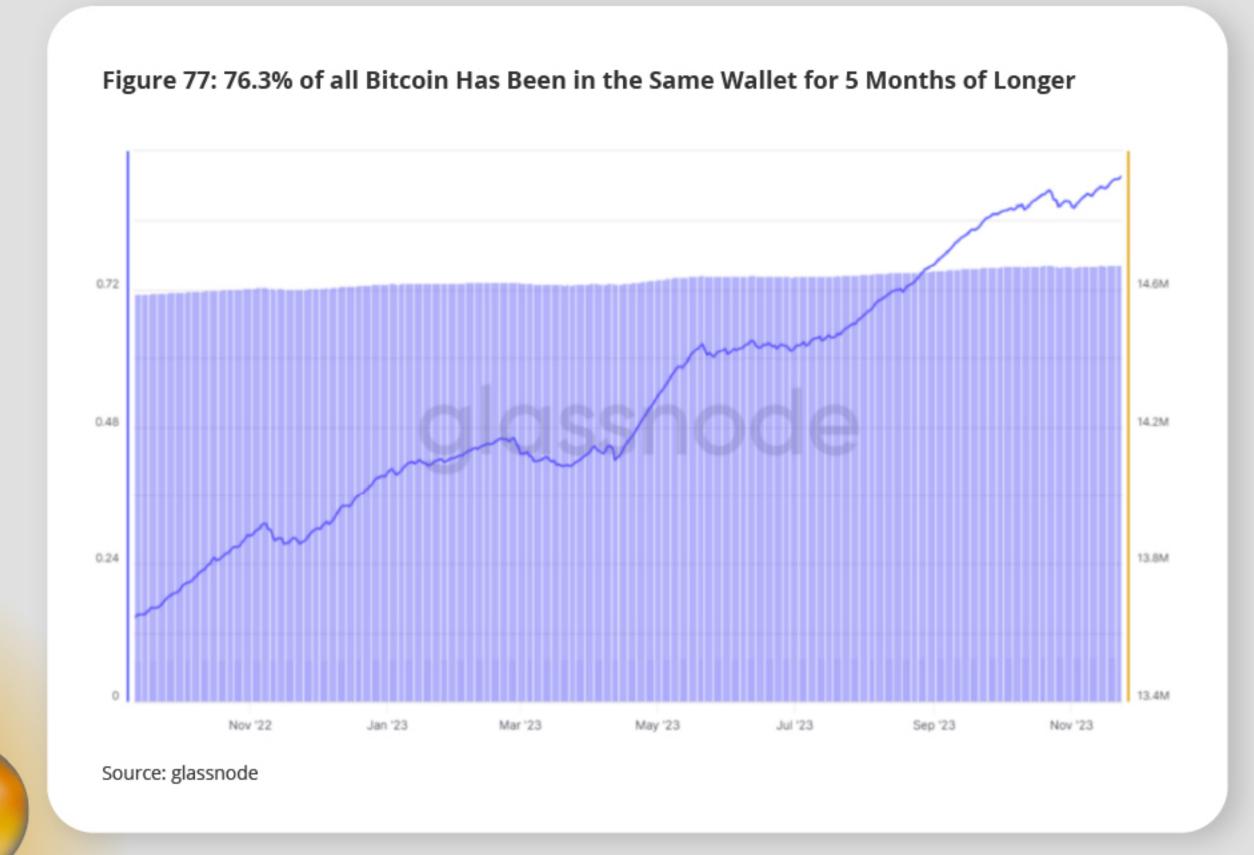
<sup>108</sup> https://www.fidelitydigitalassets.com/sites/default/files/documents/2022\_Institutional\_Investor\_Digital\_Assets\_Study.pdf

#### 4.3 Market Volatility and Liquidity Concerns



LIQUIDITY CONCERNS: Liquidity, or the ease with which an asset can be bought or sold without causing a significant price change, is another critical consideration. Bitcoin's market, despite its growth, still lacks the liquidity depth of traditional markets like stocks or bonds. This can lead to challenges in executing large transactions without affecting the market price, potentially leading to slippage. However, the Bitcoin market is rapidly evolving. Increasing institutional involvement is likely to enhance market depth and liquidity over time, as it attracts more participants and fosters a more robust trading environment.





The majority of Bitcoin is now in the hands of long-term holders, with over 76.2% of all BTC residing in wallets inactive for at least five months. This marks the highest level of long-term holding in the past decade. Additionally, Bitcoin stored outside of exchanges has reached an all-time high, contributing to lower market liquidity. This scarcity on exchanges has been a factor in Bitcoin's recent price increases. Analysis of wallet activities also indicates that many investors are committed to holding (HODLing) their Bitcoin, suggesting that a significant increase in market liquidity may not occur soon.



#### Bitcoin is likely to see significant institutional adoption in 2024, as more investors recognize its potential as a hedge against inflation and a long-term store of value.





ie Wood, CEO of ARK

**THE BIGGER PICTURE:** While market volatility and liquidity concerns are significant, they also present opportunities for astute investors. Volatility can offer profitable opportunities for those with the expertise to navigate these waters effectively. As for liquidity, the evolving nature of the Bitcoin market is gradually addressing these concerns. Enhanced market participation by institutions could lead to greater stability and improved liquidity, creating a more favorable environment for large-scale investments.

Moreover, the introduction of financial products such as Bitcoin ETFs and futures contracts is a positive development. These instruments provide more options for exposure to Bitcoin, allowing for more sophisticated risk management strategies. They also contribute to market depth and liquidity, making the market more accessible and navigable for institutional investors.

In conclusion, while market volatility and liquidity are important concerns for institutional investors considering Bitcoin, these challenges are not insurmountable. With a strategic approach and the evolving nature of the market, these challenges can be managed effectively, unlocking the potential for significant returns and portfolio diversification.



#### 4.4 Monetary Policy and Global Economic Factors

The influence of global monetary policy and economic factors on Bitcoin represents a vital aspect for institutional investors to consider. This section explores how these macroeconomic variables interact with Bitcoin, highlighting the challenges and opportunities they present.

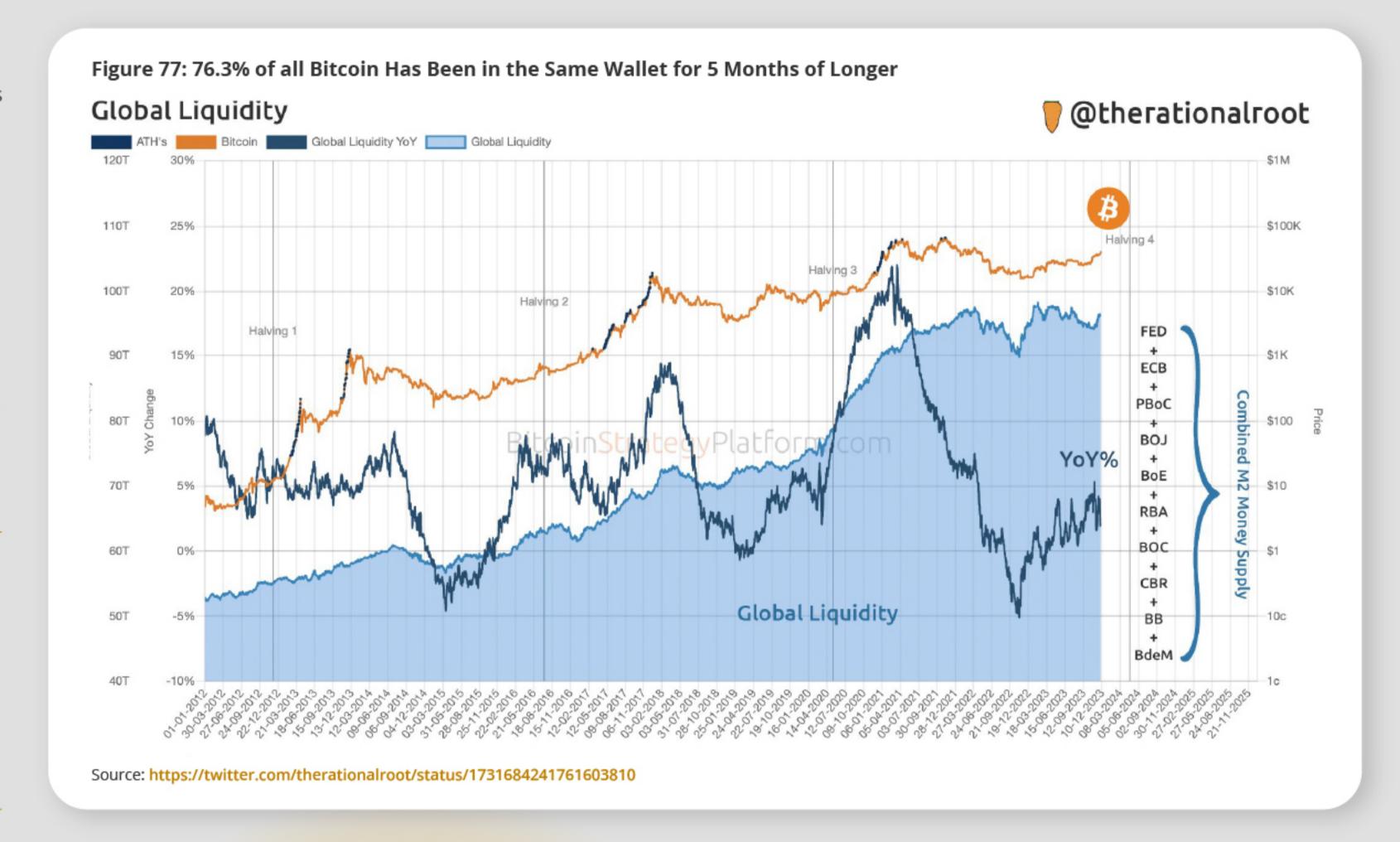
increasingly influenced by the monetary policies of central banks, Bitcoin stands apart due to its decentralized nature. Unlike fiat currencies, Bitcoin is not subject to the whims of central bank policies or government interventions. This independence from traditional monetary systems allows Bitcoin to serve as a hedge against inflation and currency devaluation, especially in times of expansive monetary policies and economic uncertainty. However, it also means that Bitcoin is more susceptible to market sentiments and global economic shifts, making its behavior harder to predict using traditional economic models.

Bitcoin correlates with various liquidity indicators more closely than any other asset I track.





Lyn Alden, Founder of Lyn Alden Investment Strategy





#### 4.4 Monetary Policy and Global Economic Factors

**BITCOIN AS A DECENTRALIZED ASSET:** Bitcoin's global, borderless nature makes it uniquely positioned in the context of international finance. It operates independently of any single nation's economic policies, making it an intriguing option for portfolio diversification. This characteristic can be particularly appealing in times of geopolitical tensions or localized economic crises, where Bitcoin may act as a safe haven asset.

The challenge for institutional investors lies in understanding and navigating Bitcoin's response to global economic events and policy changes. Since Bitcoin is not anchored to any single economy, its reactions to global economic shifts can be unpredictable and rapid. Investors must stay informed and agile, ready to adapt their strategies to the ever-changing economic landscape.

**THE BIGGER PICTURE:** The decentralized and global nature of Bitcoin offers a unique opportunity for institutional investors. It presents a chance to diversify portfolios in a way that is less correlated with the performance of any single economy or traditional asset class. Additionally, as more institutional players enter the Bitcoin market, there's potential for increased market maturity, which could lead to more stable and predictable behavior over time.

Furthermore, Bitcoin's growing acceptance and integration into the global financial system, as evidenced by the increasing interest from major financial institutions, suggest a positive trend towards its legitimization as a viable asset class. This evolving landscape offers investors the chance to be part of a pioneering financial movement, potentially reaping the benefits of early adoption in a changing economic world.

