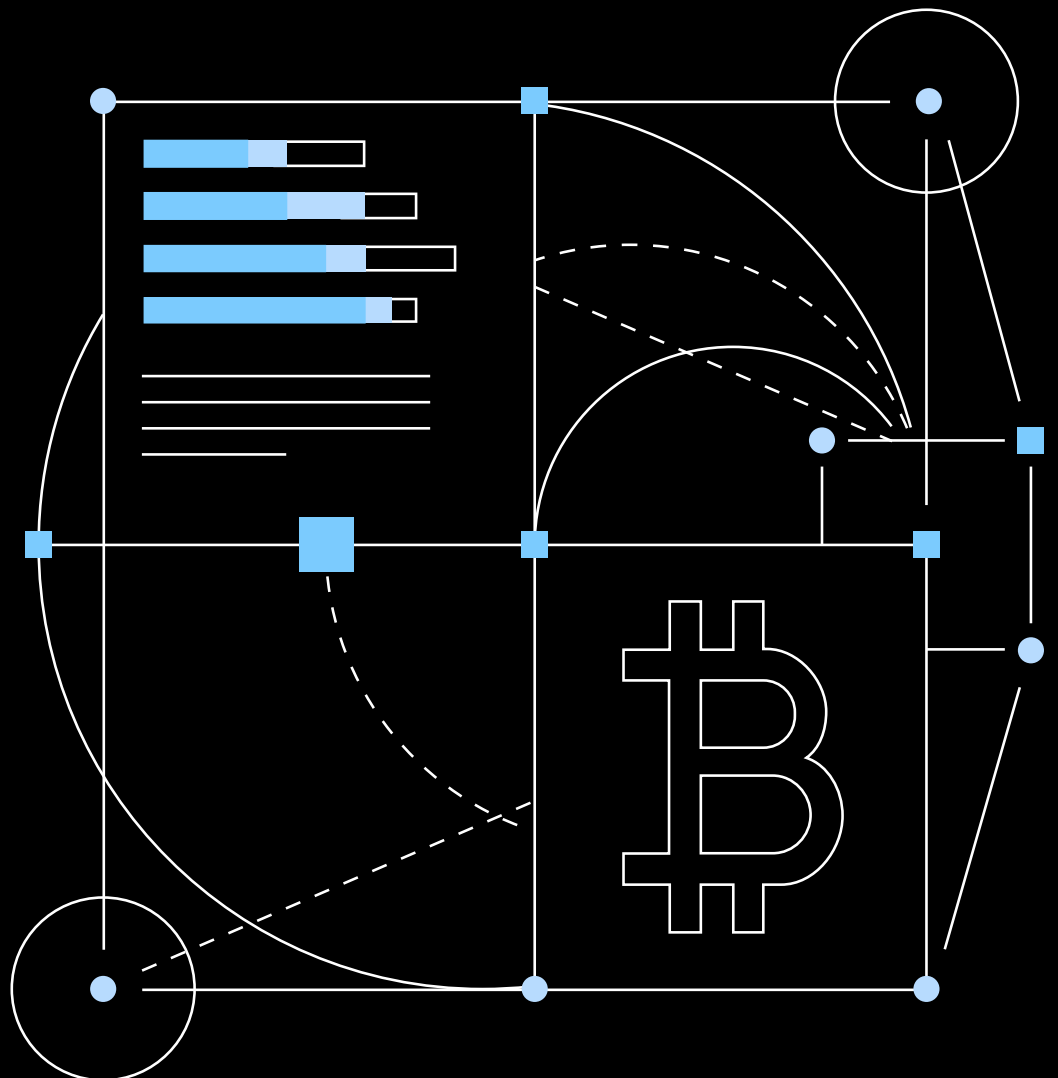


Galaxy Funds

# Bitcoin's Role in the Modern Portfolio

JANUARY 2022





# Bitcoin: an emerging asset

Bitcoin has become a force of innovation since its invention in the aftermath of the 2008 financial crisis. The utility of its underlying blockchain technology has driven the value of the native digital asset that rides on top of it—bitcoin with a lowercase “b”—to become one of the world’s best performing investment of the last decade.<sup>1</sup>

Originally conceived as a peer-to-peer electronic cash for the internet, bitcoin has become a next generation store of value, resistant to political censorship or interference and governed by the mathematical principles of its open source code. It is built on a long history of technological advancements in computer science, cryptography, and digital scarcity, and its disinflationary nature is designed to facilitate trust-minimized, peer-to-peer transactions without a centralized intermediary in a highly secure and transparent way.

