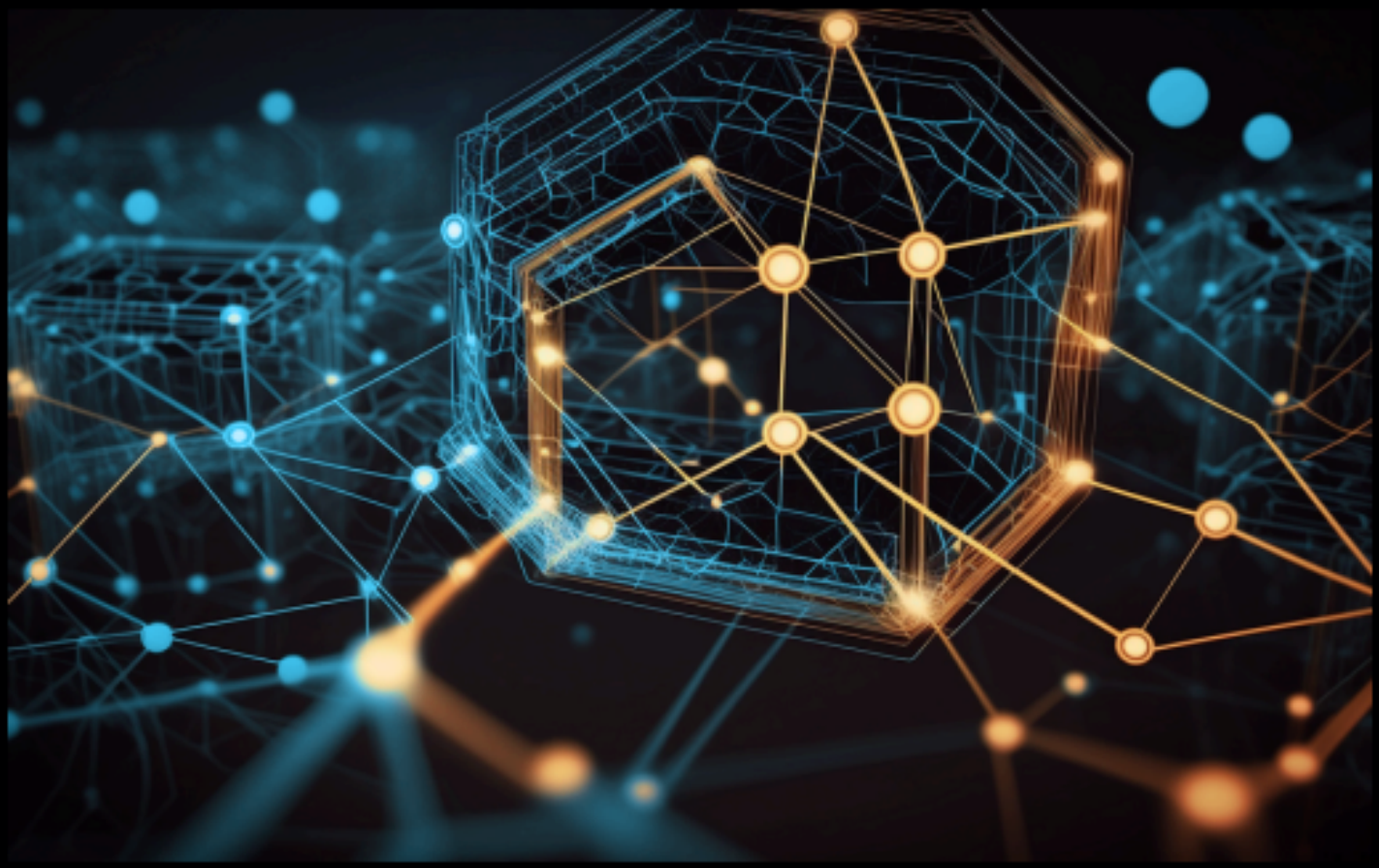
DIGITAL ASSETS LAWS & REGULATIONS

FACTORS MOTIVATING THE INSTITUTIONALIZATION OF CRYPTOCURRENCIES

15 December 2025



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Overview

Abstract

Cryptocurrencies and the crypto ecosystem are undoubtedly a permanent feature of the modern financial system, and the innovations introduced are undeniably transformational. It seems inevitable that the digital economy is here to stay and that much of the crypto ecosystem will come to dominate the way payment systems, commercial transactions, and many other components of the financial system are structured and operated. That said, there are many unknowns.

