FIRST EAGLE
INVESTMENT MANAGEMENT®

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Considering Crypto

The rise—and fall and rise and fall and rise—of bitcoin in recent years has dragged the universe of cryptocurrencies out of the shadows of the internet and onto the radars of a range of mainstream financial market participants, including central banks and regulatory bodies, institutional investors and asset managers, merchants and electronic-payment providers, and smaller, less-experienced investors looking for a pathway to easy (digital) money. While First Eagle recognizes the potential for cryptocurrencies and similar innovations in a world marked by the continued debasement of fiat currency, we also are cognizant of the uncertainty inherent in existing forms of crypto at this point of development.

As investors focused on identifying attractive assets available for purchase at a "margin of safety,"[1] we often have found ourselves bearing detached witness to the pockets of outsized enthusiasm that emerge in markets from time to time, whether it's Japanese real estate in the late 1980s, dot-com stocks in the late 1990s, financials in the mid-2000s or cryptocurrencies today.[2] While each of these scenarios offered investors with impeccable timing the potential for profit, our focus on avoiding the permanent impairment of capital in support of long-term client outcomes dictates a more measured approach to asset selection.

Key Takeaways

- The mainstreaming of cryptocurrencies—and bitcoin, in particular—has accelerated since the onset of the Covid-19 pandemic. These digital assets have caught the attention of a broad range of financial market participants, driving the total crypto market capitalization higher by nearly tenfold.
- With bitcoin and its ilk facing significant challenges in meeting the functionality of traditional fiat currency, some investors have instead turned to crypto as a vehicle for speculation.
- While its limited supply has led some to see bitcoin as a store of value and potential hedge against inflation and the ongoing debasement of fiat currency, considering bitcoin in this context entails weighing the mostly theoretical benefits of a 12-year-old cryptocurrency against those gold has offered for millennia.
- First Eagle believes bitcoin's higher volatility, higher beta to equities and maturation-related uncertainties make it unlikely to be a binary substitute for gold at this stage of development.

Views expressed are as of May 19, 2021.

For all of their broadening appeal, cryptocurrencies represent a very young asset whose behaviors across varying macroeconomic and market regimes are theoretical at best. While some of its backers have dubbed bitcoin "digital gold," in our view it currently is better described as an option on becoming digital gold. In contrast, actual gold has served as a store of value for millennia, and its unique risk-return characteristics have enabled it to maintain its real purchasing power over time across disparate environments and through numerous existential threats, providing investors a perceived "safe haven" in times of need.

1. First Eagle defines "margin of safety" as the difference between a company's market value and our estimate of its intrinsic value.
2. Prior to January 1, 2000, the Global Value strategy was managed by a prior portfolio manager while he served at a firm different from First Eagle Investment Management, LLC.

KYC: Know Your Crypto

Like many grassroots movements bent on disruption, cryptocurrency comes with its own unique nomenclature. Though definitional nuances may differ depending on the source, below is a quick overview of some of the basic concepts discussed in more detail throughout this paper.

A **blockchain** is an anonymous, public record of digital transactions distributed and maintained across a peer-to-peer network of unaffiliated computers (**nodes**). Driven by advanced encryption techniques and a system of well-aligned incentives among participant nodes, blockchains rely on **consensus mechanisms**—such as **proof-of-work** or **proof-of-stake**—to verify and record individual transactions and thus preserve the legitimacy of the entire blockchain. Blockchain technology can be used to support a range of applications that require the efficient and secure storage and transfer of data, from securities trading to the sharing of personal healthcare information to elections. The first use case of blockchain technology to emerge at scale, was **cryptocurrency** (namely, bitcoin). Cryptocurrencies are digital assets that reside on and are secured by a blockchain. While some forms of crypto, including bitcoin, have a hard cap on their ultimate total supply written into their source code to promote scarcity, others allow for infinite expansion; generally, however, cryptocurrencies have mechanisms built into their protocols that control the rate of new issuance over time.

Coin refers to any cryptocurrency that is the product of its own standalone decentralized blockchain technology. Coins other than bitcoin fall under the umbrella of **altcoins** given their status as alternatives to the first mover; these include such cryptocurrencies as ether, XRP and dogecoin. Coins typically are intended to embody the properties of fiat currency—that is, to function as a medium of exchange, common unit of account and a store of value—to varying degrees.

In contrast, **tokens** are crypto assets that do not have their own underlying blockchain and thus are wholly dependent on an existing network; the Ethereum blockchain is the most popular platform for tokens. Tokens may have broad—and sometimes overlapping—functionality beyond that of a fiat currency substitute; for example, security tokens represent an ownership claim on a physical or digital asset, while utility tokens can be used to participate in a specific blockchain protocol. Tether, uniswap and chainlink are among the largest tokens by market cap.

Tokenization is the process of converting a physical or virtual asset into a digital unit that can be bought or sold. For example, **stablecoins** are a tokenization of currency; pegged to the value of another, more stable asset like fiat currency, stablecoins seek to mitigate the volatility typical of noncollateralized assets like bitcoins and altcoins. **Non-fungible tokens (NFTs)** are unique, indivisible digital assets used to prove the authenticity and ownership of collectibles like digital art and are also very popular in the online gaming world. Tokens also may be issued through **initial coin offerings (ICOs)** to raise capital for the production of **decentralized applications (dApps)**. Rather than the centralized data servers upon which typical websites are run, dApps leverage blockchain technology to process data across distributed networks. Among the functionality dApps enable is **decentralized finance (DeFi)** through which developers seek to make a broad range of financial services—lending, insurance, trading, etc.—available over peer-to-peer networks. These services are executed by **smart contracts**, open-source blockchain protocols coded to be self-executing once certain prerequisites are met.