In conclusion, while the interplay of monetary policy and global economic factors with Bitcoin presents challenges, it also opens up unique opportunities. For institutional investors willing to embrace and understand these dynamics, Bitcoin offers a novel avenue for portfolio diversification and growth in an interconnected global economy.

#### 4.5 Interoperability with Traditional Financial Systems

The integration of Bitcoin into the realm of traditional finance poses unique challenges and opportunities, especially regarding its interoperability with existing financial systems. This section explores the complexities and potential solutions surrounding the interaction between Bitcoin and conventional financial frameworks.

**CHALLENGES IN INTEGRATION:** One of the key challenges facing Bitcoin in the context of traditional finance is its distinct operational and technological underpinnings. Bitcoin operates on a blockchain, a decentralized ledger system fundamentally different from the centralized, institution-based systems that govern traditional finance. This difference poses technical and regulatory challenges in seamlessly integrating Bitcoin into existing financial infrastructures, such as payment systems, investment platforms, and regulatory frameworks.

**REGULATORY AND COMPLIANCE HURDLES:** The decentralized nature of Bitcoin often clashes with the centralized regulatory environments of traditional finance. This clash can lead to compliance, risk assessment, and regulatory reporting difficulties. Additionally, the lack of standardized regulatory approaches across different jurisdictions adds another layer of complexity for institutional investors who operate on a global scale.









Jamie Dimon, CEO of  $\ensuremath{\mathrm{JPMorgan}}$  CHASE & CO. (December 2023)

JPMorgan expanded its Bitcoin Desk in the days following...

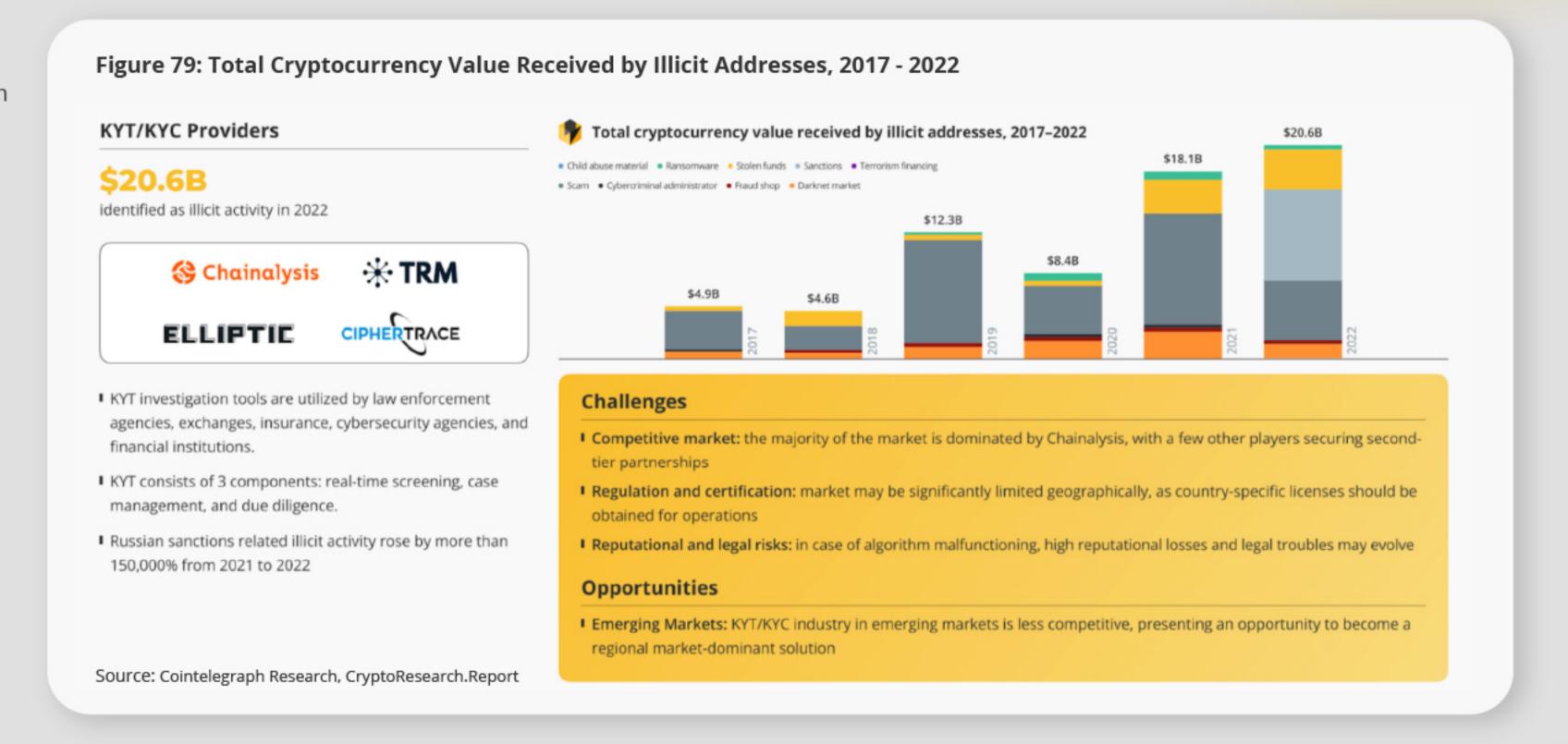






#### 4.5 Interoperability with Traditional Financial Systems

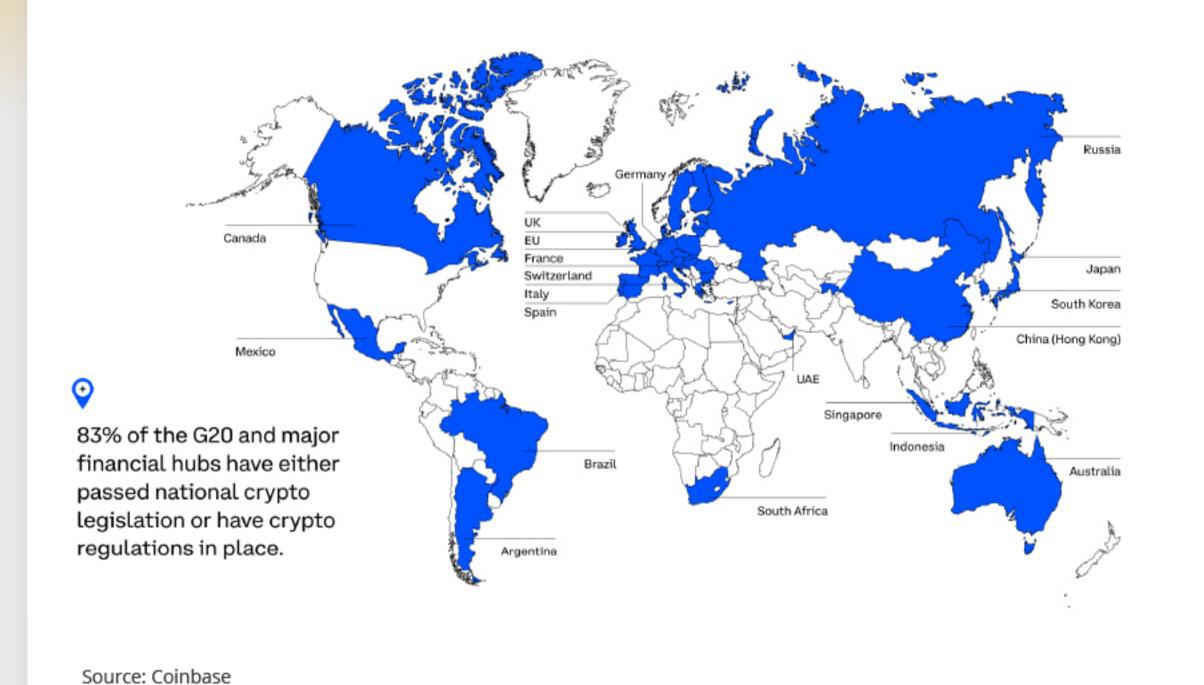
The global push for regulated and responsible cryptocurrency use is gaining momentum, with 83% of G20 nations and key financial hubs moving towards clear crypto regulations. This shift aims to transform the financial system, potentially boosting economic freedom and opportunities on a global scale. Countries are competing to become crypto hubs, recognizing the economic benefits of attracting digital asset holders.





#### 4.5 Interoperability with Traditional Financial Systems

Figure 80: 83% of the G20 and Major Financial Hubs Have Either Passed National Crypto Legislation or Have Crypto Regulations in Place



CROSS-PLATFORM TRANSACTIONS AND FRICTION: Facilitating transactions between Bitcoin and traditional financial assets can be cumbersome due to the differences in transaction processing and settlement mechanisms. This friction can result in inefficiencies and increased costs, posing a hurdle to widespread adoption among traditional financial institutions and investors.



This is the opportunity we have in front of us as an industry - a new form of money, a new financial system, a re-decentralization of the web. A new global economy based on crypto that creates economic freedom.





Brian Armstrong Co-founder and CEO at coinbase

**EMERGING SOLUTIONS:** Despite these challenges, the intersection of Bitcoin with traditional finance offers significant opportunities. Technological advancements and innovative financial products are gradually bridging the gap between these two worlds. For instance, the development of cryptocurrency exchanges, Bitcoin ETFs, and digital asset custody solutions are making it easier for traditional investors to engage with Bitcoin.

Furthermore, we can expect a smoother integration process as regulatory frameworks evolve and become more accommodating of cryptocurrencies. This evolution will likely enhance investor confidence and facilitate greater capital inflow into the Bitcoin ecosystem.

THE BIGGER PICTURE: The integration of Bitcoin into traditional financial systems is not just about overcoming technical and regulatory barriers; it's about pioneering a new financial paradigm. By navigating these challenges, institutional investors have the opportunity to be at the forefront of a financial revolution, harnessing the benefits of both traditional and digital assets. Major financial players' growing interest and involvement in the Bitcoin space signal a positive trend towards a more interconnected and diverse financial future.

In conclusion, while interoperability between Bitcoin and traditional financial systems presents considerable challenges, it also opens up a world of possibilities. For institutional investors, navigating this landscape requires adaptability, foresight, and a willingness to embrace innovation. The journey toward integration promises to enhance the value proposition of portfolios and redefine the boundaries of the financial sector as we know it.







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# Bitcoin's Roadmap and Innovation



#### 5. Bitcoin's Roadmap and Innovation

#### 5.1 Bitcoin Network Milestones



Since the inception of the Bitcoin (BTC) network by Satoshi Nakamoto in 2009, it has been the benchmark for the crypto industry. Often referred to as 'Digital Gold,' the network may have much more to offer with the recent developments. In the process, it has reached various milestones in these 14 years and has new controversial development milestones on the horizon

- BTC Genesis Block: he Bitcoin network came into existence with Satoshi Nakamoto mining its first block (Block 0) on January 3, 2009.
- Pizza Day: May 22 is referred to as 'Bitcoin Pizza Day'. On this day in 2010, the first real-world transaction was made using Bitcoin by a Florida programmer, Laszlo Hanyecz, in Jacksonville. He made a post on the BitcoinTalk Forum that anyone who brings him pizza will be given 10,000 BTC in return. Surprisingly, someone from the U.K. took him up on the offer and sent two pizzas from Papa John's for \$25 to his place and got 10,000 BTC in return.
- 1st Halving: After every 210,000 blocks or approximately four years, BTC goes through halving where
  the reward for mining a block is reduced to half. With every halving, the circulation of new Bitcoin slows
  down and keeps the inflation in check. In November 2012, BTC went through its first halving, where the
  mining reward for each block was reduced from 50 BTC to 25 BTC.