Introduction

In 2023, many financial advisors were hesitant to recommend allocations to digital assets, such as bitcoin and Ethereum, in client portfolios. A key concern was custody, especially after the 2022 publicity surrounding the fraud at the FTX cryptocurrency exchange,1 which promised investors that their crypto assets would be segregated from the assets of the exchange.

Before the launch of exchange-traded funds (ETFs), which employ professional custodians, investors had two choices for custody. Many investors used the default option of holding assets on a centralized exchange, such as Coinbase, Kraken, Binance, or Crypto.com. Unfortunately, there is a history of exchange thefts and failures from Mt. Gox to FTX.2 Investor holdings on an exchange may be held in a com- mingled pool, with the only records of investor ownership maintained by the exchange. If the exchange fails, has a cybersecurity incident, or is subject to theft by insiders, investors can lose all their cryptocurrency holdings.

Investors can choose to self-custody rather than hold their digital assets on a centralized exchange. In a self-custody arrangement, the investor’s ownership of digital assets is recorded on the blockchain, with the investor responsible for keeping track of the wallet address and its password, known as a private key. If the investor uses a phone, computer, or blockchain hardware wallet to hold the private keys, there is the potential of losing access to the digital assets if the device is lost, stolen, or destroyed, or the password is lost. If the device owner dies without informing heirs of the device and its access procedures, the value of the digital assets is lost. In the self-custody world, private key access cannot be restored after it has been lost.

It became much easier for financial advisors to recommend crypto currency assets to clients in 2024, when the U.S. Securities and Exchange Commission (SEC) approved ETFs holding spot bitcoin and Ethereum tokens. Rather than facing the choice of holding digital assets on an exchange or in self-custody, investors can delegate the custody to the professional custodian hired by the ETF manager. ETFs are traded on a stock exchange and held in a brokerage account, which has clear procedures for password recovery and inheritance by beneficiaries.

The ETFs have proved popular, with U.S.-based spot bitcoin and Ethereum ETFs holding more than $100 billion[3] and $10 billion,4 respectively, at the end of 2024. BlackRock's iShares Bitcoin ETF (IBIT) attracted $10 billion in its first two months, the only ETF ever to raise that amount of capital so quickly.5 When the SEC allowed spot crypto ETFs to be created, it may have increased the credibility of crypto as an asset class, especially among institutional investors.

The 2017 launch of bitcoin and Ethereum futures traded on the CME, the world's largest futures exchange, and the 2024 launch of spot bit- coin and Ethereum ETFs in the United States accelerated institutional investment in digital assets. The availability of options on futures and ETFs increases the flexibility of investment strategies and may further increase institutional holdings. In the second quarter of 2024, nearly 1,200 professional investment firms filed a form 13F with the SEC detailing holdings of spot bitcoin ETFs, a 28-percent increase from the prior quarter. Those professional investors held more than 21 percent of the shares of U.S.-listed bitcoin ETFs.6

Nevertheless, data on holdings of crypto assets by pension funds, endowments, and foundations is scarce, and what data there is suggests that holdings by such institutions are very low, most likely less than 1 percent. In recent years, Fidelity has conducted a number of surveys to assess trends in the institutional ownership of digital assets . The 2023 survey7 queried a total of 1,042 investors across investor types, both tax- able and tax exempt. The survey found that holdings among high-net- worth individuals, financial advisors, and family offices were high at 60 percent, 65 percent, and 38 percent of those surveyed, respectively, while only 5 percent of the pension funds and 10 percent of the endowments and foundations surveyed held crypto assets. However, this sur- vey occurred prior to the listing of the crypto-based ETFs in 2024, which likely has increased allocations across investor types. We discuss issues behind crypto adoption by institutional investors in more detail below in the section "Factors Affecting Cryptocurrency Adoption."