The Bitcoin blockchain can best be thought of as distributed ledger that allows for the transfer of value via its native digital asset, bitcoin, without relying on trusted third parties. Its store of value characteristics are forged from its public, predictable, and unchangeable monetary policy that allows protection from unexpected inflation. Bitcoin has created a new asset class that may become the biggest technological development since the internet. As its open-source software evolves, bitcoin will continue to differentiate itself further from traditional asset classes.

## Bitcoin has created a new asset class that may become the biggest technological development since the Internet



### LIMITED SUPPLY

- Bitcoin offers one of the only verifiably scarce, immutable, and capped supply assets in the world
- Only 21 million bitcoin will ever be mined



### NON-SOVEREIGN STATUS

- No single point of failure or control
- Supply issuance resistant to macro or government influence
- Democratized digital money



### IMMUTABILITY

- Hard-coded software defines user rules
- All transactions between users are permanently recorded
- Auditable transaction verification and history



### SECURITY

- Cryptographically secured and validated transactions
- Security lies in the asymmetry of the costs of performing the “proof-of-work”
- The Bitcoin blockchain has never been hacked<sup>2</sup>

1) Source: Galaxy Digital Research as of 12/31/2021.

2) While custodians and exchanges that hold bitcoin have been hacked, the Bitcoin blockchain itself has never been hacked. Source: Galaxy Digital Research, Federal Reserve Bank of St. Louis, Bitcoin.



# Digital gold for a digital world

Historically, society has sought the time-tested reliability of gold as a safe, durable store of value. Investors look to gold in times of market stress to preserve wealth and protect against inflation in the financial system. Gold has also played a central role in physical trade for thousands of years, but we now live in a digital world.

Bitcoin shares many of the same attractive properties of gold that have made it a great store of value for centuries. We see Bitcoin as an emergent store of value. In today's market, it's largely a risk asset, but it should trade similarly to non-fiat stores of value like gold in a steady state. Both gold and bitcoin are borderless and have no centralized power or government that controls their supply. Both are globally recognized, easily verifiable, and have limited supplies.

Yet, bitcoin has modernized and improved properties that position it as an attractive alternative to gold. Unlike gold, bitcoin is easily divisible into smaller units. While gold requires large and expensive storage facilities and is extremely difficult to physically transport, bitcoin does not require high storage costs and is weightless. Bitcoin can travel across borders in the same frictionless way that information is shared across the internet.

## ■ Bitcoin provides investors a digital store of value for a digital world

	Bitcoin	Gold
LIMITED SUPPLY	●	●
BORDERLESS	●	●
DECENTRALIZED	●	●
EASILY VERIFIABLE	●	●
FAST VALUE TRANSFER	●	
WEIGHTLESS	●	
PROTECTION AGAINST COUNTERFEITING	●	
EASILY DIVISIBLE	●	
LOW COST STORAGE AND TRANSFER	●	
CENSORSHIP RESISTANT	●	