- 2nd Halving: The 2nd Halving for BTC occurred in 2016, where the mining reward for each block was reduced to 12.5 BTC
- Version Bits: Introduced in 2016, Bitcoin Improvement Proposal 9 (BIP 9) or Version bits was a key
  upgrade for the network as it defined a more efficient mechanism for activating and deploying soft
  forks on the BTC network. With BIP 9, the miners can indicate their support for a particular feature or
  protocol change by using Version bits as the signaling mechanism. The upgrade also allows for multiple
  soft forks to occur simultaneously, with miners indicating their support to a soft fork as per their
  preference
- SegWit Upgrade: SegWit or Segregated Witness was the first major upgrade on the BTC network supported by BIP 141. It led to a division in the BTC community and the creation of Bitcoin Cash (BCH), a hard fork of the BTC network. The upgrade brought two major updates to the network. First of all, it fixed the issue of transaction malleability, and secondly, it increased the block size to increase the transaction efficiency
- 3rd Halving: The 3rd Halving for BTC occurred in 2020, where the mining reward for each block was reduced to 6.25 BTC
- Taproot Upgrade: Implemented in 2021, Taproot upgrade was a soft-fork upgrade introduced with BIP 340, BIP 341, and BIP 342. It was the most important update on the network since Segwit in 2017. It opened the doors to BRC-20 tokens as it made the smart contracts on the BTC network cheaper and smaller.

It included three BIPs:114

BIP 340 - Schnorr Signatures: Schnorr replaced ECDSA and provided a digital signature scheme that
was faster, more secure and less data-intensive than ECDSA





<sup>114</sup> https://cointelegraph.com/learn/a-beginners-guide-to-the-Bitcoin-taproot-upgrade

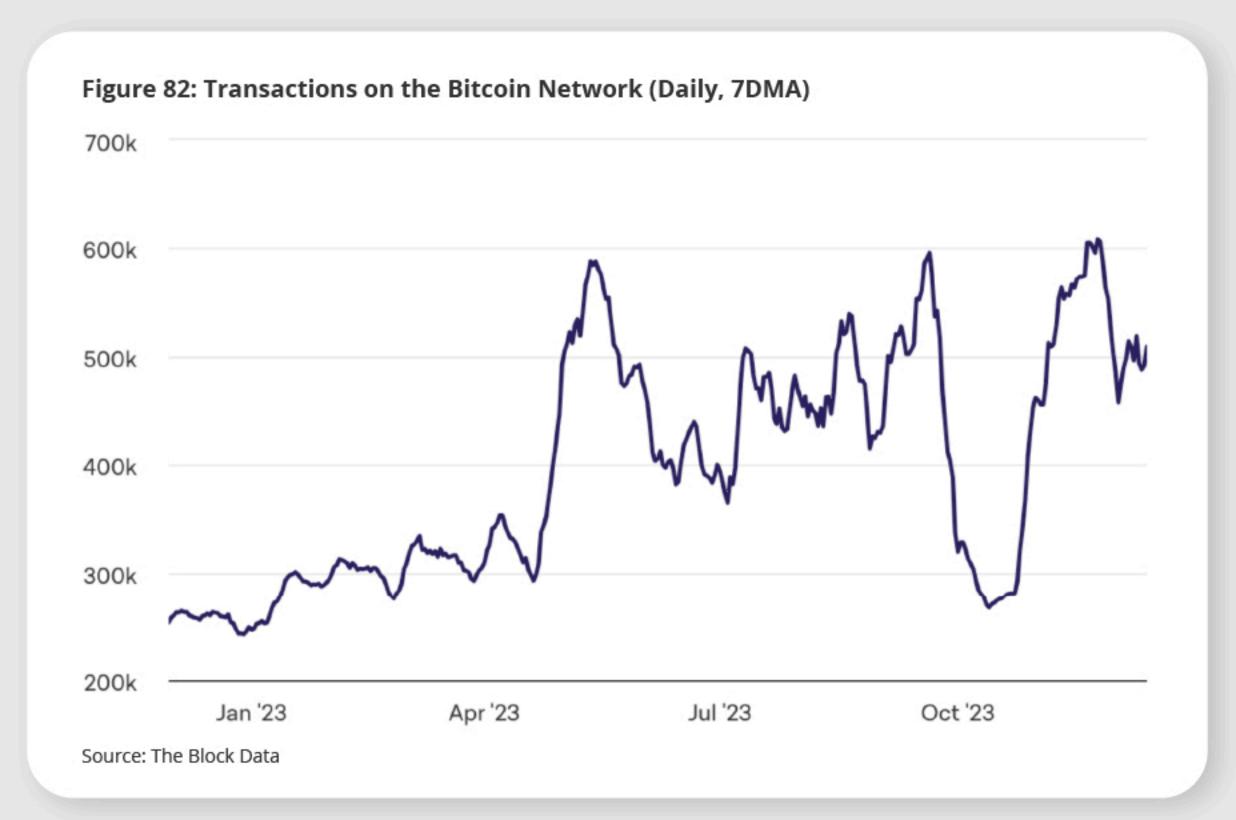
BIP 341 - Taproot: Taproot offered a new way to perform Bitcoin transactions by enhancing privacy
and flexibility for users. It activated Merklized Alternative Script Trees (MAST), which condenses
complex Bitcoin transactions into a single hash, reducing transaction fees, minimising memory usage
and improving Bitcoin's scalability



• **BIP 342 - Tapscript:** Tapscript is the scripting language used for Taproot script-path spends. This update leveraged Schnorr's efficiency and enabled more flexibility on future upgrad

Taproot enabled new use cases for Bitcoin, such as inscriptions like ordinals; however, not everyone in the Bitcoin community is happy about these changes. Despite criticism from Luke Dash Jr. and his mining pool Ocean, backed by The Block CEO Jack Dorsey, the majority of miners have welcomed the increase in inscriptions on Bitcoin, primarily due to the additional transaction fees they earn, which come in addition to the standard Bitcoin block rewards.

According to The Block's data dashboard, At different times this year, there has been a significant rise in transactions on the Bitcoin network, corresponding with spikes in activity related to inscriptions. This surge peaked in November, reaching a record average of 607,000 daily transactions.<sup>115</sup>



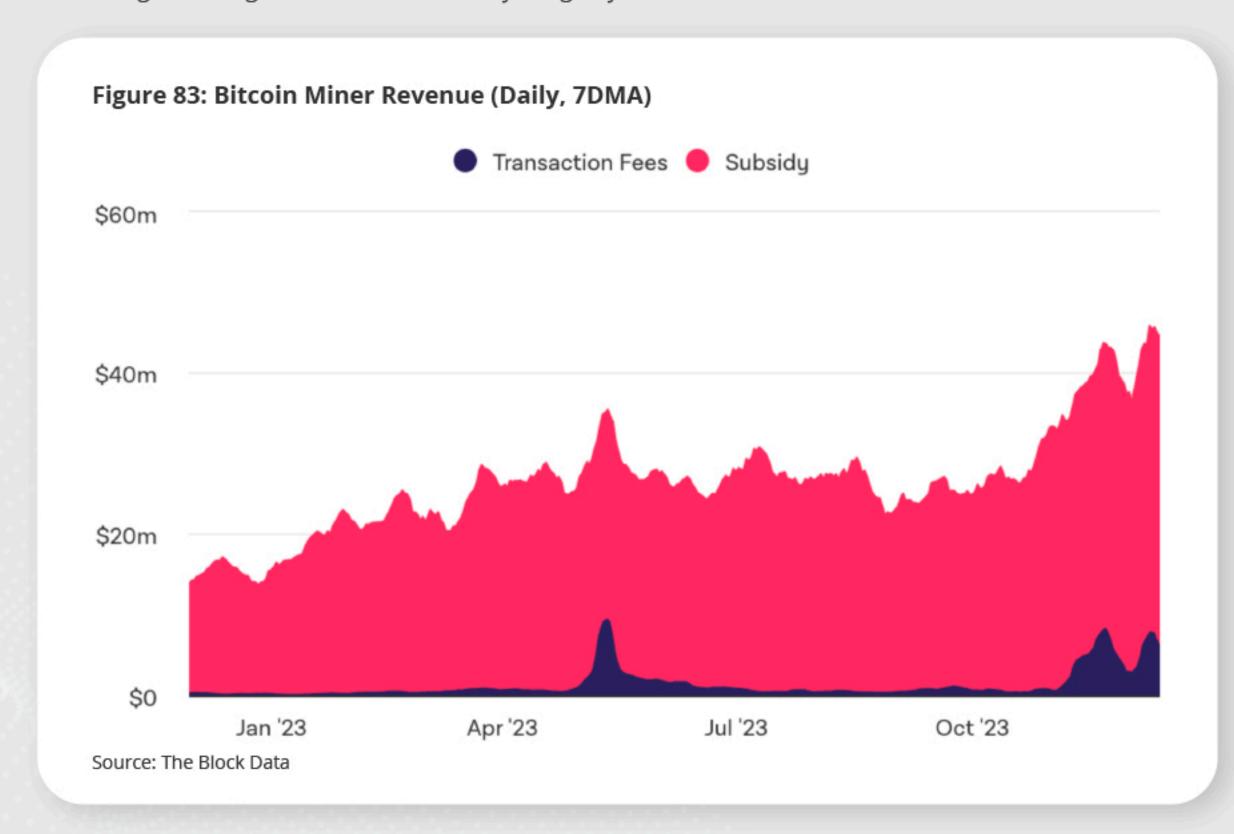
The increase in demand for the Bitcoin network has increased transaction fees from the historical average of \$1 to \$2 up to \$10, according to Mempool Space. This means that Bitcoin miners are earning more in transaction fees; however, this also means that low transaction users may switch to competing



<sup>116</sup> https://mempool.space/

<sup>115</sup> https://www.theblock.co/post/266298/Bitcoin-dev-luke-dashjr-calls-inscriptions-spam-community-members-push-back

blockchains or to Lightning. Over 263,000 transactions are pending confirmation on the Bitcoin network, exceeding the designated 300 MB memory usage by more than fivefold.



Even though more base chain activity should normally push up demand for Bitcoin L2's like Lighting, inscriptions like ordinals can wreak havoc on the Lightning Network. Although inscriptions are Taproot's most talked about use case, it's not the only one. Taro, an upcoming protocol for issuing assets (like stablecoins) directly on Bitcoin, makes use of Schnorr Signatures and also Tapscript's ability to embed arbitrary data. Therefore, even the critics of inscriptions have to be sure not to throw out the baby with the bathwater if they persist in their crusade to censor inscriptions.

BTC All-Time High: One of the major milestones achieved by BTC was reaching its all-time high in Nov.
 2021 with a price of \$69,044.<sup>117</sup>

#### • Bitcoin Covenants118

Bitcoin Covenants is a controversial upgrade proposal from BIP 0119. A covenant introduces more control over an element in terms of what can be done with it. It enhances the security and scalability of the network

Covenants allow a Bitcoin script language to prevent an authorised spender from spending on specific other scripts. They describe how to improve Bitcoin in smart contracts, information included in a code that executes when certain conditions are met. For example, a user can set a condition that his Bitcoin will only be spent after entering a matching private key.