The value of global alternative investments continues to climb, including private debt ($1.8 trillion),8 private equity ($8.2 trillion),9hedge funds ($4.3trillion),10 physical gold investments ($5 trillion),11 and real estate investment trusts ($4.5 trillion).12 With digital assets and cryptocurrencies valued at more than $3 trillion at the end of 2024 and given the ease of access to exchange-traded bitcoin and Ethereum funds, which employ professional custodians, it should benefit advisors to become conversant with the investment case for digital assets.

Web 1.0, Web 2.0, and Web 3.0

Understanding the value of cryptocurrencies and digital assets requires an understanding of Web 3.0, which requires an understanding of Web 1.0 and Web 2.0.

The internet dates to the late 1960s, when universities funded by the Advanced Research Projects Agency Network (now the Defense Advanced Research Projects Agency) started building an electronic communication system. The Transmission Control Protocol (TCP) and the Internet Control Protocol (IP), together TCP/IP, were launched at Stanford University in 1975.1[3] The Simple Mail Transfer Protocol (SMTP) was developed in the 1980s. Finally, the Hypertext Transfer Protocol (HTTP) was developed at the European Organization for Nuclear Research(CERN) in 1989.14 Together, these protocols paved the way for Web 1.0, the read-only internet that gained mass adoption in the 1990s.Initial applications of the internet included email and static content provided by publishers such as newspapers.

It is important to note that the initial inventors of internet protocols were employed largely by universities and governmental agencies and did not seek to monetize their contributions to the revolution in global telecommunications. That is, viewing web pages using HTTP and sending emails using SMTP generally were free, because the inventors chose not to charge a minimal fee for the use of their protocols. This leads to the fat protocol thesis from Union Square Ventures.15 Because there was a minimal cost to operating the protocol layer, most of the value created by the internet accrued to the application layer, enriching such giants as Alphabet/Google and Meta/Facebook, valued at $2.1 trillion and$1.7 trillion, respectively, in the second quarter of 2025.

Although Web 1.0 was generally read-only, the widespread adoption of social media and YouTube ushered in Web 2.0, where internet users created their own content. Services offered by Google, Facebook, and other web giants were free to users, which required the companies to build a revenue model to support massive data centers and build profit-able companies. Advertising generates revenues, often by utilizing user data.

The more targetedthe advertising, the more revenuethe advertis- ing generates. Both U.S. and European regulators have issued multiple rounds of fines and sanctions for Google and Facebook based on privacyviolations and anticompetitive monopoly practices.16.

The era of digital currencies, advanced by the pseudonymous Satoshi Nakamoto's Bitcoin white paper in 2008,17 ushered in the age of Web 3.0. Internetentrepreneur and investorChris Dixon callsWeb 3.0 the read- write-ownversion of digitalcommunications and valuetransfer (Dixon 2024). The concept of bitcoin as peer-to-peer digital cash was designed to disintermediate centralized counterparties such as commercial banks, central banks, and, ultimately, the corporate giants of the internet.

The fat protocol thesis notes that the economics of the blockchain- based ecosystem in Web 3.0 are the opposite of that found in Web 2.0, because most of the money is earned by the protocol layer, while the applications layer has yet to gain substantial market capitalization. In the third quarter of 2024, the entire eco system of more than 12,000 cryptocurrencies and digital assets was valued at $2 trillion.18 Most of the market capitalization was held in proto- cols designed to store and process transactions, including Bitcoin ($1.1 trillion), Ethereum ($300 billion), Binance (BNB, $77 billion), and Solana ($63 billion). That is, more than 75 percent of the entire market capitalization of the digital asset universe was held in just four protocols or layer-one blockchains. Contrast these fat protocol valuations with the valuations of the thin applications, including Chainlink ($7 billion), Uniswap($5 billion), Filecoin($2 billion), and Aave ($2 billion).