Nearly all digital asset trades are executed through **centralized exchanges** that serve as trusted intermediaries facilitating the purchase and sale of cryptocurrencies in exchange for fiat or other digital assets. Though cryptocurrencies never leave the blockchain, investors can interact with their digital assets through a **wallet**—a software program or dedicated hardware device. Wallets comprise a **public key** and a **private key**, codes that work together to securely store and manage the transfer of crypto assets.

Source: Coinbase, CoinDesk, CoinMarketCap, Gemini; as of April 30, 2021.

The Rise of Cryptocurrencies

Bitcoin was introduced just weeks after the collapse of Lehman Brothers, a time when public confidence in traditional institutions was particularly low.

Bitcoin, the first cryptocurrency, was introduced to the world in a 2008 white paper attributed to the pseudonymous Satoshi Nakamoto, whose identity (or -ies) remains a mystery to this day. The paper was published just weeks after the collapse of Lehman Brothers, a time when public confidence in traditional institutions was particularly low. Bemoaning internet commerce's reliance on financial institutions to securely process electronic payments and the costs and privacy issues associated with their involvement, Nakamoto sought "an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party."[3] To accomplish this, Nakamoto envisioned a decentralized peer-to-peer network through which both currency issuance and transactions are executed collectively—aka, the blockchain. In early 2009, the "genesis" block of bitcoin was mined, releasing into the world the first 50 of the maximum 21 million bitcoins allowed per the software's coding.

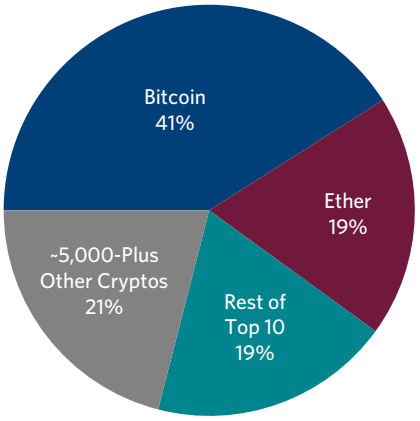
While "bitcoin" seems to have become to cryptocurrency what "google" is to web search, there were nearly 5,000 cryptocurrencies being tracked by CoinMarketCap as of the end of April 2021. Trading on hundreds of spot exchanges, these include both a wide array of established crypto jostling for market share and new ones being released regularly.[4] More recent entrants range from the reputable (JPM Coin, an intrabank payment system for institutional customers launched by JPMorgan Chase[5]) to the less so (Bitcoiin2Gen, which counted among its backers erstwhile action star Steven Seagal, who received a fine from the Securities and Exchange Commission for his efforts[6]). That said, the nearly $1.7 trillion cryptocurrency market continues to be dominated by the largest cryptos, and bitcoin in particular, as shown in Exhibit 1.

Exhibit 1. Cryptocurrency Market Is Large but Concentrated

Top 10 Cryptocurrencies by Market Capitalization in US Dollars, as of May 19, 2021

Cryptocurrency	Symbol	Market Cap (billions)	Market Share	Price per Unit	2021 Price Change: January 1 – April 30	2021 Price Change: May 1 – May 19
Bitcoin	BTC	$692.40	41.01%	$36,701.25	99%	-34%
Ether	ETH	$313.43	18.57%	$2,620.89	276%	-4%
Tether	USDT	$58.42	3.50%	$1.00	0%	0%
Binance Coin	BNB	$56.98	3.41%	$359.59	1,542%	-40%
Cardano	ADA	$52.01	3.08%	$1.58	650%	17%
Dogecoin	DOGE	$50.08	3.00%	$0.38	7,247%	23%
XRP	XRP	$41.54	2.49%	$1.15	623%	-28%
Polkadot	DOT	$24.73	1.48%	$26.10	293%	-27%
Internet Computer	ICP	$15.57	0.90%	$124.43	NA*	-71%*
Bitcoin Cash	BCH	$14.70	0.88%	$789.53	3,535%	-22%

Market Share



* Internet Computer was released to the public on May 10, 2021; its first reported price per unit was $426.46.
Source: CoinMarketCap; data as of May 19, 2021, at 12 pm EDT.

It's worth noting that tether, number three in market cap, is by far the leader in terms of average daily volume. As a stablecoin intended to mimic the value of a dollar, tether isn't an investment asset like bitcoin but rather a liquidity and settlement mechanism that exists outside of the traditional banking system. While tether has long claimed

3. Satoshi Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System" (2008).
4. Source: CoinMarketCap; data as of March 31, 2021.
5. Source: CNBC; as of October 27, 2020.
6. Source: *Financial Times;* as of February 27, 2020.

to be backed at all times by an equal amount of dollar reserves, the New York State attorney general found that to be "a lie" and charged that tether and crypto exchange Bitfinex had "recklessly and unlawfully covered up massive financial losses to keep their scheme going." As part of a February 23, 2021, settlement, tether and Bitfinex face $18.5 million in penalties and are forbidden from trading activity with New Yorkers.[7] Interestingly, the market capitalization of tether has increased about 70%—or $24 billion—in the three months or so since the settlement.

More impactful than the sheer volume of cryptocurrencies introduced in recent years has been their accelerating insinuation into the mainstream financial system.