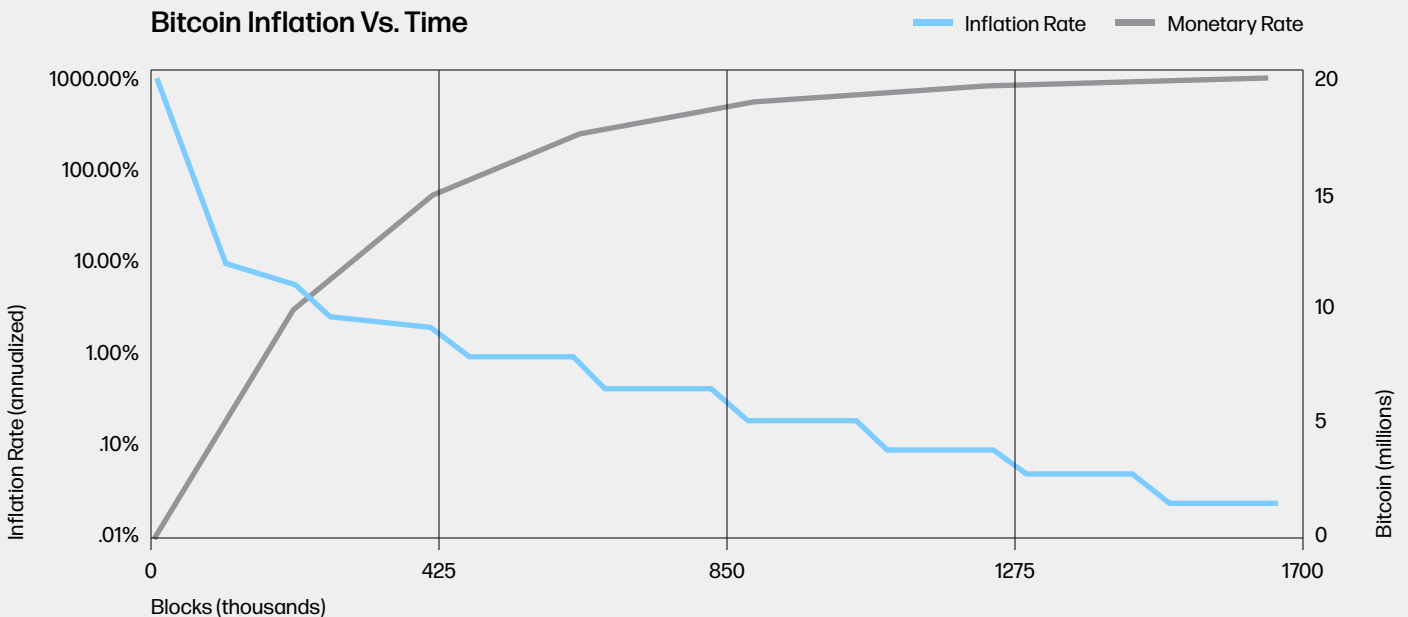
# Fixed supply

Bitcoin is one of the only verifiably scarce, fixed supply assets in the world. Bitcoin’s underlying code controls how much new bitcoin is created and limits the maximum amount of bitcoin that will ever exist to 21 million. Bitcoin has a price-inelastic supply, meaning that a change in price cannot change its supply issuance. Said differently, bitcoin’s supply is transparent and unchangeable; it is strictly bound and algorithmically hard-coded. An increase in the value of bitcoin does not affect its supply, and does not affect bitcoin’s issuance schedule.

At time of writing, 18.9 million of that total supply has been issued as block rewards to the miners securing and validating Bitcoin’s network.<sup>3</sup> Approximately every four years, the supply of bitcoin issued as mining rewards gets cut in half until eventually no more supply will be issued. The last bitcoin supply reduction occurred in May 2020, when the supply issuance was reduced from 12.5 bitcoin per block to 6.25 bitcoin per block. The next halving is expected in 2024. This “block reward” for miners will continue to be cut on a fixed schedule until it approaches zero around 2140.

Unlike most global currencies or commodities, bitcoin’s transparent and immutable fixed supply properties make it a truly unique investable asset. Investors favor the fact that bitcoin’s supply cannot be expanded, thereby allowing its inflation schedule to be predictable.

## Bitcoin is one of the only verifiably scarce, fixed supply assets in the world<sup>4</sup>



3) Source: [Blockchain.com](https://blockchain.com) as of 12/31/2021  
4) Source: Galaxy Digital Research