The plumbing of the internet (TCP/IP, SMTP, and HTTP) earns little to no revenue; however, the plumbing of the blockchain earns substantial revenues. That is, layer-one blockchains such as Bitcoin and Ethereum charge or earn substantial fees, paid to the miners and validators, for facilitating transactions and storing balances and trans- action information. With a block reward of 3.125 bitcoins each 10 minutes,bitcoin miners are expected to earn $14.7 billion in 2025 (3.125 bitcoin × $90,000 per bitcoin × 6 transactions per hour × 24 hours per day × 365 days per year). Validators on the Ethereum network, which both process transactions and provide substantial computing power to pro- cess smart contracts on the Ethereum virtual machine, earn a variable annual staking yield of 4 percent on the 27.7 percent of Ethereumtokens that have been staked.19 This provides an annual income of approximately $3.3 billionto Ethereum validators (27.7 percent × $300 billion × 4 percent).

Blockchain Technology

The Bitcoin blockchain started as a way to create and transfer peer-to-peer digital cash. Rather than relying on centralized counterparties such as banks, blockchain technology is used to secure and track transactions on a distributed ledger. Thousands of computers in dozens of countries keep records of all transactions and account balances, reducing the risk of the failure of a single bank or changes in government regulations. When thousands of computers are used to track and secure transactions, modifying or counterfeiting transaction records becomes computationally infeasible. Distributed ledger technology has the greatest potential value in countries with fragile banking systems or governments that restrict citizens from certain financial transactions, especially the export of capital.

Blockchain technology can be used to track the flows, transactions, and provenance of any asset. The earliest applications were cryptocurrencies, such as bitcoin and Ethereum. In the long run, however, the most important use of blockchain technology may be tracking owner- ship of real-world assets. That is, blockchain technology can be used to track ownership of real estate, automobiles, art, and collectibles, which can be especially valuable in countries that do not have a system of documented property rights. In August 2024, the California Department of Motor Vehicles digitized the titles to 42 million vehicles, with owner- ship recorded on the Avalanche blockchain.20

Theories of Value

Cryptocurrencies are mediums of exchange, and in that sense, they are like fiat currencies. However, unlike fiat currencies, they don’t come with a promise from an issuing government to support their exchange value. In fact, they are fully outside the influence of any government’s controls. One consequence of this is that owners don’t face the inflationary devaluation risk that results from an issuing entity freely printing new money supply when it needs to. Due to the way that the blockchain is set up, cryptocurrencies offer an independent medium of exchange; they can be acquired only from miners, through open market purchases, through a goods or service purchase, as a gift, or by theft—and the total supply of bitcoin is mathematically controlled and capped at 21 million. Given these characteristics, cryptocurrencies have an attributed value as a place to deposit money, a source of liquidity, a method for transferring funds,and a medium for purchases and sales of goods and services—and none of these transactions require paying a fee to an intermediary. However, as mentioned previously, transaction fees are deducted by miners on all bitcoin transactions and by validators on

all Ethereum transactions. These fees are not particularly transparent, vary with the rate of transaction activity, and can be high when the blockchain is congested. Nevertheless, they are still markedly lower than when using traditional payment platforms.

Adding these various factors together motivates the conclusion that cryptocurrencies have an economic value or utility and not just a purely speculative value. The problem is connecting these attributed sources of value to a price and not just a speculative premium.

Fiat currencies themselves are tricky to value. Fundamentally based valuation models for currencies are, at best, long-term equilibrium models. Purchasing power parity specifies that prices of goods across borders should be the same on an inflation-adjusted basis. Other fundamental models link currency value to the macroeconomic characteristics of the issuing country. Other than these long-term models, there are other shorter-term technical models, such as the use of country interest- rate differentials. However, none of these models works particularly well in consistently explaining currency values or changes (Rossi2013).

Cryptocurrencies lack the economic characteristics that support fiat currencies. In particular, cryptocurrencies don't have a yield, so the interest-rate differentials between fixed income yields that are vital to valuing fiat currency pairs can't come into play. Obviously, the more fundamentally based techniques for valuing traditional currencies gen- erally don't apply. The demand/supply flows for cryptocurrency transac- tions are not dependent on the specific cross-border transaction flows of goods and services. They are drivensolely by agent-based preferences for the differentiating characteristics that cryptocurrencies offer within the context of a borderless transaction network.