However, there are various drawbacks as well, which have prevented the Bitcoin Covenants from going live. Covenants could provide grounds for censorship since they can control what can be done with the token and what cannot be done. It also poses a threat to the fundamental structure of the BTC network since the tokens would become non-fungible due to the different nature of each token defined by covenants

#### · Bitcoin Drivechains

Another controversial upgrade that has the community divided is Bitcoin drivechains or BIP 300. It introduces side chains to the main chain, enhancing scalability with the same security the underlying network offers.

Since the \$BTC can never leave the original chain, Drivechains allow the side chains to operate with a two-way peg. The amount that needs to be added to the side chain is locked on the main chain, and the same amount of tokens is released on the side chain. When the user is done and wants to withdraw, the same amount of the token will be locked on the sidechain and locked BTC will be



<sup>117</sup> https://www.coingecko.com/en/coins/Bitcoin

<sup>118</sup> https://cointelegraph.com/explained/what-are-Bitcoin-covenants-and-how-do-they-work

released on the mainchain. This, in turn, makes the network more scalable since the transaction speed is faster and cheaper than on mainnet



#### 2024 literally is going to be a year of institutional adoption, primarily first through the Bitcoin ETF.







#### ETF in USA

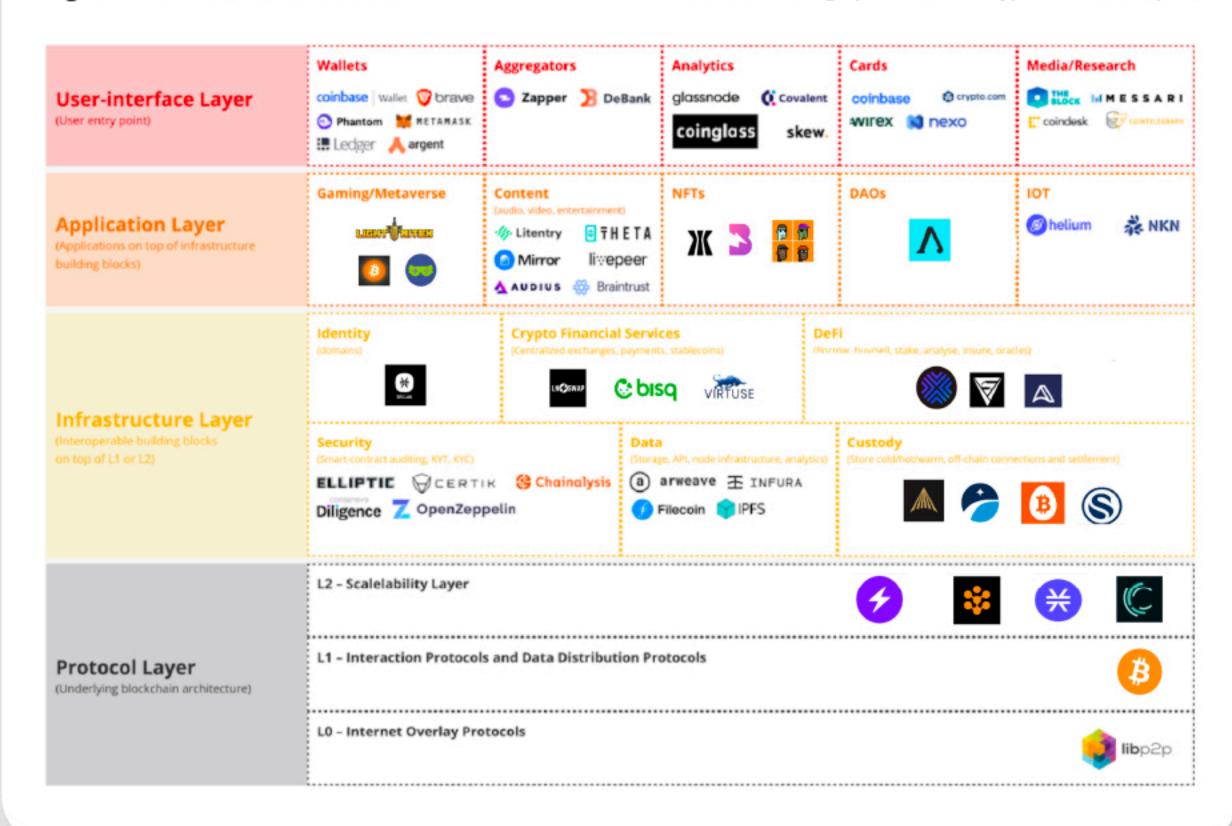
There is no definitive answer to when the first Bitcoin ETF will be approved in the United States. Several Bitcoin ETF applications are currently under review by the Securities and Exchange Commission (SEC). Industry experts predict potential approval in early 2024, with some even speculating on a specific date of Jan. 8-10, 2024, based on the SEC's 240-day comment period deadlines.

#### **5.2** Building on Bitcoin

Fundamentally, the network was not built to support multiple functions, like allowing users to build on top of the network since it can process only 5-7 transactions/second. However, Layer 2 solutions like the Lightning Network have allowed the network to be more scalable while keeping the security intact with the underlying Bitcoin chain.

Figure 84: The Bitcoin Stack

Source: Cointelegraph Research, CryptoResearch.Report





### **5.2.1** User Interface Layer

The user interface layer allows frictionless entry to the Bitcoin network for users.

- Wallets: There are loads of Bitcoin-only hot and cold wallets available in the market that cater to a user's specific needs. Among them, Bitcoin Core (into existence since the network, as it is equivalent to running a full node) and Electreum (2011) wallets are some of the oldest Bitcoin wallets in existence. Users can also opt for keeping their Bitcoin more secure in cold wallets such as Coldcard and Foundation Passport
- · Aggregators: As user adoption increases, the demand for cryptocurrency payment aggregators will increase since more and more vendors would like to accept Bitcoin or any other cryptocurrency as a means of payment. There are a bunch of Bitcoin-only aggregators present in the market, such as BtcPay, BitRequest, Open Node, Swiss Btc Pay, etc.
- · Analytics: There are not many blockchain analysis platforms present in the market that are solely dedicated to Bitcoin. Most of the platforms, such as Glassnode, have taken the wider approach to cover the maximum networks if not all. When talking about platforms solely dedicated to Bitcoin, BitBo is the only contender and not a very strong one as well since it only provides charts, dashboards, and Bitcoin-related articles only
- Cards: There are several debit card options offered by centralized exchanges with multiple currency support, e.g. - Crypto.com, Binance, Coinbase, etc. For Bitcoin-only support, there are only a few options, such as cards offered by Cash app, Fold, and Strike platform.
- Media/Research: Users can leverage platforms such as Bitcoin Magazine, Bitcoin.com news, BTC Times, and Clark Moody Dashboard for their research and to remain up to date about the Bitcoin network.



Bitcoin is a real innovation with the potential to redefine finance, and we are committed to exploring ways to serve





David Solomon, CEO of Soldman (August 2023)
Sachs

### 5.2.2 Application Layer

The application layer gives the blockchain's real-world applicability in terms of what more use cases the user can derive from the network. Being not very scalable, Bitcoin has never been the platform of choice for developers to build DApps or any other solutions. However, a few layer 2 solutions like the Lightning Network, Rootstock and Stacks have made it possible to integrate more functionality into the Bitcoin network.

- Gaming: Bitcoin gaming has never been popular like Axie Infinity or SandBox. However, Lightnite made the news in 2019 when it launched as a Fortnite alternative with Bitcoin rewards made possible through the Lightning Network. Other games include Bitcoin Bounce and Satoshi Games, which also allow users to earn Bitcoin while playing the game
- NFTs: The Ordinals protocol launched in January this year (2023) has made Bitcoin NFTs trending since it allows users to mint NFTs directly onto the Bitcoin chain. Additionally, Bitcoin NFT marketplaces are also being built on top of the Stacks network, such as Gamma and Boom Money
- . DAOs: There are only a few DAOs present on the Bitcoin network. Lydian DAO is one of them. It is a treasury management protocol built on top of the Stacks network. Sovryn, a DeFi platform built on the Rootstock network, is also governed by a DAO model
- **DeFi:** The Rootstock and Stacks protocol has enabled the developers to bring DeFi infrastructure to the Bitcoin network. For example, ALEX on the Stacks network allows users to build Bitcoin DeFi applications on the network. Another DeFi platform, Sovryn, built on the Rootstock network, allows users to lend, stake and swap BTC on its decentralized platform. It has also launched its Bitcoin-backed stablecoin Sovryn Dollar (\$DLLR)



### 5.2.3 Infrastructure Layer

The infrastructure layer consists of building blocks built on top of L1 and L2 which enable standalone features like buying/selling assets on the blockchain, asset custody, etc.

- Identity: BTC Domains allows the users to own unique .btc domain names of their choice secured on the Bitcoin chain using the Stacks network
- Crypto Financial Services: Users can obtain Bitcoin using any centralized exchange such as Binance or Coinbase. However, if they are looking for a decentralized Bitcoin-only exchange, then they can leverage Bisq, which provides peer-to-peer Bitcoin exchange with multiple fiat currencies. Other finance platforms include Virtuse, which offers financial services around Bitcoin and traditional finance making it easier for non-native users to be a part of Bitcoin
- **Custody:** Institutional interest in Bitcoin has increased exponentially in recent years, and Bitcoin has become an integral part of risk management and portfolio diversification. There are various Bitcoin-only custodial services such as River Finance, Unchained Capital, Bitcoin IRA, Swan Capital, etc. In fact, in Sep 2023, Swan Capital announced that it is working with BitGo to launch a Bitcoin-only custody service

### **5.2.4** Protocol Layer

The Protocol Layer is the fundamental layer of a Blockchain.

- L2: L2 is a scalability layer that makes the network more scalable and efficient. Solutions like the Lightning Network, Rootstock, Stacks, and the Liquid Network have enabled Bitcoin to be a faster and more scalable network
- L1: The Bitcoin network is the layer 1 protocol for Bitcoin
- LO: The Bitcoin network runs on a peer-to-peer model

### 5.3 Understanding Bitcoin Layer-2 Solutions

Bitcoin layer-2 solutions are specialized protocols designed over Bitcoin's foundational layer. Their main goal is to enhance Bitcoin's capacity by handling transactions away from the main blockchain. Besides scaling, they tackle other technical challenges and add new features to Bitcoin. By doing so, they boost Bitcoin's performance while retaining its security and network advantages.

Here are the benefits of these layer-2 solutions for Bitcoin:

- Better Scalability: They address Bitcoin's restrictions on transaction speed, block approval time, and transaction fees, making the network more capable of handling a higher volume of transactions efficiently.
- Increased Programmability: They enable more complex smart contract functions, extending the types
  of operations and agreements that can be executed on the network.
- Preserved Security: They maintain the high-level security of the Bitcoin network as they don't alter the base layer, ensuring transactions remain secure.
- Extended Capabilities: They introduce new features to Bitcoin, opening doors for various applications like payments, decentralized finance (DeFi), non-fungible tokens (NFTs), and access to other market platforms.

Examples of Bitcoin layer-2 solutions include the Lightning Network, Rootstock, Stacks, and Liquid Network. Each of these projects enhances Bitcoin's scalability and programmability, showcasing the potential for further growth and innovation within the network.



Figure 85: 91% of Digital Asset Funds are Invested in Bitcoin

	Lightning Network	Stacks	Rootstock	Liquid
Native Token	N/A	STX	RBTC	L-BTC
Smart Contracts	No	Yes	Yes	Yes
Programming Language	Multiple programming languages	Clarity	Solidity	Simplicity
Consensus Mechanisms	N/A	PoX	PoW (Merged-mined with Bitcoin)	Strong Federations
EVM- Compatible	No	No	Yes	No
Throughput (TPS)	Millions	-19 (between Bitcoin and Ethereum's throughput)	10-20	7-10
Finality	Near-instant	10 mins.	12 blocks confirmation (-6 mins.)	2 blocks (-6 mins.)