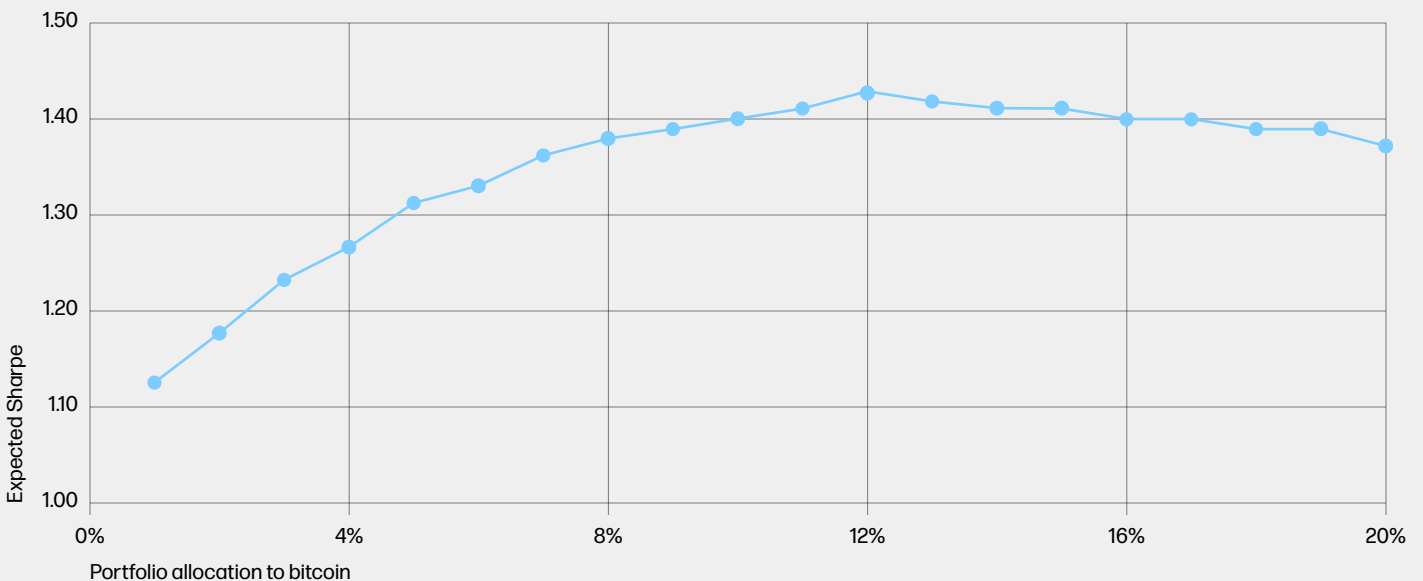
# Modern portfolio theory in the digital age

Modern portfolio theory (MPT) is a trusted analysis often used by investors to model scenarios of optimal portfolio allocations to various assets. Investors assessing the role of bitcoin in their portfolios are encouraged to utilize the same MPT approach for a quantitative-based analysis of bitcoin.

MPT demonstrates that bitcoin's history makes it an attractive addition to traditional portfolios. Despite its volatility, adding a portfolio allocation to bitcoin generally increases the overall expected return and improves the portfolio's expected risk-adjusted returns. It also potentially diversifies some of the systemic risk that exists in today's portfolios.

Most modern portfolios present a fair degree of inherent systemic risk in the financial system. Adding bitcoin to an investment portfolio may diversify away some of this systemic risk and offers additional portfolio benefits. Our study shows the Sharpe ratio of a portfolio may be optimized somewhere near a 12% allocation to bitcoin. However, the strongest marginal improvement to a portfolio's Sharpe ratio appears to occur in the 1% to 2% range. This demonstrates that even a small percentage allocation to bitcoin in a portfolio may have an impact.

## An allocation to bitcoin increases expected portfolio returns and optimizes sharpe<sup>5</sup>



5) Galaxy Digital Research as of 12/31/2021.



# A macro hedge against global uncertainty

Historically, bitcoin's correlation among established macro assets typically hovers within +/-0.20 around a zero correlation.<sup>6</sup> Over its 12-year history, bitcoin has demonstrated very low or even slightly negative correlation to most major global asset classes, including the S&P 500, Euro Stoxx 600, Nikkei 225, MSCI Index, US Agg Bond Index, Crude WTI, Gold, the DXY, EUR, and other emerging market currencies. While many see bitcoin mainly as a risk asset that is currently more correlated to equities, we believe that it will trade similarly to non-fiat stores of value like gold in a steady state.