More impactful than the sheer volume of cryptocurrencies introduced in recent years has been their accelerating insinuation into the mainstream financial system. To provide just a few illustrations from a seemingly ever-growing list:

- Tesla in late 2020 updated its updated investment policy to allow for investment in certain alternative reserve assets, including bitcoin, gold and gold-related ETFs. Subsequently, the company announced the purchase of $1.5 billion of bitcoin, joining a handful of other public companies—including software developer MicroStrategy, payments processor Square and Massachusetts Mutual Life Insurance—that hold bitcoin in their treasuries or general investment accounts.[8] Tesla CEO Elon Musk has been particularly influential on the direction of crypto markets of late; his early 2021 announcement that Tesla would accept bitcoin as payment for its vehicles and subsequent suspension of that policy only a few months later had a major impact on bitcoin's year-to-date price gyrations.[9]
- PayPal recently began to allow US consumers to use crypto to fund purchases from millions of online merchants.[10] While PayPal settles transactions in US dollars by converting the crypto held in user accounts within the same checkout flow,[11] Visa recently became the first payment network to allow the use of a cryptocurrency (in this case, stablecoin USD coin) to settle transactions without first being converted into fiat.[12]
- Bank of New York Mellon, the oldest bank in the US and the world's largest custody bank, said that it would treat cryptocurrencies as it would any other security, allowing its asset management clients to hold, transfer and issue bitcoin and certain other competitors.[13] Through its digital assets subsidiary, Fidelity Investments began providing crypto custody and execution services for hedge funds, family offices and financial advisors in 2019.[14]
- In early 2021 SEC filings, BlackRock made bitcoin futures investment-eligible in certain of its mutual funds available to both retail and institutional investors.[15] Morgan Stanley began offering privately managed bitcoin funds to its wealthiest private clients earlier this year, while JPMorgan Chase and Goldman Sachs reportedly are prepping to do the same for their private wealth clients.[16]
- Cryptocurrency exchange operator Coinbase went public through Nasdaq on April 14, 2021. Closing near $330 per share on its first day of trading, Coinbase's market cap put it among the 100 most valuable companies in the US and ahead of traditional publicly traded exchanges like CME Group and Intercontinental Exchange.[17]

7. Source: New York State Office of the Attorney General; as of February 23, 2021.
8. Source: *The Wall Street Journal;* as of February 8, 2021.
9. Source: *The Wall Street Journal;* as of May 12, 2021.
10. Source: Company reports; as of February 10, 2021.
11. Source: TechCrunch; as of March 30, 2021.
12. Source: Visa, Inc. press release; as of March 29, 2021.
13. Source: *The Wall Street Journal;* as of February 11, 2021.
14. Source: *Financial Times;* as of October 18, 2019.
15. Source: Bloomberg; as of January 20, 2021.
16. Source: Bloomberg; as of March 17, 2021.
17. Source: Morningstar; data as of April 14, 2021.

Blockchain Basics

A blockchain is an anonymous public record of transactions distributed and maintained across a peer-to-peer network of unaffiliated computers.

The blockchain technology that underpins the protocols for bitcoin and other cryptocurrencies is a high-tech version of the old-fashioned ledger that has been used to track the movement of assets for thousands of years. A blockchain is an anonymous public record of transactions distributed and maintained across a peer-to-peer network of unaffiliated computers. Instead of employing a central clearing authority, like a bank, to validate digital relationships, blockchains rely on consensus mechanisms to reach an agreement about the legitimacy of transactions; proof of work and proof of stake are the two most widely used consensus mechanisms on public blockchains, while private protocols may employ still others. The consensus mechanism employed by a particular blockchain has implications for its accessibility, transaction speed, security and scalability.

Bitcoin, for example, is based on a proof-of-work blockchain, as is ether (though ether is transitioning to proof of stake). A proof-of-work protocol is executed by miners—decentralized nodes on a network composed of high-powered computer rigs—that race to be the first to solve a laborious mathematical problem and in doing so confirm the legitimacy of a new batch of transactions, or a "block." That block is added to the chain of previously validated blocks, and the resulting immutable blockchain is maintained by all network participants. Proof-of-work blockchains are designed to release new blocks at specific intervals, and the difficulty of the proof is geared to the amount of computing power on the network at the time it is released, which preserves these timing intervals (and thus new supply) and prevents malicious actors from interfering. In the case of bitcoin, the winning miner of each new block is awarded a batch of fresh bitcoin at a rate that halves after every 210,000 blocks that are mined. With the most recent "halving" in May 2020, bitcoin miners receive 6.25 bitcoins per new block; the next halving is expected in 2024.[18]

Proof-of-stake blockchains remove the competitive element—and reduce the astounding energy consumption (see text box on page 7)—that characterizes the proof-of-work protocol. Rather than an assortment of unaffiliated miners racing to brute-force their way through computational challenges, proof-of-stake blockchains—which include polkadot and cardano—have "validators," or network participants who are randomly selected to verify and approve transactions as needed. Validators receive network transaction fees for providing this service and risk losing their stake—the crypto tokens they have anted up to participate in the proof-of-stake blockchain—if they act maliciously or incompetently.

Bitcoin: Money, Investment Asset or Something Else Entirely?

Thus far, bitcoin and other similar cryptocurrencies have faced significant barriers in meeting the three functions of money.

Money in the traditional sense—issued by central banks for use by financial institutions, businesses and the public—serves three primary functions, acting within a jurisdiction as 1) a medium of exchange, 2) a common unit of account and 3) a store of value. Currency supply management is an important tool for central banks in pursuit of public policy objectives.[19] Since the end of US dollar convertibility to gold in 1971, government-issued currencies effectively have been backed by fiat (from the Latin meaning "let it be done"), or authoritative decree. In other words, fiat currency is money because the government says it is money; it has no intrinsic value, nor does it represent the promise of exchange for an underlying commodity.

Thus far, bitcoin and other similar cryptocurrencies—most of which are uncollateralized—have faced significant barriers in meeting the three functions of money. Though acceptance continues to ramp up, only a limited number of businesses and individuals have transacted with crypto directly, undermining claims on being a common medium

18. Source: CoinDesk; as of July 10, 2020.
19. Source: Bank for International Settlements; as of March 1, 2020.

of exchange. Further, blockchain-based systems are notoriously slow to perform transactions, a significant drawback for retailers accustomed to the near-instantaneous response of legacy systems. Visa and Mastercard are capable of executing 65,000 and 45,000 transactions per second, respectively; at 1,700 transactions per second, ripple is the fastest cryptocurrency, while bitcoin can only process seven per second.[20]

The valuation of bitcoin and other prominent free-float cryptocurrencies relative to established fiat currencies is too volatile at this point to imagine that either businesses or individuals would embrace bitcoin as a mainstream unit of account. Exhibit 2 depicts the wild fluctuations in the price of bitcoin during 2021, which already has seen the cryptocurrency experience four massive selloffs even as it set a series of new all-time highs. It's hard to imagine retailers or consumers adjusting to this sort of currency volatility as they seek to set the price of goods or to compare prices among competing merchants. In contrast, the Federal Reserve considers an average inflation rate of 2% over time to represent the "price stability" it is Congressionally mandated to seek.