Advocates contend that the value of cryptocurrencies represents the value of the networks that underlie them. These networks are trans- formative and are changing the way in which commerce is conducted, from what is called the "platform" economy to the "protocol" economy.21 As this shift gains momentum, the demand for cryptocurrencies as the "currency" of exchange on these networks will grow. So, an investment in cryptocurrencies is an investment in these networks. The growth in the use of these networks will translate into greater demand and, there- fore, greater value for the cryptocurrencies, which are the medium of exchange on the networks.

Network theory is an emerging area of economics that recognizes the importance of networks to modern society. Financial systems are net- works that offer externalities that benefit participants, such as access to information about transactions, prices, liquidity, etc. Significant research has been conducted into methods for determining the value of such networks. In 1983, Robert Metcalfe developed a simple mathematical formula for valuing decentralized networks, such as the block- chain. Metcalfe's law states that the value of the network increases with the square of the number of participants, perhaps subject to a time decay. Other network models have been subsequently developed, such as Reed's law (2001) which says networks scale exponentially, and Briscoe et al. (2023) which adjusts for Metcalfe's assumed optimism using $n \times \ln(n)$ as the model (see Peterson [2018] for a good discussion of these models).

An appropriate system for empirically testing Metcalfe's law didn't exist until 2013. At that point, Metcalfe and others empirically tested its effectiveness using the Facebook network as the test case. Metcalfe used his model to successfully fit Facebook's annual revenues during 2004– 2013. This work led him to the conclusion that "Facebook creates much more value than is captured and monetized by Facebook selling ads" (Metcalfe2013).

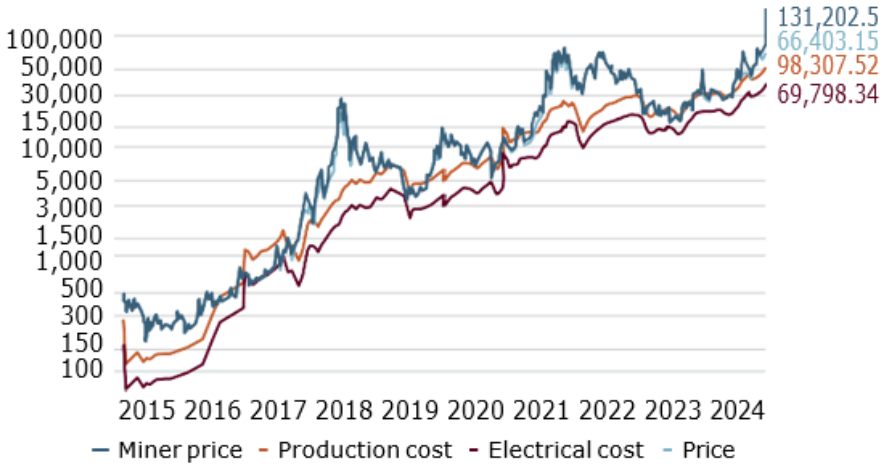
Peterson (2018) evaluated the appropriateness of this law for valuing Bitcoin. Bitcoin transactions began using wallets in 2011. This feature is necessary to accurately identify the number of participants in the network, because every transaction is stored in a participant's wallet. Peterson's study covers the period from the end of 2011,when wallets became fully available, through the end of 2017.

The blockchain does offer various economic externalities that should allow value to accrue to participants. It is a fully transparent system where all transactions are stored in perpetuity. It has other properties that a decentralized system needs to be subject to Metcalfe's law, such as the fact that there is a single medium of exchange and the direct benefit of the transaction value dominates any indirect benefits. Peterson (2018) provides convincing empirical evidence that bitcoin's value does reason- ably follow Metcalfe's law, with the exception of a periodin 2013 when there appears to have been extensive price manipulation of bitcoin in play. Price manipulation is a concern to regulators who seek fair and orderly markets and another reason why regulation has a significant role to play in the value of bitcoin and the blockchain.

A variety of other valuation models are on offer, most of which focus on bitcoin. This bias is driven by the fact that bitcoin has the longest history and is by far the largest and most widely held and traded of the lot. Soni and Preece (2023)takes an interesting approach to determining which possible models to include in the overview. The researchers surveyed a range of crypto professionals and asked them which models they found useful. A model that was highlighted, other than Metcalfe's law, was a cost-of-production model. This model suggests that the price of bitcoin should be determined primarily by the cost faced by miners, which is largely a function of the required energy costs.