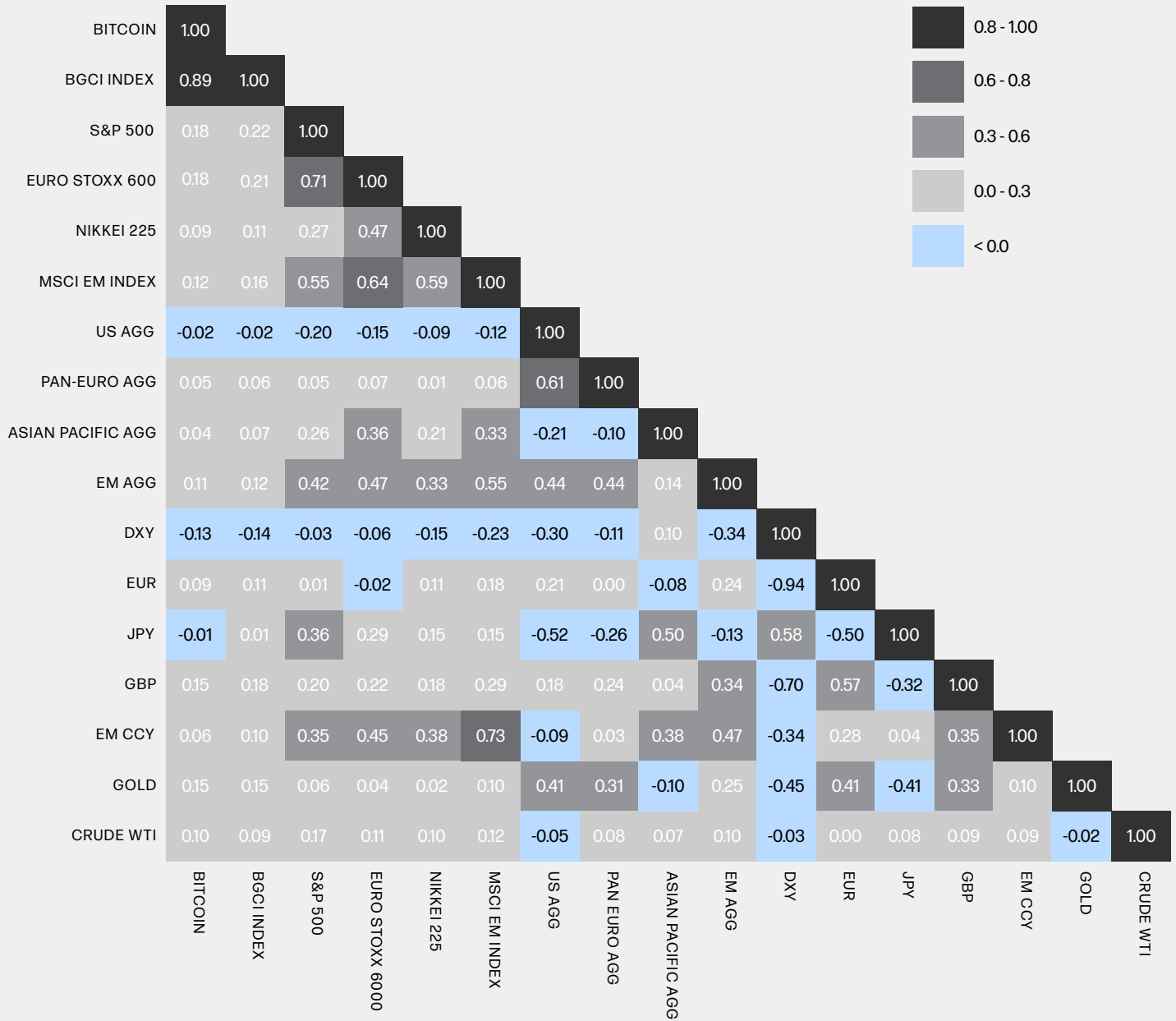
Many believe that bitcoin can be used as a hedge against macroeconomic uncertainty. Without question, the onset of the COVID-19 pandemic and the resulting trillions in stimulus dramatically accelerated interest in bitcoin. As governments continue to "print money," bitcoin's fixed supply makes it all the more appealing. And as social sentiment across the world shifts away from trust in centralized institutions, bitcoin's decentralized nature makes it more appealing still.

Global markets will continue to be impacted by increasing uncertainty due to significant shifts in trade, tariff, and tax policies, as well as monetary and fiscal policies at the national level. Financial cycles are becoming increasingly severe and further quantitative easing threatens to swell central bank balance sheets, devaluing investors' purchasing power in the process. Bitcoin offers investors a potential hedge against this global uncertainty.

6) Source: Galaxy Digital Research as of 12/31/2021.