Exhibit 2. A Series of New Highs—and a Series of Collapses—for Bitcoin Prices in 2021

Source: CryptoCompare; data as of May 19, 2021.
Past performance does not guarantee future results.

The dynamics that in recent years have led many to question bitcoin's suitability as a currency—massive price volatility chief among them—are likely among the drivers of its popularity as a vehicle for speculation, particularly in a quarantine environment marked by stimulus-supported household incomes (in the US, at least) and limited outlets for discretionary spending. Further, it's likely not a coincidence the latest surge in bitcoin prices occurred at the same time that very low interest rates also inspired investors to roll the dice on concept stocks, initial public offerings and special-purpose acquisition companies (SPACs)—not to mention the so-called "meme stocks" fueled by chatter on sites like Reddit. As we have seen repeatedly throughout history, the fear of missing out (FOMO) can be a powerful motivator for investors.

20. "The Future of Payments, Series II: When Digital Currencies Become Mainstream," Deutsche Bank Research (February 2021).

The Externalities of Bitcoin Mining

Coincident with the mainstreaming of cryptocurrencies has been an increased emphasis on environmental, social and governance (ESG) considerations as part of the decision-making processes of consumers and investors. For some, the ESG concerns attendant with certain types of crypto may conflict with their desire to participate in this burgeoning technology.

The inefficiencies and redundancies essential to the maintenance of the proof-of-work blockchains and the mining of new coins are the primary sources of its security; the massive operational expenses associated with bitcoin mining—in terms of both computer hardware capital expenditures and ongoing energy costs to run and cool that hardware—serve as an economic disincentive for malicious entities that may seek to undermine the network while also reinforcing bitcoin's aura of scarcity and thus its claim on being a potential store of value. The energy intensity of the mining process has raised some startling comparisons from a sustainability perspective, however. According to the Cambridge Centre for Alternative Finance (CCAF), bitcoin mining consumes nearly 119 terawatt hours annually; were bitcoin a country, that rate of electrical consumption would rank it 27th in the world, between Malaysia and Sweden. The CCAF also found that while a significant majority of blockchain participants employed renewable energies as part of their mix, the share of renewables in total consumption was only around 39%.[1]

(We should note that proof-of-stake blockchains, for which the computational complexity of the consensus mechanism is low and insensitive to scaling, consume energy at a rate several orders of magnitude less than proof-of-work blockchains. Some have argued that such networks are less secure as a tradeoff, but this point is contested by other members of the crypto community.[2])

Because of the energy intensity of bitcoin mining, access to cheap and reliable electric power has a significant impact on a miner's bottom line; as such, mining "pools" often are drawn to parts of the world able to offer it. This has notably included China, which accounts for nearly two-thirds of bitcoin's global hashrate, or the volume of computing networking power devoted to bitcoin mining. More than one-third of this Chinese mining occurs in Xinjiang, which is home to abundant, cheap coal—and concentration camps that imprison more than one million Uighur Muslims. The human-rights abuses taking place in the region raise significant ethical and regulatory risks across products produced there; earlier this year, for example, US Customs and Border Protection instituted a ban on the imports of all cotton and tomato products from Xinjiang. For bitcoin to overcome its reputation as an environmental and social scofflaw, we believe its mining footprint must be diversified to include a greater percentage of jurisdictions with reasonable regulatory protections, respect for personal liberties and more environmentally friendly energy sources.

Until then, however, the bitcoin backdrop may represent a conundrum for investors sensitive to the ESG impacts of their holdings—and not only as it relates to direct ownership of crypto. Consider a company like automaker Tesla, which is focused on the production of zero-emission transport electronic vehicles. "The very purpose of Tesla's existence is to accelerate the world's transition to sustainable energy," begins its 2019 Impact Report, though that proclamation may be difficult to square with the company's very public—and potentially very profitable—embrace of bitcoin and other forms of crypto. Though Tesla recently suspended the use of bitcoin to purchase its vehicles, citing environmental-impact concerns, it will continue to hold it in its treasury.[3] And as noted on page 4, Tesla is not the only public company that has gotten into the crypto game and all that comes with it.

1. Source: Cambridge Centre for Alternative Finance; data as of May 21, 2021.
2. Johannes Sedlmeir, Hans Ulrich Buhl, Gilbert Fridgen, et al. "The Energy Consumption of Blockchain Technology: Beyond Myth," *Business & Information Systems Engineering 62* (2020).
3. Source: CNBC; as of May 12, 2021.