This rule was originally proposed in Hayes (2015). In 2019, a team at Cambridge University took on the challenge of refining the data necessary to arrive at a meaningful estimate of the energy costs required for bitcoin production. Capriole Capital since has taken responsibility for maintaining this data and producing figure1, from which you'll see that the cost of production appears to be highly relevant for understanding the valuation of bitcoin; in particular, you'll note that the electrical costs have served as a floor for Bitcoin prices.

FIGURE 1 Bitcoin Production Cost



Source: https://capriole.com/update-49/.

This approach to valuing bitcoin is consistent with the view that bit- coin is inherently a commodity and, like other competitively produced commodities, the price should be driven by the marginal cost of pro- duction. Interestingly in the early days of bitcoin, the ethereal founder, Satoshi Nakamoto, famously said:

The price of any commodity tends toward the production cost. If the price is below cost, the production slows down. If the price is above cost, profit can be made by generating and selling more. At the same time, the increased production would increase the difficulty, pushing the cost of generating towards the price.22

The addressable market model was cited as relevant most frequently among the practitioners interviewed for Soni and Preece (2023). This model is applied when bitcoin is viewed as an alternative form of money—primarily as a medium of exchange or an alternative to gold. The total address-able market model considers the potential value of bitcoin in terms of the percentage of the market against which it is seen as competing. For example, when bitcoin is viewed as a medium of exchange, a measure of the outstanding supply of money, such as M2, is used as the value of the tar- get market, and its value is determined by possible levels of penetration.

For a specific addressable market, the model is given by the following formula:
Level of Penetration × ValueofTarget Market / Fully DilutedSupply

Table 1, taken from Soni and Preece (2023),provides a thorough analysis of the potential values of bitcoin relative to the most salient target markets using the above model.

A more recent value model, a variant on Metcalfe's law, that's getting a lot of attention is the BitcoinPower Law Theory developed by physicist Giovanni Santostasi.2[3] This model quantifies bitcoin's price movement through a purely empirically based fitting exercise, although it is derived from growth models often found in physical and biological systems. The model is as follows:

P(t) = [t /(t – 1)]^5.82,

TABLE 1 Value of Bitcoin at Different Levels of Addressable Market Penetration

ADDRESSABLE MARKET	VALUE ($)	LEVEL OF PENETRATION					
		0.50%	1%	5%	10%	20%	30%
U.S. M2	21,149,000,000,000	$5,035	$10,071	$50,355	$100,710	$201,419	$302,129
Gold	13, 365, 747,545,332	$3,182	$6,365	$31,823	$63,646	$127,293	$190,939
U.S. central bank reserves	11,598,000,000,000	$2,761	$5,523	$27,614	$55,229	$110,457	$165,686
Gold remittances	794,000,000,000	$189	$378	$1,890	$3,709	$7,562	$11,343
Fedwire	1,060,257,294,000	$252	$505	$2,524	$5,049	$10,098	$15,147
Fully diluted supply (number of coins)	21,000,000						

Source: Soni and Preece (2023).

where P(t) is the price of bitcoin and t is the time elapsed since bitcoin's genesis block was mined in January 2009.

Although this model fits the historical data surprisingly well, detractors argue that it is purely a data-fitting exercise and lacks firm theoretical underpinnings.

Importantly, the use of Metcalfe's law, or other network-based valuation models, serves as long-term measures of value and cannot be expected to explain the day-to-day price movements. These are driven by agent-based transactional activity, which will continue to be inherently unpredictable, as for fiat currencies. Prices in the short term will be subject to technical patterns such as trending and reversals and the vagaries of changing agent preferences—especially swings in global risk appetites. The impact of speculative flows likely will continue, with the corresponding implications for volatility (Van Hove 2016).

From this discussion, it should be apparent that the framework for valuing bitcoin depends on how one views its role in our global economic framework. Whether it is viewed primarily as a commodity, an alter- native to gold, a medium of exchange, or a network will determine the approach taken for assessing its value.