Source: Crypto.com

The most prominent Bitcoin Layer-2 solution is the Lightning Network. The Lightning Network is a layer-2 payment protocol engineered on top of the Bitcoin blockchain, crafted to improve scalability and alleviate network congestion. It employs payment channels to manage Bitcoin micropayments off-chain. This network facilitates the creation of a direct channel between two individuals wishing to transact, bypassing the need to interact with the main blockchain.

It allows for numerous transactions to be carried out without requiring global consensus or confirmation on Bitcoin's main blockchain, making transactions nearly instantaneous and significantly reducing fees.

This makes the Lightning Network a potent solution to Bitcoin's scalability challenges, enabling it to handle a high volume of transactions effortlessly.

Figure 86: Lightning is Increasing Bitcoin's Transaction Per Day

Average daily on-chain transactions

Average daily Lightning transactions

9
7
9
200k

200k

200k

2000

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

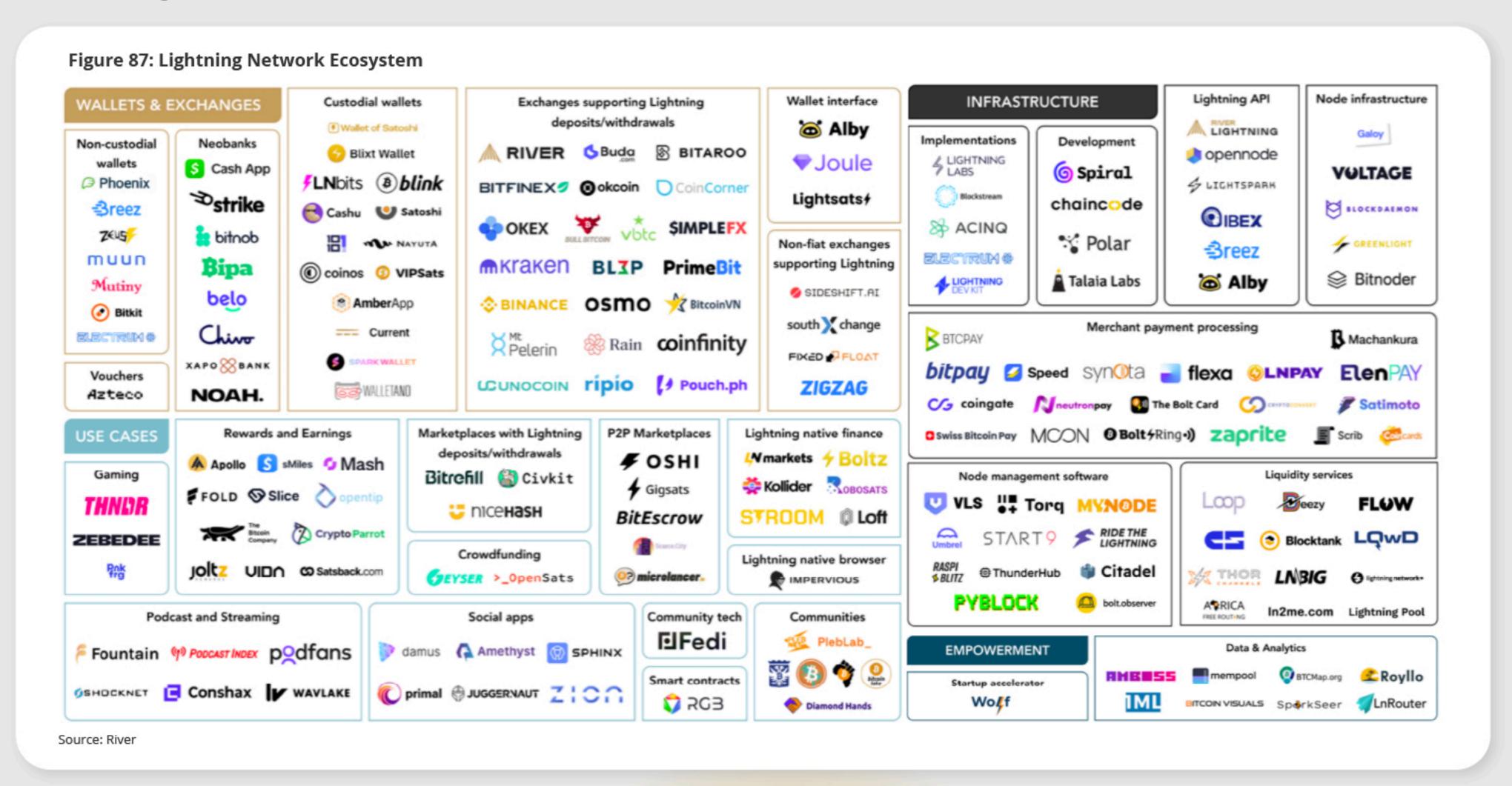
2023

Source: River





Furthermore, the Lightning Network ensures secure multi-party transactions and payment routing through hashed timelock contracts (HTLCs). These smart contracts allow recipients to access funds once specified conditions are satisfied within a designated time frame (or block time).



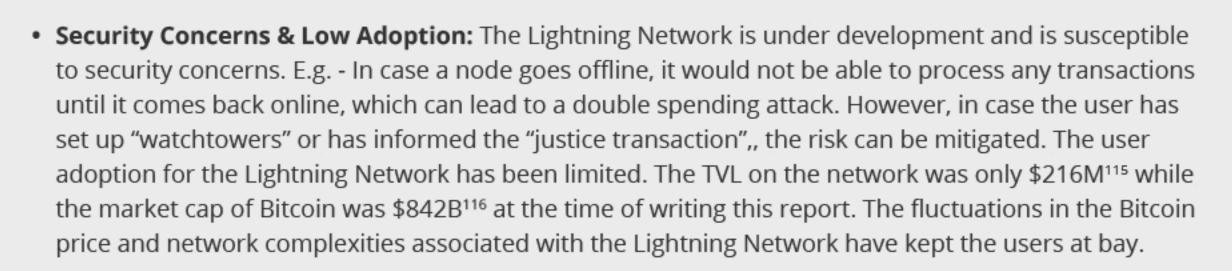


Although the Lightning Network is one of the most scalable L2 solutions for Bitcoin, it comes with its own set of problems.<sup>114</sup>

- Channel Balancing: One of the challenges that users face while using the Lighting Network is channel liquidity, e.g., if a user wishes to make a payment that exceeds their channel balance, they must find a well-funded node with a direct channel to the recipient or else the transaction cannot take place. Thus, users must balance the channels and manage the funds effectively. Solutions like Phoenix and Breeze are solving this problem by automatically rebalancing the channels to provide liquidity to the users. However, it is still challenging for noncustodial users. According to Viktor Butin, protocol specialist at Coinbase Cloud: "This capital inefficiency at the edges for non-custodial users is a hard and annoying optimization problem, and it's objectively worse than an account-based model with arbitrary transaction sizing. However, it's not an unworkable problem."
- Centralization and Associated Costs: Since, the Lightning Network relies on well-connected nodes
  with liquidity, this concentration can lead to centralization issues with a particular set of dominant
  nodes controlling the network. Additionally, another major issue associated with it is the cost of
  opening and closing a channel, which can be a repulsive factor for users when the fees are high on the
  network

The Lighting Network is not the only layer 2 solution present on the Bitcoin network. There are other prominent projects as well that are enhancing the network scalability and capabilities.

One such protocol is Stacks, an independent layer 2 protocol with its own native token. It leverages the Bitcoin network as a settlement layer while hosting smart contracts and Web3 apps on its network. Another prominent layer 2 solution is Rootstock. Similar to Stacks, it allows the \$BTC network to indirectly host smart contracts and connect to the world of DeFi. Since Rootstock is an EVM sidechain, it is also compatible with all ERC-20 assets. While these two solutions enable smart contract functionality on the network, the Liquid Network is one more protocol that is making the Bitcoin network more scalable. It is a sidechain built on the Bitcoin network, which uses a two-way peg system for transactions, enabling fast and secure transactions with low fees.





<sup>116</sup> As reported by Coingecko on 19th Dec 23



<sup>114</sup> https://cointelegraph.com/news/bitcoins-lightning-network-major-challanges

<sup>115</sup> As reported by DeFi Llama on 19th Dec 23



### Buy and Store Digital Assets

"Bitalo AG is a premier German digital investment firm. We connect companies and investors through our brokerage license to gain exposure in digital assets."

- Christian Heinz, Bitalo Executive Officer





# Future Price of Bitcoin

### 6. Bitcoin's Roadmap and Innovation



Tom Lee, Fundstrat Global Advisors Founder Prediction: \$500,000



Dan Morehead,
Pantera Capital CEO
Prediction: \$700,000



Tim Draper,
Venture Capitalist
Prediction: \$250,000



Raoul Pal,
Real Vision CEO
Prediction: \$200,000



PlanB,
Bitcoin Price Prediction Model Creator
Prediction: \$300,000



Michael Saylor, Executive Chairman and President of MicroStrategy Prediction: \$500,000



Cathie Wood,
ARK Invest CEO
Prediction: \$650,000



Max Keiser,
Venture Capitalist at Heisenberg Capital
Prediction: \$1,000,000



Adam Back,
Blockstream CEO
Prediction: \$100,000



Robert Kiyosaki, Investor, Author and Entrepreneur Prediction: \$500,000



Arthur Hayes,
Former CEO of cryptocurrency exchange BitMEX
Prediction: \$70,000



Standard Chartered,
British multinational bank
Prediction: \$120,000



J.P. Morgan,
FAmerican multinational bank
Prediction: \$125,000



Mike Novogratz,
CEO of Galaxy Investment Partners
Prediction: \$500,000



Robert Kiyosaki,
Japanese-American businessman and author
Prediction: \$100,000

This section summarizes the main models for forecasting Bitcoin's future price, including the target addressable market analysis used by research outfits such as Galaxy and the halving cycle model used by Standard Chartered, amongst others.



### **6.1** Target Addressable Market Analysis

With the Bitcoin spot ETF on the verge of potential approval, Bitcoin may have a lot more upside before halving in 2024. According to Charles Yu and Alex Thorn of Galaxy, the Spot Bitcoin ETF approval will bring \$14.4 billion of liquidity in the 1st year and a BTC/USD price increase of 74%. The Galaxy report employs a TAM model to understand what would happen if a percentage of the total assets held in brokerage accounts were invested in Bitcoin. The research sums up the assets managed by broker-dealers (\$27T), banks (\$11T) and RIAs (\$9T) to find a TAM of \$48.3 trillion. The Galaxy analysis used a reference Bitcoin price of \$26,920 from September 2023 and estimates a 74% increase after the ETF is launched. Therefore, if we take a new price reference price of Bitcoin of \$42,505, a 74%<sup>117</sup> increase would give Bitcoin a price of \$73,958.7 in 2024.



Bitcoin ETF approval will bring \$14.4 billion of liquidity in the 1st year and a BTC/USD price increase of 74%. The Galaxy report employs a TAM model to understand what would happen if a percentage of the total assets held in brokerage accounts were invested in Bitcoin. The research sums up the assets managed by broker-dealers (\$27T), banks (\$11T) and RIAs (\$9T) to find a TAM of \$48.3 trillion. The Galaxy analysis used a reference Bitcoin price of \$26,920 from September 2023 and estimates a 74% increase after the ETF is launched. Therefore, if we take a new price reference price of Bitcoin of \$42,505, a 74% increase would give Bitcoin a price of \$73,958.7 in 2024.