"HODLing" Through the Volatility

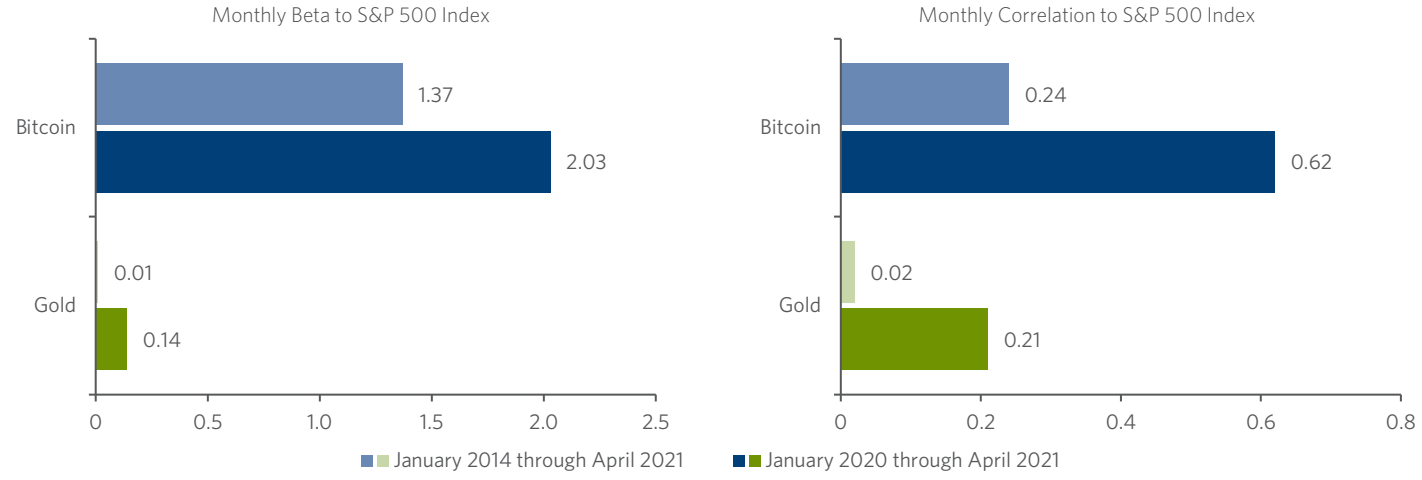
In addition to its speculative allure, a new narrative for the utility of bitcoin appears to have taken root in the aftermath of the pandemic: bitcoin as a store of value and potential hedge against inflation and the debasement of fiat currency in the face of trillions of dollars of government stimulus. In considering bitcoin through this lens, investors are in some cases weighing the mostly theoretical benefits of a 12-year-old cryptocurrency against those gold has offered for millennia.

Bitcoin's trading behavior, notable for its large short-term swings in market prices, has more in common with a high-risk growth stock than a traditional perceived "safe haven."

While the argument in favor of bitcoin as a store of value is bolstered by its inherent supply limitations, it does not yet trade like a conventional store of value. In fact, bitcoin's trading behavior has more in common with a high-risk growth stock than a traditional perceived "safe haven," with large swings in market prices often driven by speculative reactions to a news headline or a random social media post. Momentum cuts both ways, of course. As we have seen in the past few weeks, cryptic tweets from the likes of Elon Musk can call forth the bitcoin bulls for no discernible fundamental reason—and send them running away just as quickly. Further, the prevalence of bitcoin "whales"—wallets with 1,000 bitcoins or more—presents an opportunity for large holders to have an outsized influence on movements in crypto prices through their buy and sell decisions.

With annualized volatility of around 75% since the start of 2013, bitcoin is far more volatile than other assets that may be looked to in times of tumult, such as gold (14.8%) or short-term Treasuries (0.04%).[21] Moreover, as shown in Exhibit 3, the beta and correlation of bitcoin to the S&P 500 Index has increased as the asset has grown in popularity, suggesting bitcoin is highly sensitive to the systematic risks faced by equity markets and may have limited utility as a diversifying complement to broad-based portfolios. Gold, in contrast, has maintained a relatively low beta and correlation to equities even during the current period in which cross-asset correlations in general have been biased higher.

Exhibit 3. Bitcoin's Ties to Equity Market Performance Have Increased



Source: FactSet; data as of April 30, 2021.
Past performance does not guarantee future results.

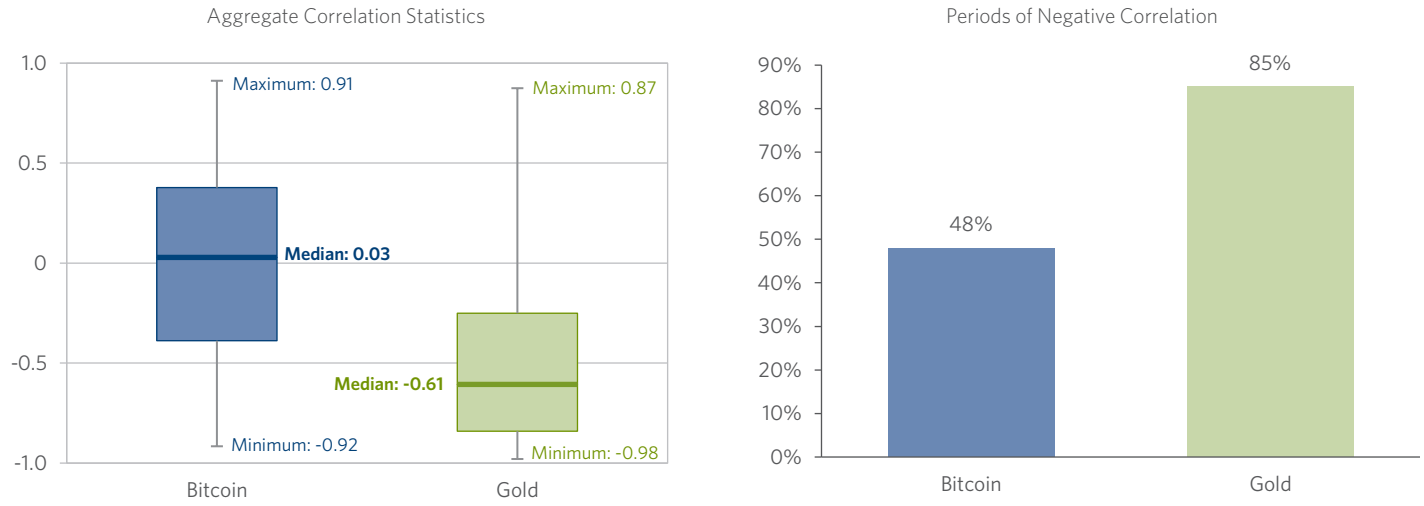
Bitcoin's performance relative to real interest rates (i.e., the difference between nominal interest rates and inflation) also calls into question its use case as a store of value at this point in its development. An effective store of value would be expected to mitigate the deleterious impact of inflation on purchasing power; that is to say, it would demonstrate a persistently negative correlation with real interest rates. For example, the price of gold, despite some lead/lag effects, generally has moved higher when real interest