It also should be obvious that the models used for bitcoin and other cryptocurrencies are fundamentally different from the models used for stocks and bonds, which typically depend on future cash flows. There are no cash flows associated with cryptocurrencies that can be put into discount models. This is similar to the currency markets. Interest rates are a factor for currencies, but volatility in exchange rates dominates and no cash flows are earned from holding a currency.

This leads to the question of how to form expected returns to use for bitcoin in asset allocation models. There are two approaches that can be considered: (1) average historical returns, which at least provide unbiased estimates under the assumption of stable distributions or (2) one or more of the valuation models discussed to forecast future prices. Some practitioners combine models to come up with an empirically derived factor model, which could include technical models along with the types of valuation models discussed in this section.

Risk and Return of Bitcoin

Bitcoin is the oldest and largest digital asset by market capitalization, rising from a startup protocol in January 2009 to a valuation of more than $2.1 trillion in June 2024. The price of one bitcoin rose from less than $1 in 2009 to $10,000 by January 2018; however, it is unrealistic to assume that its price will repeat that level of success. The price of bitcoin has experienced substantial volatility, large drawdowns, and signs of mean reversion. Since January 2018,the price of one bitcoin has ranged from $10,000 to more than $100,000, but it spent half of that time in drawdowns at least 30 percent below its prior high price and one-quarter of that time in drawdowns exceeding 50 percent. One bitcoin was priced at $20,000 in November 2020, June 2022, and December2022, and $40,000 in February 2021,May 2021, April2022, and December2023, reaching $100,000 for the first time in December 2024.

Despite nearly 74-percent annualized volatility of monthly bitcoin prices, a small allocation to bitcoin, rebalanced monthly, did not substantially change the volatility or drawdown characteristics of a portfolio allocated 60 percent to U.S. stocks and 40 percent to U.S. bonds (see table 2). From January 2018 to March 2024, the 60/40 portfolio earned an average annual return of 7.3 percent with a standard deviation of 11.8 percent and a maximum drawdown of 20.1 percent. Including a 5-percent allocation to bitcoin raised the annual return to 9.4 percent while increasing volatility to 12.8 percent and the maximum drawdown to 22 percent. That is, a small allocation to bitcoin increased annual returns by more than 200 basis points with minimal increases in risk statistics. This is due to the low correlation of bitcoin to stocks (0.37) and bonds (0.20) since 2018 and to the impact of rebalancing the volatile bitcoin allocation on a monthly basis. It is assumed that transaction costs are minimal compared to the large price swings of crypto assets that create rebalancing profits.

Rebalancing is profitable when investors take profits as asset prices rise and repurchase assets as prices fall. Consider November20, 2017, to February 19, 2018, when the bitcoin price rose from $9,330 to $9,664, leaving buy-and-hold investors with a return of 3.6 percent. Investors rebalancing bitcoin during this period had a number of weekly opportunities to sell bitcoin between$15,000 and $19,000,and a subsequent opportunity to repurchase bitcoin below $8,200. Consider an investor owning one bitcoin and wishing to keep a position value of $9,500. At a price of $19,000, the investor sells half of one bitcoin to return the position value to $9,500.When the bitcoin price returns to $9,500, the investor repurchases the previously sold half bitcoin. At the end of the period, the investor is left with one bitcoin worth $9,500 and $9,500 in cash from the sale of the half bitcoin at $19,000. Rebalancing profits are maximized in high volatility assets that have a low correlation to other assets in the portfolio. When a market trends quickly higher, rebalanc- ing can be counterproductive and reduce total returns.

TABLE 2 Impact of Bitcoin Allocation in a 60/40 Portfolio

JANUARY 2018–MARCH 2024	BITCOIN	S&P 500	BLOOMBERG AGG	60/40	1% BITCOIN	2% BITCOIN	3% BITCOIN	5% BITCOIN	10% BITCOIN
Return	33.4%	11.4%	0.6%	7.3%	7.7%	8.1%	8.6%	9.4%	11.4%
Std Dev	73.9%	17.8%	5.7%	11.8%	11.9%	12.1%	12.3%	12.8%	14.6%
Maximum Drawdown	-75.6%	-23.9%	-17.2%	-20.1%	-20.5%	-20.8%	-21.2%	-22.0%	-24.3%

Source: Black, Investing in Cryptocurrencies and Digital Assets (2024a).