### Bitcoin correlation matrix<sup>7</sup> may serve as a global hedge on the existing financial system



7) Source: Galaxy Digital Research as of 12/31/2021.



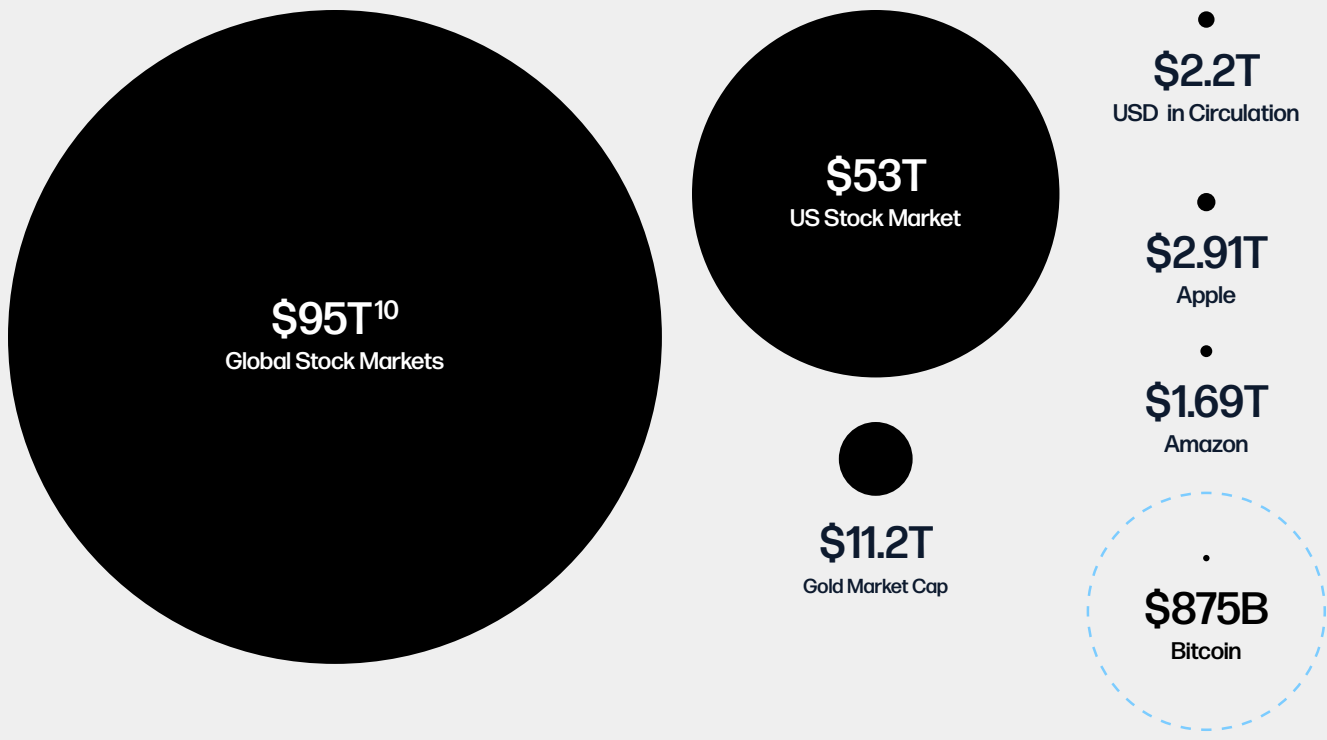
# Early lifecycle growth

Bitcoin may seem like it has quickly exploded onto the scene, but it has steadily and consistently been making gains in adoption, usage, and awareness since its inception over 12 years ago. Its growth has been quite impressive and has provided investors with stellar absolute returns, far exceeding those of any other asset class in a similar time period.

Yet, bitcoin still has room to expand compared to other global markets. Bitcoin's current market cap stands at \$875B at time of writing.<sup>8</sup> That is still smaller than individual companies like Apple (\$2.3T) or Amazon (\$1.7T).

Further still, when compared to the size of the gold market (\$11.2T) or US stock market (\$49T) bitcoin has tremendous upside growth potential. The total value of gold is over 16x the size of bitcoin and the US stock market is over 80x the size of bitcoin.