21. Source: FactSet; data as of April 30, 2021.

rates were in decline and vice versa. Exhibit 4 depicts rolling 30-day correlations of gold and bitcoin vis-à-vis real interest rates (as proxied by the yield on 10-year US Treasury inflation-protected securities) since 2014; as shown, gold's median correlation to real interest rates in these periods—representing 1,884 unique observations—was -0.61 compared to 0.03 for bitcoin. Moreover, gold's correlation has been more consistently negative over time, demonstrating an inverse relationship in 85% of the measurement periods.

Exhibit 4. Gold Has Had a Stronger, More Consistent Inverse Relationship with Real Interest Rates

30-Day Rolling Correlations to the Yield on 10-Year US Treasury Inflation-Protected Securities, January 1, 2014, through April 30, 2021

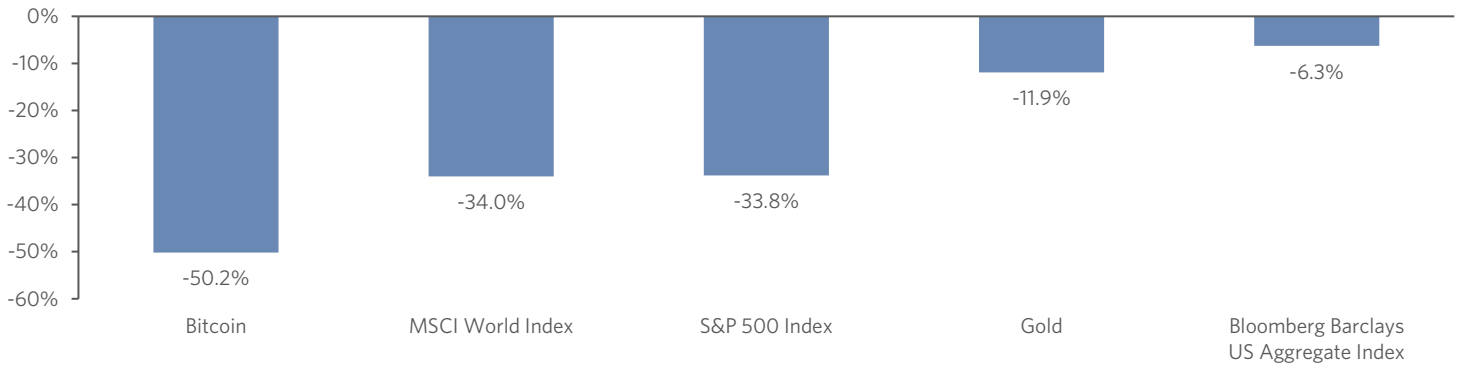


Note: Gold performance represented by continuous gold futures contracts on the New York Mercantile Exchange.
Source: FactSet, Bloomberg; data as of April 30, 2021.
For illustrative purchases only. **Past performance does not guarantee future results.**

When it comes to periods of extreme market duress, bitcoin's youth limits our ability to compare its performance against other asset classes to a single significant episode: the selloff related to Covid-19 in first quarter 2020. As shown in Exhibit 5, bitcoin's performance does not compare favorably as a potential "safe haven" during financial market turbulence; notably, the drawdown period depicted includes a staggering 39% single-day loss. Of course, investors with the foresight to "HODL"—crypto slang for "hold on for dear life"—saw massive gains over the next 12 months, but such faith in an untested asset amid a global pandemic was a tough ask.

Exhibit 5. Bitcoin Suffered Deepest Drawdown During Covid-19 Selloff

Maximum Drawdown from February 19, 2020, through March 23, 2021



Note: Gold performance represented by continuous gold futures contracts on the New York Mercantile Exchange.
Source: FactSet; data as of March 31, 2021.

Cryptocurrency Risks: Dimensions to Be Determined

With the oldest cryptocurrency in existence not yet a teenager, it should come as no surprise that the boundaries of the digital currency playing field are still being drawn. As the market and regulatory framework for cryptocurrencies matures—and the involvement of national monetary authorities and other government policy makers increases—the value proposition of bitcoin and others is likely to change. For all the appeal that bitcoin's limited supply may have, it won't protect the currency from potentially onerous regulations or from being supplanted at the top of the crypto heap by any of the thousands of other currencies in existence or yet to emerge.

While the regulatory framework supporting crypto remains somewhat murky, efforts are underway to harmonize the rules governing crypto assets with those of more mainstream assets.

Regulatory and taxation uncertainty. The more scalable a blockchain network becomes, the greater the centralization and institutionalization that appears to be required of it. The still-novel cryptocurrency ecosystem poses a variety of challenges to national regulators seeking to stymie financial crime, protect consumers and investors, and avoid market instability. While the regulatory framework supporting crypto remains somewhat murky and bifurcated by domicile at this point, efforts are underway in many economies to harmonize the rules governing crypto assets with those of more mainstream assets. Of course, new rules come with attendant costs of enforcement and risk of noncompliance, and potentially the loss of anonymity treasured by crypto adherents; all of these may impact the appeal of crypto ownership going forward.