Michael Saylor, the CEO of MicroStrategy, emphasized the transformative potential of Bitcoin ETFs in a Bloomberg interview (Dec 19, 2023), stating, "It's not unreasonable to suggest that this may be the biggest development on Wall Street in 30 years."<sup>118</sup> He compared this significance to the creation of the S&P index fund, highlighting how these ETFs could open doors for mainstream retail and institutional investors to access Bitcoin through a compliant channel. Saylor foresees a major demand surge, particularly with the upcoming Bitcoin halving event, underscoring the ETF's potential as a pivotal moment in finance. "I don't think we've ever seen a 2 to 10x increase in demand combined with a halving in supply in a scarce, desirable asset that people want to hold for a long period of time."

However, Anton Golub, the Advisor, Founder and President of SwissAssetDAO explains how Yu's analysis is actually on the conservative side. 119



"Considering a conservative adoption rate of 1% portfolio allocation across 10% of addressable AUM, Galaxy team estimates that Broker-Dealer platforms and independent RIAs could channel \$14.4 billion of inflows in the 1st year. Using gold markets as a reference, Bitcoin inflows would have 8.8x greater price impact, resulting in a price increase of +74% in the 1st year. Liquidity inflows would amount to \$38.6 billion in the 3rd year. The world's largest asset managers, like BlackRock, Franklin Templeton and State Street are all lining up for approval of their application to launch a Spot Bitcoin Exchange Traded Fund."



<sup>117</sup> https://www.galaxy.com/insights/research/sizing-the-market-for-a-Bitcoin-etf/

<sup>117</sup> https://www.youtube.com/watch?v=6llouw78-eU&t=440s

<sup>118</sup> https://www.linkedin.com/posts/antongolub\_blackrock-Bitcoin-etf-activity-7122960012582252544-yPIH/



Another reason the Galaxy estimate may be conservative is that the \$48.3 trillion TAM is only the sum of assets managed by broker-dealers in the U.S.. However, this TAM is reasonable, given that the ETF is being launched in the U.S.. There are spot-Bitcoin ETFs that have been launched in other parts of the world such as the London-based Jacobi Asset Management BCOIN ETF listed on the Euronext Amsterdam.<sup>120</sup>

The unlocking of vast amounts of advised wealth has the potential to significantly alter the dynamics of Bitcoin's market participation and pave the way for increased institutional involvement. Michael Sonnenshein, CEO of Grayscale Investments, emphasized on CNBC the potential of a spot Bitcoin ETF in the US. He noted its ability to "unlock" about "\$30 trillion worth of advised wealth." He stressed the significant opportunity for advised assets to invest in Bitcoin through a regulated ETF, allowing broader participation in the market. Sonnenshein's insights highlight the potential for increased institutional involvement and mainstream recognition of Bitcoin with the introduction of a spot Bitcoin ETF.

## Bitcoin Magazine © ®BitcoinMagazine · Follow JUST IN: Grayscale CEO tells CNBC a spot #Bitcoin ETF would "unlock" #BTC for about "\$30 trillion worth of advised wealth." BITCOIN/L Continue watching on X YTD =147.34% 40,952.00 -1,130.79 -2.69% 40,952.

### WHAT IS A TARGET ADDRESSABLE MARKET ANALYSIS?

A TAM analysis is a type of absolute valuation model that gives an exact price point target for an asset. TAMs are a key component of market research and business strategy used to estimate the overall revenue opportunity available for a product or service. In Bitcoin's case, a TAM can be used to add up all of the different revenues for the use cases that Bitcoin may disrupt, such as gold's market cap and the global fiat base money. The Crypto Research Report's 61-page TAM analysis for Bitcoin is available for further insights.<sup>121</sup>

American entrepreneur and investor Anthony
Pompliano views a potential spot Bitcoin ETF as an
extremely positive development. He suggests that
the combination of increased investor accessibility
and adoption, alongside a growing number of
existing holders unwilling to sell and the anticipated
reduction in newly minted Bitcoin from the upcoming
halving event, aligns with basic economic principles
of supply and demand to drive Bitcoin's value higher.



<sup>121</sup> https://cryptoresearch.report/wp-content/uploads/2020/06/Crypto-Research-Report-June-2020-ENG.pdf



<sup>120</sup> https://live.euronext.com/en/product/etfs/GG00BMTPK874-XAMS

Table X illustrates the hypothetical impact of substantial capital inflows into the Bitcoin market, utilizing a 21x multiplier effect calculated by the Cointelegraph Research Team. This multiplier is based on the premise that each dollar invested in Bitcoin increases its market capitalization by 21 times, a concept derived from the observed impact of Tesla's investment in Bitcoin in early 2021. The multiplier reflects Bitcoin's scarcity and the reduced liquidity in its market, suggesting a magnified effect on price. The multiplier used is theoretically a conservative estimate because, since 2021, the market for Bitcoin has experienced increased scarcity and decreased liquidity, which would suggest an even higher multiplier for 2023.

Figure 88: Projected Impact of \$30 Trillion Capital Inflows on Bitcoin's Market Valuation

Inflow Percentage	Inflow Amount (USD)	Multiplier Effect on Market Cap (USD)	New Market Cap (USD)	New Bitcoin Price (USD)	ROI % Change
1%	\$300 Billion	\$300B * 21 = \$6.3 Trillion	\$847.36B + \$6.3T = \$7.15T	\$365,076.42	743.67%
5%	\$1.5 Trillion	\$1.5T * 21 = \$31.5 Trillion	\$847.36B + \$31.5T = \$32.35T	\$1,652,882.10	3720.98%
10%	\$3 Trillion	\$3T * 21 = \$63 Trillion	\$847.36B + \$63T = \$63.85T	\$3,261,687.79	7441.96%
25%	\$7.5 Trillion	\$7.5T * 21 = \$157.5 Trillion	\$847.36B + \$157.5T = \$158.35T	\$8,089,219.48	18604.90%
50%	\$15 Trillion	\$15T * 21 = \$315 Trillion	\$847.36B + \$315T = \$315.85T	\$16,133,438.96	37209.80%
100%	\$30 Trillion	\$30T * 21 = \$630 Trillion	\$847.36B + \$630T = \$630.85T	\$32,222,877.92	74419.60%

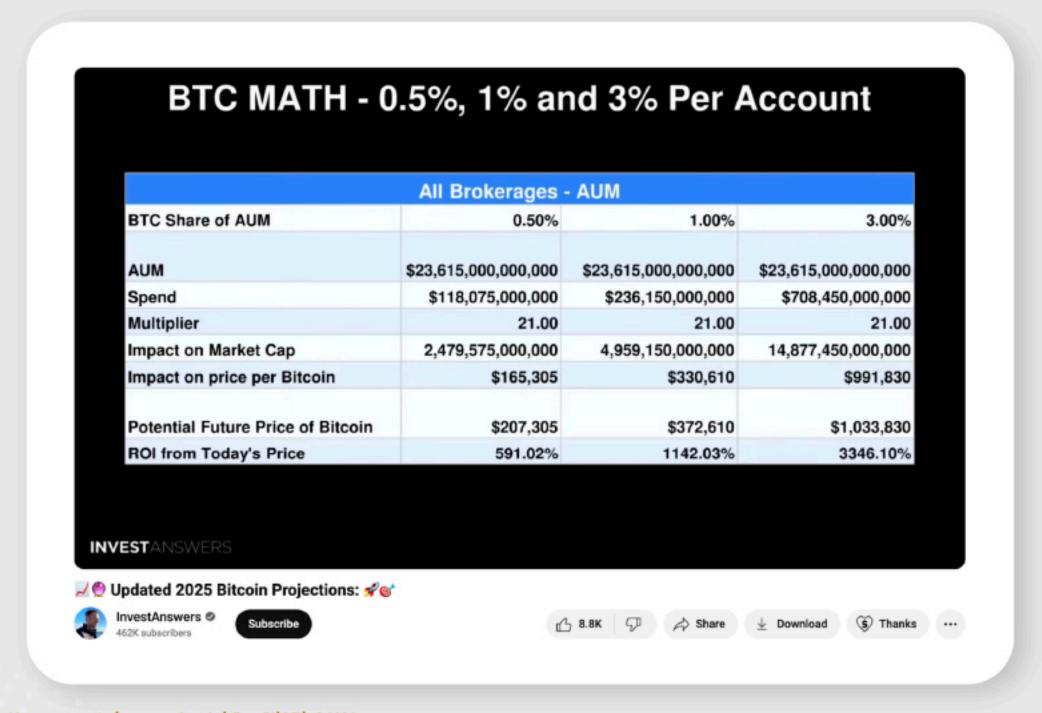
### **Calculations:**

- Multiplier Effect on Market
   Cap = Inflow Amount \* 21
- New Market Cap = Current Market Cap + Multiplier Effect on Market Cap
- New Bitcoin Price = New Market Cap / Circulating Supply
- ROI % Change = (New Bitcoin Price / Current Bitcoin Price) \* 100%

Source: Cointelegraph Research, CryptoResearch.Report

The table presents various scenarios, ranging from 1% to 100% of a \$30 trillion inflow, showing the amplified effect on Bitcoin's market cap and price. Corresponding to the hypothetical market cap increases, the price of Bitcoin is projected to rise dramatically with each incremental inflow. For instance, a 1% inflow could potentially increase the price to over \$365,000 per Bitcoin, while a full 100% inflow could theoretically push the price to over \$32 million per Bitcoin.

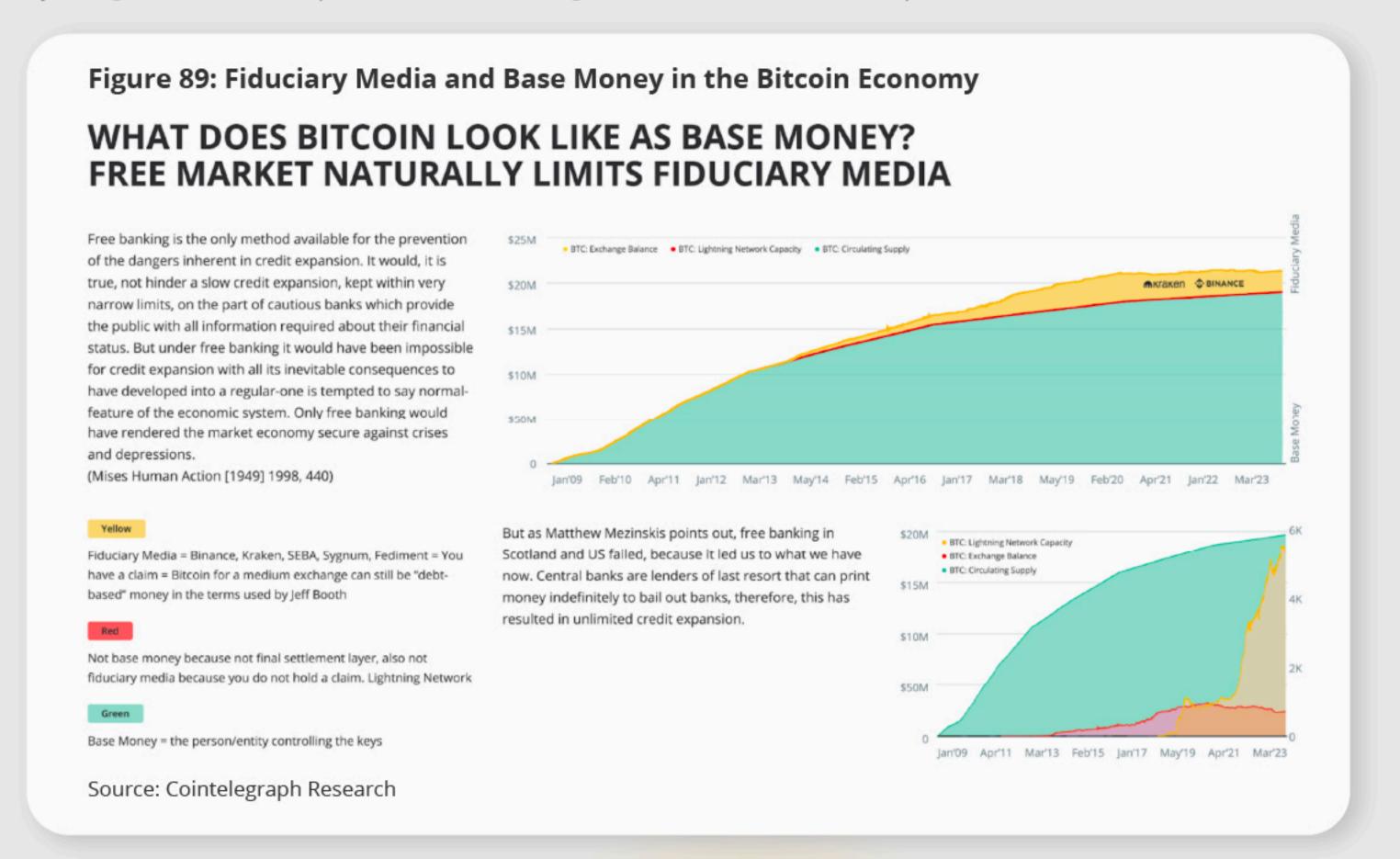
However, Galaxy and Michael Sonnenshein are not the only researchers using the TAM model to forecast Bitcoin's price. The YouTube researcher James from InvestAnswers also employed a TAM for the inflow of assets under management into Bitcoin after the ETF is launched. According to InvestAnswers, the assets under management held by brokerages around the world are approximately \$23 trillion. If 0.5% of those assets bought Bitcoin, the price of Bitcoin would reach \$165k.