## ■ Bitcoin's total market cap continues to grow, but still has tremendous room to expand compared to other global markets<sup>9</sup>



8) Sources: [CoinMarketCap.com](https://CoinMarketCap.com) as of 12/31/2021.

9) Sources: Google Finance, Coin MarketCap as of 12/31/2021.

10) Source: [CNBC.com](https://CNBC.com) as of 11/12/2021.





# Institutional adoption

Due to its open source ethos, bitcoin has traveled an unconventional growth path. Instead of being cultivated in the boardrooms or trading floors of large financial institutions like most transformative financial innovations, bitcoin first captured the hearts and minds of many retail, high-net-worth, and family office investors. Institutions took note and have started to embrace bitcoin as a part of their investment strategy given the transformative investment opportunity it presents.

Worldwide, billions of dollars of infrastructure investments have been made in the last few years to support bitcoin's robust ecosystem and enable institutional investors to invest, trade, and instantly transact with billions of dollars in daily liquidity. Progress on this front includes regulated custody, physically settled futures contracts, and regulated options contracts.

Announcements from BNY Mellon, the oldest and largest traditional financial institution, and German-based Deutsche Bank to service and custody digital assets deliver validity from players looking beyond fiat currency. Additionally, names like Fidelity, BBVA, Bakkt (primarily owned by Intercontinental Exchange), and Anchorage continue to set new standards for the custody, trading, and settlement of digital assets. They are collectively subject to regulatory oversight. Additionally, they receive ongoing audits by Big Four accounting firms and have received SOC reports as a result of routine independent SOC exams.

The "institutional herd" is arriving. BlackRock, JP Morgan, Goldman Sachs, Deutsche Bank, Morgan Stanley, Hanyep Group, Square, MassMutual, Harvard and Yale are just a fraction of the growing list of traditional financial institutions and public institutions that jumped on the digital asset bandwagon just over the last few months.

Galaxy itself has played a role in crypto's institutional infrastructure build; in partnership with Bloomberg, we launched the Bloomberg Galaxy Crypto Index (BGCI) in 2018 to improve data integrity and standardization among digital assets. Infrastructure improvements have, in turn, established the rails for institutional quality products like our Galaxy Crypto Index Fund and Galaxy Bitcoin Funds, a key reason our funds received a positive operational due diligence score from a prominent global investment consultant.

**Traditional wealth managers are also waking up to the potential benefits of bitcoin<sup>11</sup>**

# 60%

of advisors indicate that they are likely to allocate client portfolios to Bitcoin within the next 12 months

# 56%

of bitcoin has become more positive over the past six months (30% more positive since July)

<sup>11</sup>) Source: RIA Channel surveys as of 12/31/2021.



# The future is bright

In just over a decade, bitcoin has transformed from a relatively obscure innovation into a \$875B, globally recognizable institutional asset with room to grow.<sup>1</sup> If bitcoin were an asset class, it would be the best performing asset of the last decade.<sup>13</sup> For sophisticated investors, it can no longer be ignored.

More and more people are discovering and investing in bitcoin every day. Open to all, bitcoin's ability to settle immense value across borders, 24/7, is unprecedented in the history of money. Bitcoin is the world's first global asset that harnesses the power of computers—and humankind's innate need to innovate—to enable a worldwide decentralized store of value. 2021 is highly likely to see further increases in bitcoin interest, innovation, and adoption.

Bitcoin has room to grow

# \$875B

globally recognizable institutional asset<sup>12</sup>

12) Sources: [CoinMarketCap.com](https://CoinMarketCap.com) as of 12/31/2021.

13) Source: Galaxy Digital Research as of 6/30/2021.



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# Galaxy Funds Risk Factors

Please note that the following are not all the risk factors associated with Digital Assets or the Funds (each, a “Fund”). Refer to the Offering Memorandum of the applicable Fund for more risk factors.

**Investment Risks Generally.** An investment in the Fund, involves a high degree of risk, including the risk that the entire amount invested may be lost. The Fund will invest in Digital Assets (such as Bitcoin, Ethereum, other cryptocurrencies or blockchain based assets, including those that represent the Decentralized Finance (or DeFi) portion or sector of the digital assets market) using strategies and investment techniques with significant risk characteristics, including risks arising from the volatility of the global Digital Assets markets and the risk of loss from counterparty defaults. The Fund’s investment program may use investment techniques that involve substantial volatility and can, in certain circumstances, substantially increase the adverse impact to which the Fund may be subject. All investments made by the Fund will risk the loss of capital. No guarantee or representation is made that the Fund’s investment program will be successful, that the Fund will achieve its investment objective or that there will be any return of capital invested to investors in the Fund, and investment results may vary.