In the US, the Commodity Futures Trading Commission (CFTC) in 2014 declared virtual currencies like bitcoin that originate within a decentralized network to be a "commodity" subject to its oversight. But the CFTC generally limits its oversight to policing fraud and manipulation in the cash and spot markets and in the derivatives markets.[22] In contrast, crypto that is released by individuals or companies is generally considered a security that is regulated by the Securities and Exchange Commission (SEC).

The line between crypto as a commodity and crypto as a security remains a source of debate.

The line between crypto as a commodity and crypto as a security remains a source of debate, however, and has resulted in a number of enforcement actions by the SEC. In late 2020, for example, the SEC sued Ripple Labs, alleging that the sale of its digital token XRP represented the distribution of an unregistered security, a characterization the company disputes.[23] The CFTC, however, says that it coordinates its approach to bitcoin and other virtual currencies with the SEC and other federal regulators, including the FBI and the Justice Department's Financial Stability Oversight Council.

In addition to the CFTC, the SEC and the Treasury Department, the Internal Revenue Service is likely to be among the numerous US government stakeholders with an interest in how cryptocurrency rules and regulations evolve. Cryptocurrencies currently are considered property by the IRS and thus their sale or exchange is subject to capital gains taxes, just like a stock or bond investment; notably, a gain or loss is realized when using crypto to pay for goods and services. With no legally required third-party reporting requirement for crypto transactions—such as the 1099 statement provided by brokerages—the onus of recordkeeping is on the taxpayer, with potentially serious implications for noncompliance.

China's attitude toward crypto has been a bit of a moving target. Despite being the largest domicile for crypto mining by far, China in recent years has taken steps to discourage the practice and some regions within the country—including Inner Mongolia—have banned it outright. The People's Bank of China (PBOC) over the years has issued a variety of mandates to control the spread of crypto among the populace—including prohibiting ICOs, banning citizens from exchanging cryptocurrency for yuan and shutting down domestic cryptocurrency exchanges—citing concerns about financial stability. While April comments from a senior PBOC official referring

22. Source: Commodity Futures Trading Commission; as of January 4, 2018.
23. Source: CNBC; as of April 30, 2021.

to bitcoin and stablecoins as "investment alternatives" was interpreted by some as a positive tonal shift, May saw Chinese regulators further tighten restrictions on crypto dealings by financial institutions and payment companies.[24, 25]

While there is much to be said about the benefits of first-mover advantage and the network effects that often accompany it, history is littered with examples to the contrary.

Displacement risk. Bitcoin remains the largest cryptocurrency even as the market has grown exponentially—bitcoin's market cap is more than twice that of closest competitor ether and nearly 11 times that of third-place tether. As shown in Exhibit 6, however, market dominance can change rapidly in this volatile market; bitcoin was the only game in town not so long ago, and its current market share of 41% is down sharply from 71% at the start of 2021.[26] While there is much to be said about the benefits of first-mover advantage and the network effects that often accompany it, history is littered with examples to the contrary, especially in the technology space: Think of social media (Facebook versus MySpace) or search engines (Google versus WebCrawler and Lycos) or, going back a bit, television recording devices (VHS versus Betamax). As the definition of cryptocurrency broadens further to encompass a wider array of digital assets with different utilities, the market is likely to become even more diffuse.

Exhibit 6. Bitcoin's Crypto Market Dominance Has Fluctuated Over Time

Percentage of Total Cryptocurrency Market Capitalization, January 1, 2014, through May 19, 2021

Source: CoinMarketCap; data as of May 19, 2021.

The biggest challenge to the broad acceptance of cryptocurrencies like bitcoin may come from major central banks.

The biggest challenge to the broad acceptance of cryptocurrencies like bitcoin may come from major central banks. Viewing crypto as a potential threat to financial stability and the ability to conduct monetary policy effectively, central bankers would seem unlikely to allow privately controlled cryptocurrencies to displace money, digital or otherwise. More than 60 central banks are at the very least considering some form of digital currency of their own.[27] In addition to the lower costs and higher efficiencies associated with digital currencies in general, central bank digital currency (CBDC) has the advantages of the imprimatur of its government, established regulatory frameworks and easy integration into existing banking and payment systems, while also allowing policy makers to maintain control over its supply and administration.

- In October 2020 the Bahamas launched the world's first CBDC—the sand dollar, which is pegged one-to-one with the Bahamian dollar. The currency was intended to support the un- and under-banked population of the Bahamas, as many of its 700 islands are sparsely populated and unprofitable for commercial banks to provide service.[28]

24. Source: CNBC; as of April 19, 2021.
25. Source: Reuters; as of May 19, 2021.
26. Source: CoinMarketCap; data as of May 19, 2021.
27. Source: *The Wall Street Journal;* as of April 5, 2021.
28. Source: International Monetary Fund; as of March 2021.

- The Federal Reserve Bank of Boston has been working with the Massachusetts Institute of Technology on a project that could evolve into a digital dollar sometime in the future, with plans to reveal its initial research to the public in July 2021.[29] This is consistent with rhetoric out of the executive branch of the government, where Treasury Secretary Janet Yellen has publicly sounded the alarm on bitcoin—citing its inefficiency as a transaction mechanism, energy consumption and price volatility, among other concerns—while also offering support for a Fed-maintained digital dollar.[30]
- The European Central Bank recently published the results of a public survey about a potential digital euro, which one executive board member said could be ready for launch within about five years.[31] The Bank of Japan in April began to study the feasibility of its own digital currency, though the central bank's official stance is that it currently has no plan to issue CBDC.[32]
- The PBOC has been testing a digital version of its yuan—the e-CNY—with retailers in certain cities, including Shenzhen and Beijing. China hopes to make the e-CNY more widely available in conjunction with the Beijing Winter Olympics in 2022.[33]
- India appears poised to take what is among the most aggressive national-level stances against private crypto. Policymakers reportedly are preparing to bring a law before parliament that would criminalize a wide range of crypto-related activities—including fines for possession and trading—while establishing the framework for a Reserve Bank of India-backed digital currency. It's estimated that there are around 8 million crypto investors currently in India, holding $1.5 billion worth of digital currencies.[34]