<sup>122</sup> https://www.youtube.com/watch?v=6lj1Bh4-XAl



Galaxy, Michael Sonnenshein, and InvestAnswers' TAM forecasts may be considered conservative since these models are looking at only one target addressable market for Bitcoin. In reality, there are dozens of use cases for Bitcoin. Cointelegraph researchers explained in Chapter 3.1.2 of this report that Bitcoin's primary use case is storing value over time. If central banks around the world adopt Bitcoin as the base money for the fiduciary media issued in their economy, a single Bitcoin could surpass \$1 million, according to Matthew Mezinskis of Porkopolis Economics.<sup>123</sup>



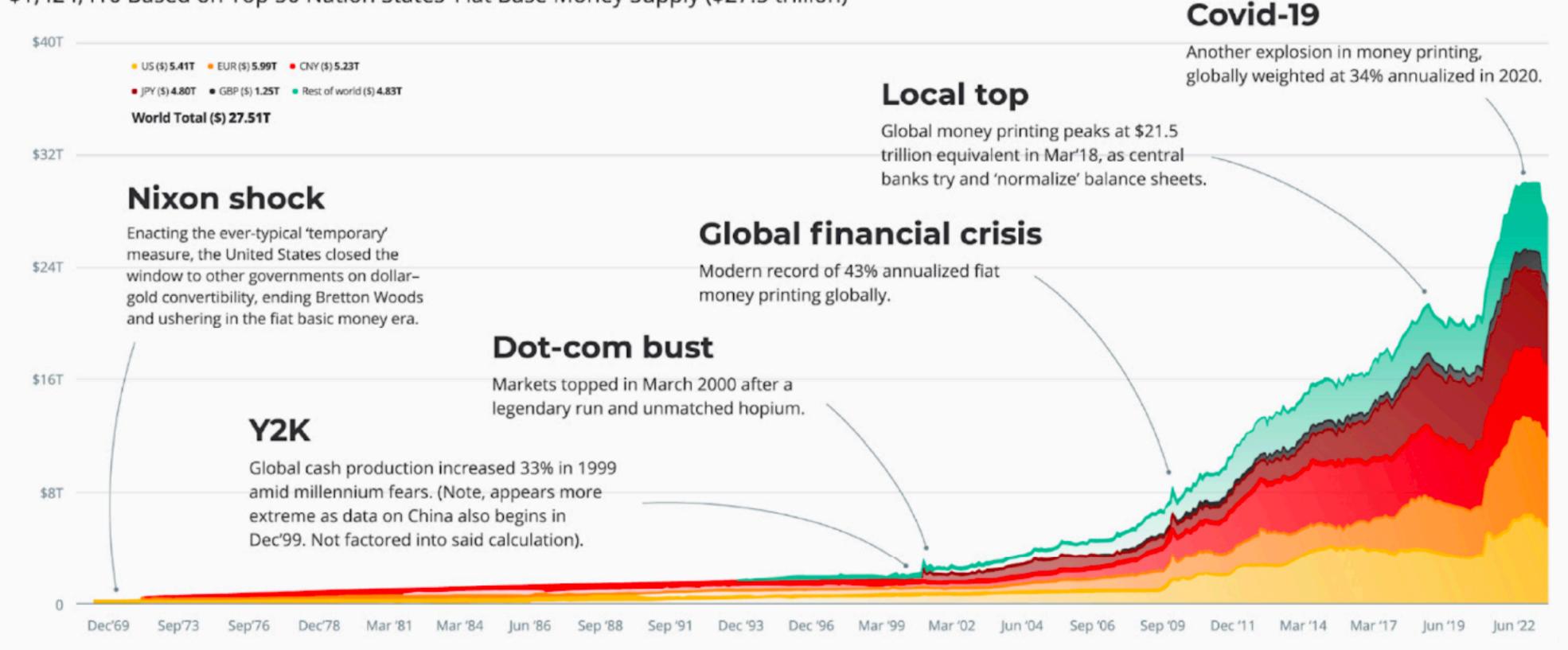
However, adoption of Bitcoin as base money will not occur until Bitcoin's volatility is lower than fiat volatility. Therefore, a price of Bitcoin over \$1 million is not forecasted until 2028, which coincides with the 2028 halving cycle indicating that the next bull market may be a Super Cycle.



### Figure: 90: Top 50 Nation States' Fiat Base Money Supply (\$27.5 trillion)

### HOW MUCH WILL ONE BITCOIN BE WORTH WHEN BITCOIN BECOMES BASE MONEY?

\$1,424,410 Based on Top 50 Nation States' Fiat Base Money Supply (\$27.5 trillion)



Source: Porkopolis Economics





### Figure 91: 30-Day BTC/USD Volatility / Figure 92: BTC and EUR/USD Volatility

### WHEN WILL BITCOIN BECOME BASE MONEY? Bitcoin voltility will need to be lower than fiat volatility

Medium of exchange and unit of account is what all goods and services are priced in.

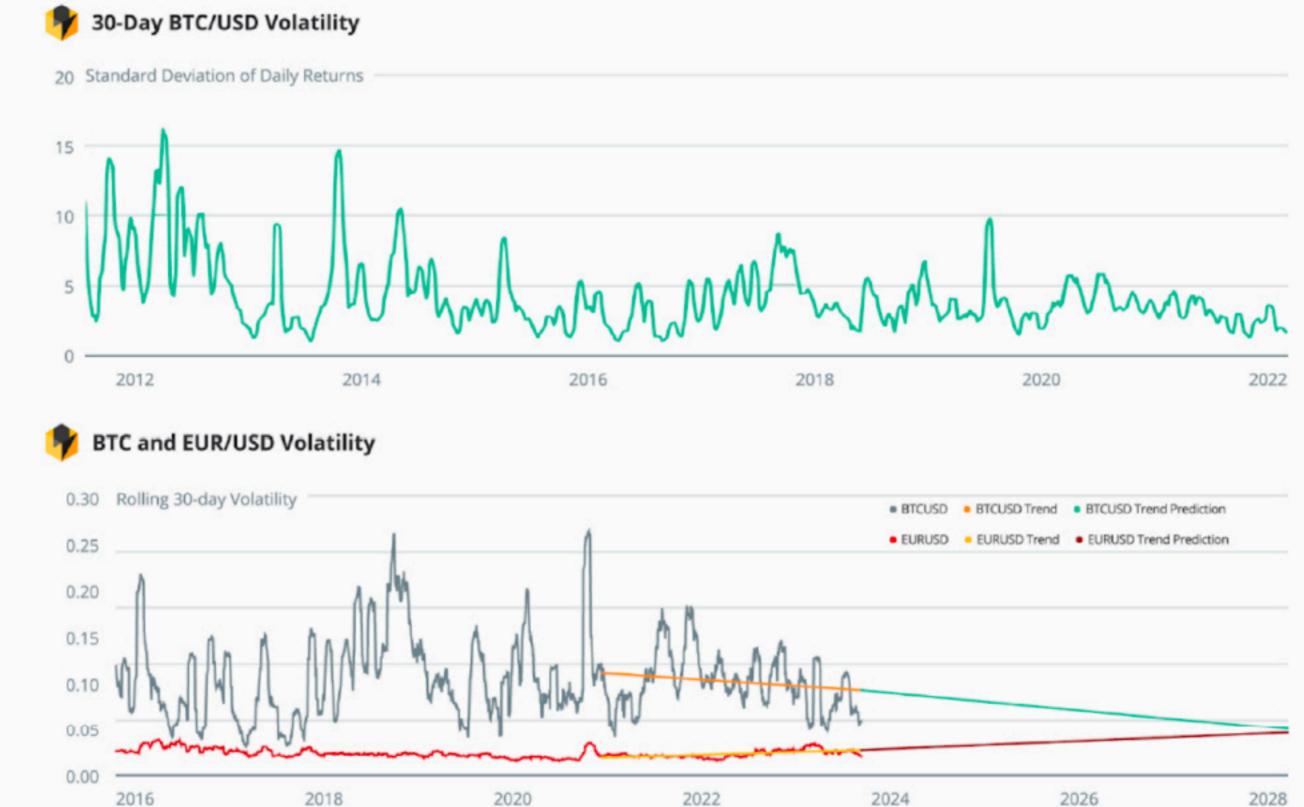
- Prices are surrogates of information.
  - If dairy farmer sees Bitcoin price of milk increase from B
     3,600 satoshis per gallon to B 4,000 satoshis per gallon,
     dairy farmer does not know if this is due to increased
     demand for Bitcoin or increased demand for milk.
  - Noise in the unit of account leads to inefficient capital allocation.
- Reason why countries with hyperinflation do not "Golderize" instead, they "dollarize".
- Currently, Bitcoin volatility is 3.5x higher, but we are in a period of low volatility.

### Zeltner<sub>&</sub>Co

The Zeltner&Co. Bitcoin Stabilization Fund aims to bring down volatility

- \$38 million market making strategy on Kraken and Zeltner&Co.
- Estimated \$9 billion is needed at current market prices to bring down Bitcoin's volatility to lower than large fiat pairs.