**Different from Directly Owning Bitcoin, Ethereum or Other Digital Assets.** The performance of the Fund will not reflect the specific return an investor would realize if the investor actually purchased a Digital Asset. Investors in the Fund will not have any rights that Digital Asset holders have.

**No Guarantee of Return or Performance.** The obligations or performance of the Fund or the returns on investments in the Fund are not guaranteed in any way. Any losses of the Fund will be borne solely by investors in the Fund. Ownership interests in the Fund are not insured by the Federal Deposit Insurance Corporation, and are not deposits, obligations of, or endorsed or guaranteed in any way, by any banking entity.

**Regulation.** Digital Assets, including Bitcoin, Ethereum and DeFi tokens, are loosely regulated. Ongoing and future regulatory actions may alter, perhaps to a materially adverse extent, the value of a Fund’s investment. If any Digital Asset is determined to be a “security” under U.S. federal or state securities laws or a Digital Asset exchange is determined to be operating illegally, it may have material adverse consequences for Digital Assets due to negative publicity or a decline in the general acceptance of Digital Assets. As such, any determination Digital Asset exchanges are operating illegally or that any Digital Asset is a security under U.S. federal or state securities laws may adversely affect the value of a particular Digital Asset or Digital Assets generally and, as a result, the value of a Fund’s investment.

**Exchanges.** Exchanges may suffer from operational issues, such as delayed execution, that could have an adverse effect on the Fund. Digital Asset exchanges have been closed due to fraud, failure or security breaches. Any of the Fund’s funds that reside on an exchange that shuts down or suffers a breach may be lost.

**Value.** Several factors may affect the price of Digital Assets, including Bitcoin, Ethereum and DeFi tokens, including, but not limited to: supply and demand, investors’ expectations with respect to the rate of inflation, interest rates, currency exchange rates or future regulatory measures (if any) that restrict the trading of a Digital Asset or the use of a Digital Asset as a form of payment. There is no assurance that a Digital Asset will maintain its long-term value in terms of purchasing power in the future, or that acceptance of bitcoin payments by mainstream retail merchants and commercial businesses will continue to grow.

**Protocol.** Many Digital Asset networks, including Bitcoin, Ethereum and DeFi tokens, operate on open-source protocols maintained by groups of core developers. The open-source structure of these network protocols means that certain core developers and other contributors may not be compensated, either directly or indirectly, for their contributions in maintaining and developing the network protocol. Lack of incentives to, or a failure to properly, monitor and upgrade network protocol could damage a Digital Asset network. It is possible that a Digital Asset protocol has undiscovered flaws that could result in the loss of some or all assets held by the Fund. There may also be network-scale attacks against a Digital Asset protocol, which could result in the loss of some or all of assets held by the Fund. Advancements in quantum computing could break a Digital Asset’s cryptographic rules. The Fund makes no guarantees about the reliability of the cryptography used to create, issue, or transmit Digital Assets held by the Fund.

**Volatility & Supply.** Values of Digital Assets have historically been highly volatile, experiencing periods of rapid price increase as well as decline. For instance, there were steep increases in the value of certain Digital Assets, including Bitcoin, over the course of 2017, and multiple market observers asserted that digital assets were experiencing a “bubble.” These increases were followed by steep drawdowns. For example, during the period from December 17, 2017 to February 5, 2018, Bitcoin experienced a decline of roughly 60%. During the period from February 13, 2020, until March 16, 2020, the value of Bitcoin fell by over 50%. Bitcoin had a strong start to 2021, hitting an all-time high of nearly \$65k in April. But, it closed H1 2021 down 47% from its record. Supply of Digital Assets is determined by computer code, not by a central bank. For example, uncertainty related to the effects of Bitcoin’s recent and future “halving” could contribute to volatility in the Bitcoin markets. The value of the Bitcoin or other Digital Assets held by a Fund could decline rapidly in future periods, including to zero.



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