Cybersecurity. While it's believed that the cryptographic security of blockchains renders them exceedingly difficult, if not impossible, to manipulate, the same cannot be said of cryptocurrency exchanges and individual holders, many of whom have had their vulnerabilities exploited by hackers or simply lost track of their crypto.[35] A number of the largest bitcoin exchanges have lost customers' private keys or had them stolen. This includes the now-defunct Mt. Gox, which prior to filing for bankruptcy in 2014 handled an estimated 70% of all bitcoin transactions. In its bankruptcy filing the company acknowledged that 850,000 bitcoins—worth $450 million at the time and around $48 billion now—under its watch could not be accounted for; 650,000 of these remain missing and are assumed stolen. Just two years later in 2016, 120,000 bitcoins were stolen from Bitfinex, which had succeeded Mt. Gox as the world's largest bitcoin exchange.

With crypto serving as the payment method of choice for many online criminals, cybersecurity has become a major concern for policymakers.

A recent task force organized by the Institute for Security and Technology (IST) brought to the White House in late April a docket of recommendations intended to combat ransomware, including methods to regulate and monitor cryptocurrencies that serve as the payment method of choice for such activity. The task force reported that ransomware gangs—some of whom have close ties with nation-states like North Korea and Russia—raised nearly $350 million in 2020, a threefold jump from 2019. More recently, Colonial Pipeline in May 2021 was forced to pay nearly $5 million in bitcoin to hackers in order to recover stolen data and restore the largest fuel pipeline in the US.[36]

The IST task force suggests that crypto exchanges and trading desks should be beholden to the same "know your customer," anti-money laundering and financial terrorism enforcement requirements faced by traditional financial institutions.[37] Sepa-

29. Source: *The New York Times;* as of April 26, 2021.
30. Source: *The New York Times;* as of February 23, 2021.
31. Source: *Financial Times;* as of April 14, 2021.
32. Source: Reuters; as of April 5, 2021.
33. Source: CNBC; as of April 18, 2021.
34. Source: *The Indian Express;* as of April 23, 2021.
35. "Cryptocurrency: The Economics of Money and Selected Policy Issues," Congressional Research Service (April 2020).
36. Source: Bloomberg; as of May 13, 2021.
37. "Combating Ransomware," Ransomware Task Force, prepared by the Institute for Security and Technology (April 2021).

rately, it was reported in May that Binance, the world's largest crypto exchange, was under investigation by the Justice Department and the IRS under suspicion of money laundering and tax offenses.[38]

The European Union is ahead of the US in these efforts. The 5th Anti-Money Laundering and Counter Terrorist Financing Directive, enacted in early 2020, defined crypto businesses as "obliged entities" subject to the same anti-money laundering rules as traditional financial institutions. More recently, a Markets in Crypto-Assets (MiCA) proposal was introduced, seeking to create an all-encompassing structure to regulate a broad swath of activities in crypto assets at the EU level, including issuance, trading, standardized definitions and more; currently, rulemaking is conducted country by country.[39]

Conclusion

As a cryptographic innovation, bitcoin was a groundbreaking step; the blockchain's ability to validate a transactional ledger through a decentralized network of servers—free from a single, central counterparty—was a true innovation. Bitcoin's lasting utility remains uncertain, however, and investors considering it as a strategic long-term allocation must be confident that it will not be supplanted by another digital currency or regulated out of usefulness and that its volatility will moderate over time.

Earlier we noted that we believed bitcoin could best be described as an option on becoming digital gold. From this perspective, it's hard to argue that bitcoin's current price levels represent an attractive entry point, even after the recent pullback; in fact, it's easier to argue that markets have already begun pricing bitcoin as if it had already become a form of digital gold. That said, the choice between digital and traditional assets as a potential hedge in investment portfolios doesn't need to be a binary one. Over time, bitcoin—or some other cryptocurrency—could evolve into a complementary store of value alongside gold; conventional ovens didn't go out of existence after the invention of the microwave, after all.

We'll continue to keep a close eye on crypto assets for signs of maturation. In the meantime, we are comfortable that a strategic allocation to gold represents the most compelling form of potential hedge against both the seen and unseen risks facing investment portfolios.

All that Glitters...

At First Eagle, we seek a strategic allocation to a long-duration potential hedge that we believe can provide portfolios with a source of resilience in a wide variety of adverse circumstances—including both inflationary and deflationary environments as well as equity bear markets—while also supporting real purchasing power across market cycles. For us, gold has best met this need.

Gold has served as a store of value for millennia, and its unique risk-return characteristics have enabled it to maintain its real purchasing power over time across disparate macroeconomic environments and through numerous existential threats, providing investors a perceived "safe haven" in difficult times. We believe gold's proven ability to maintain its purchasing power over the long term combined with its countercyclical price dynamics, versatility, resilience and long duration make it the most compelling form of potential hedge against both the seen and unseen risks facing equity portfolios.

For more of our views on gold and gold-related securities, please see our paper "A Prudent Defense: Gold as a Potential Counterweight to Equities" as well as a variety of other insights on feim.com.

38. Source: Bloomberg; as of May 13, 2021.
39. Source: CoinShares Research; as of March 9, 2021.

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The **S&P 500 Index** is a widely recognized unmanaged index including a representative sample of 500 leading companies in leading sectors of the U.S. economy. Although the S&P 500 Index focuses on the large-cap segment of the market, with approximately 80% coverage of U.S. equities, it is also considered a proxy for the total market.

The **MSCI World Index** captures large and mid-cap representation across 23 developed markets countries. The index covers approximately 85% of the free float-adjusted market capitalization in each country.

The **Bloomberg Barclays US Aggregate Bond Index** is a broad-based benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market.

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