Source: Cointelegraph Research



123 https://porkopolis.io/about

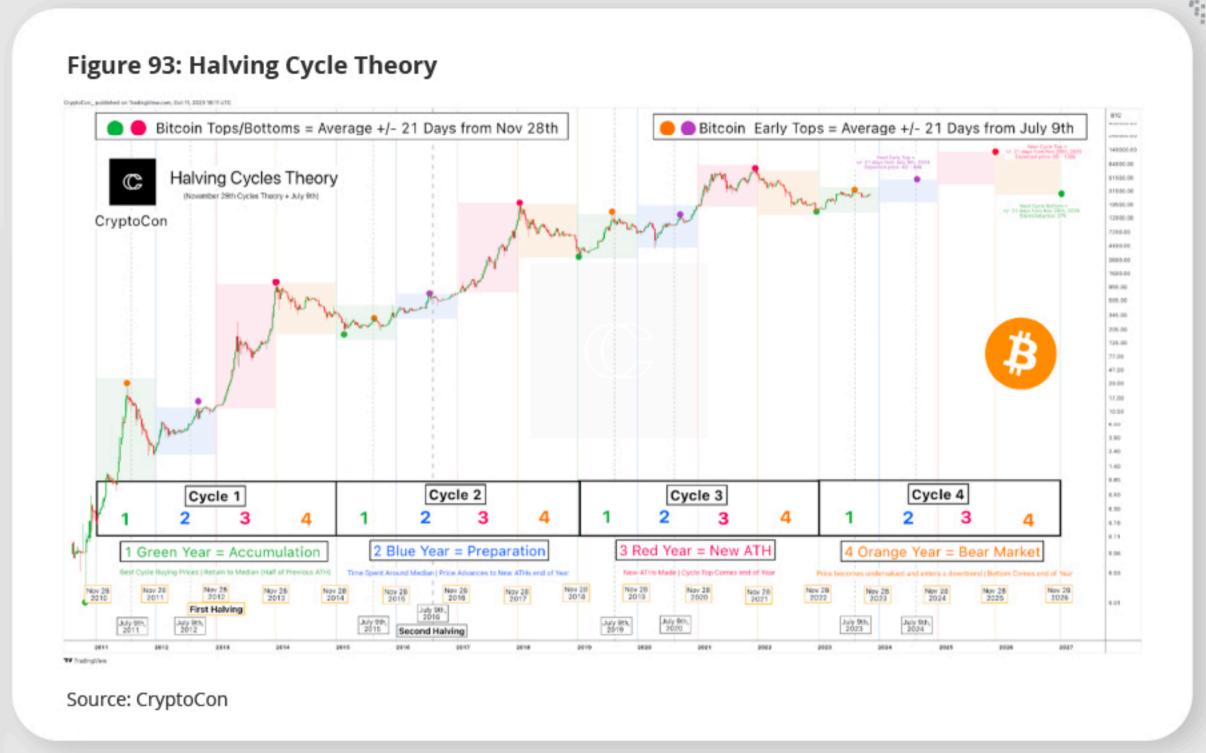


Although the adoption of Bitcoin as base money may seem outlandish, it may not be so far-fetched. Although the 2024 U.S. presidential election is some time off (Nov. 5, 2024), many candidates have already stated strong support for Bitcoin. Primarily, Republican candidate Vivek Ramaswamy and Independent candidate Robert F. Kennedy Jr. have voiced plans to support the U.S. dollar with Bitcoin, garnering significant interest. Here are some of the most notable candidates with a pro Bitcoin agenda:



### **6.2** Halving Cycles Theories

In response to the Bitcoin halving in April 2024, **Standard Chartered** says Bitcoin still has a six-figure price in the charts in 2024. Modeling how Bitcoin's price is impacted by the halving cycle is based on the concept of supply and demand. As Bitcoin's newly created daily supply drops in half every four years, the price will increase if demand is constant. In reality, demand for Bitcoin is increasing every day. Therefore, even halving cycle theories may be a lower bound for Bitcoin's price.



According to one approach to the halving cycles theory by CryptoCon, the most important date for Bitcoin's price is 28th Nov, the day when the first halving took place in 2012.<sup>124</sup> Bitcoin cycle tops and bottoms are usually observed around +/- 21 days from this date in each halving cycle. Since each halving has four-year intervals in between, the four years are classified as the following:

Year 1/Green Year: This year is for accumulating Bitcoin since it starts with a Bitcoin bottom around
 +/- 21 days from Nov 28. From there, the coin advances towards its median price (half of last ATH) and reaches its first early top around +/- 21 days from July 9



<sup>124</sup> https://cryptocon.substack.com/p/the-cycle-labs

- Year 2/Blue Year: This year, Bitcoin gains further momentum and reaches its second early top around
   +/- 21 days from July 9. However, no new all-time high is established this year, but it is the beginning of the bull market
- Year 3/Red Year: Red Year is the most bullish year for Bitcoin. The token establishes a new all-time high this year around +/- 21 days from Nov 9
- **Year 4/Orange Year:** This year is a bearish year for Bitcoin. It falls down from cycle highs to cycle lows around +/-21 days from Nov. 28, only to restart the cycle from the green year once the orange year is over.

Halving Cycles theory helps demonstrate the timing of peaks and bottoms for Bitcoin. This model states that Bitcoin will reach its second early top around +/- 21 days from July 9. This will set the base for BTC for another all-time high that can be seen in 2025 around +/- 21 days from Nov 28, with the price crossing 6 figures (\$90k-\$130k). The next cycle bottom is expected to be in 2026, around +/- 21 days from Nov 28. Understanding the historical cycle patterns and the relationship between Bitcoin's supply and demand should help investors understand when they should be accumulating Bitcoin and when they should be buying protective puts.

2022 was an example of a 'Year 4' in the Bitcoin halving cycle pattern that has been observed over the last decade. Year 4 provides an opportunity to accumulate Bitcoin. As the portfolio manager for Zeltner&Co.'s Cryptocurrency Frontier actively managed certificate (AMC), my strategy was to earn income from selling puts on the CME and to strengthen our Bitcoin position. This strategy allowed our AMC to outperform Bitcoin by 30% in 2022. The next Year 4 occurs between Nov. 28, 2025, and Nov. 26, 2026. In the first half of 2025, investors may begin buying protective puts on CME to hedge any potential losses on their long Bitcoin positions.



Dr. Demelza Hays, Zeltner Conversion of Portfolio Manager and Chief Economist at Cointelegraph

Past performance is not indicative of future performance. However, if the Bitcoin halving cycle trend continues, Bitcoin is expected to surpass \$200k in 2025, according to data provided by Coinmarketcap.com. The table below forecasts an estimated price based on previous historical data points. The data for the 4th Halving is estimated based on the trend of decreasing percentage change in ATH, assuming a 50% reduction from the 3rd halving's percentage change, and the average days to new ATH from the previous cycles.

Figure 94: Bitcoin Price Prediction Based on Halving Cycle Theory

Halving Event	Halving Date	BTC per Block	New ATH Date	New ATH Price (USD)	New ATH % Change	Days to New ATH
1st Halving	Nov 28, 2012	25	Nov 30, 2013	\$1,163	9214%	368
2nd Halving	Jul 9, 2016	12.5	Dec 17, 2017	\$19,783	2944%	526
3rd Halving	May 11, 2020	6.25	Apr 14, 2021	\$64,804	636%	338
4th Halving* (Estimated)	Apr 22, 2024	3.125	Jun 7, 2025	\$270,882.32	318%	411

Source: Coinmarketcap, Cointelegraph Research, CryptoResearch.Report

In conclusion, this comprehensive section of the report has laid out a future price forecast for Bitcoin, grounding its predictions in well-established financial models and expert price targets. The imminent potential approval of a Bitcoin spot ETF marks a paradigm shift, possibly unlocking a substantial influx of liquidity and investor interest in the cryptocurrency. The TAM analysis by Galaxy, spotlighting a \$14.4 billion liquidity addition and a 74% price increase, underscores the significant impact such financial instruments could have. This analysis, corroborated by industry leaders like Michael Saylor and Anton Golub, suggests that Bitcoin's current price dynamics might only be the tip of the iceberg, with a much larger upside in store as we approach the 2024 halving.



The forthcoming halving in 2024, paired with increasing demand and constrained supply, is expected to catalyze another bull market for Bitcoin. Projections based on the halving cycle theory indicate that Bitcoin could surpass \$200k in 2025, signifying not just a recovery from previous market downturns, but a new epoch of unprecedented valuation for the digital currency.

In synthesizing these diverse predictive models and expert opinions, it is evident that Bitcoin's journey is far from reaching its zenith. The complex interplay of market mechanisms, regulatory developments, and technological innovations will continue to shape Bitcoin's trajectory. For institutional investors and market participants, these insights provide a strategic vantage point to navigate the volatile yet promising terrain of cryptocurrency investment, as Bitcoin continues to challenge and redefine the essence of global finance.









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Bit Digital is a large-scale publicly listed bitcoin miner on the NASDAQ. Headquartered in New York with operations throughout North America and Iceland, our management team leads with international expertise in finance, investment, and technology.

### Conclusion

The integration of Bitcoin into institutional portfolios marks a transformative period in the evolution of global finance. This report has meticulously outlined Bitcoin's impressive growth trajectory and its impact on enhancing portfolio returns. With a staggering price increase in 2023 and a monumental total return since 2014, Bitcoin has emerged not just as a speculative asset, but as a strategic complement to traditional investments, offering diversification benefits and a hedge against inflation and currency devaluation.

The analysis within this report illustrates the growing mainstream acceptance of Bitcoin, underscored by major financial entities' filings for spot ETFs and endorsements from political figures. Additionally, the significant Bitcoin holdings of institutions like Grayscale, as well as governments, and the rise of Bitcoin-focused unicorn companies, signal a profound shift in the perception of Bitcoin.

The challenges associated with investing in Bitcoin, such as its inherent volatility, the need for specialized infrastructure, and the ambiguous regulatory environment, are being progressively addressed. Innovative custody solutions and regulatory clarity are providing a more secure and predictable landscape for investors, while sophisticated trading strategies are evolving to better navigate market intricacies.

The report highlights the strategic importance of including Bitcoin in diversified portfolios, advocating for a calculated and risk-managed investment approach. Bitcoin stands as a pivotal asset in the modern financial era, offering both substantial investment opportunities and an affordably priced option on the future base asset of global finance.

Addressing the technical and operational aspects of Bitcoin investment, the report acknowledges the crucial role of custodians in ensuring the safety of digital assets. The \$3.8 billion lost to cybercrime in 2022 accentuates the importance of choosing a custodian with robust security standards and regulatory compliance. The insights from industry experts provide a roadmap for selecting the right custody solutions, whether through hot and cold storage, advanced technologies, or insurance coverage for digital assets.

Furthermore, the report explores the rise in self-custody, reflecting a shift toward personal asset management, and discusses the variety of investment methods that provide exposure to Bitcoin without self-custody, from passive funds to venture capital. The detailed analysis of the Bitcoin ecosystem, including mining stocks, market makers, and tax and legal regulations, presents an extensive overview of the current state and future potential of the Bitcoin network. The discussion on Bitcoin-friendly jurisdictions and the empirical data on global adoption and growth of Bitcoin provide evidence of its expanding influence across various sectors.

This final chapters served as a testament to Bitcoin's dual role as a financial asset and a payment system, with layer-2 solutions like the Lightning Network and protocols like Stacks and Rootstock enhancing its scalability and utility. As Bitcoin continues to integrate into the fabric of global finance, its nature as a decentralized, neutral, and borderless digital asset is increasingly recognized. Models like the Target Addressable Market Analysis and Halving Cycles Theory provide investors with a way to forecast Bitcoin's price. While speculative, these approaches provide valuable insights into the use cases of Bitcoin and the potential markets that Bitcoin may disrupt in the coming years.

While the traditional 60/40 equity and bond portfolio has its merits, the financial world is evolving. With its unique properties and potential for high returns, Bitcoin presents an intriguing option for portfolio diversification. As with all investments, careful consideration and research are essential before making allocation decisions.





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