When financial advisors do allocate to cryptocurrencies, the recommendation is typically between1 percent and 3 percent, because the portfolio volatility increases quickly after the allocation exceeds 5 per- cent. It is also important to rebalance the allocation to cryptocurrencies, because buying a 5-percent allocation at a trough in crypto prices easily can turn into a 10–15 percental location at the top of the cycle, a level that is above the risk tolerance of most investors.

A contributing factor to the diversifying power of bitcoin holdings is its low correlation to other financial assets. During January 2018–August 2024, bitcoin returns experienced a monthly correlation of 0.17, 0.38, and 0.20, respectively, to gold prices (GLD), the return to the S&P 500 (SPY), and the return to the Bloomberg U.S .Aggregate Bond Index (AGG). Correlations vary widely over time, substantially increasing during the 2020 COVID crisis and again during the market sell-off in 2022, when low correlations were most valued. Because gold has low correlations to U.S. stock prices (0.20) and U.S. bond returns (0.44),both gold and bitcoin holding scan diversify a portfolio of U.S. stocks and bonds (see figures2 and 3).

The history of bitcoin prices has been quite volatile, but volatility has declined substantially since January 2022 (see table 3). If volatility continues to decline and the correlation between bitcoin and stock prices doesn't increase substantially, bitcoin likely will continue to be a diversifying asset that can be added in small amounts to a portfolio of stocks and bonds without significantly increasing portfolio volatility.

It should be noted that no risky asset will provide a hedge against broad-based spikes in market volatility and corresponding increases in investor risk aversion. In such times, correlations among risky assets tend to increase toward 1, and the benefits of diversification are reduced. The market swings of 2021 and 2022 were just such events. All risky assets, including bitcoin and Ethereum, dropped precipitously. This was a period of rising inflation, which added further to the market malaise. Cryptocurrencies did not provide a hedge against the negative impact of these market events—nor did other expected hedges, such as gold and bonds. As highly risky instruments, bitcoin and other cryptocurrencies will be impacted by spikes in risk aversion. The diversification benefits from crypto lie in the fact that very different drivers of supply and demand and factors affect the valuation. None of this matters when risk events dominate market movements and investor sentiment.

TABLE 3 Annualized Volatility of Weekly Returns, January 2018–September 2024

	ANNUAL AVERAGE BITCOIN VOLATILITY	ANNUAL AVERAGE NASDAQ VOLATILITY	AVERAGE ANNUAL GLD VOLATILITY
2015	59.1%	17.9%	14.5%
2016	48.2%	16.0%	16.6%
2017	105.2%	9.6%	11.4%
2018	87.2%	21.8%	8.4%
2019	66.5%	12.9%	10.3%
2020	66.5%	30.3%	21.2%
2021	78.0%	16.3%	12.6%
2022	55.0%	28.8%	14.2%
2023	50.9%	17.6%	13.9%
Q1–Q3 2024	51.4%	19.0%	13.0%

Source: Authors' calculations, Yahoo Finance.

The inflation-hedging character of cryptocurrencies is a frequently discussed issue. It is true that the structure of bitcoin prevents it from experiencing inflationary increases in supply. Also, in contexts where governments decide to radically devalue their currencies, it provides a store of value and protection from the inflationary effects of these devaluations(see “Stablecoins and the Store of Value” below).Nevertheless, any inflation hedging potential crypto may have will be overshadowed by its volatility, which drives markets.

FIGURE 2 Rolling 12-Month Correlation of Gold and Bitcoin Price Returns

Source: Authors' calculations, Yahoo Finance.

FIGURE 3 Rolling 12-Month Correlation of S&P 500 and Bitcoin Price Returns

Source: Authors' calculations, Yahoo Finance.

Stablecoins and the Store of Value

Bitcoin, Ethereum, BNB, and Solana tokens exhibit substantially higher volatility levels than stock market indexes, but not all digitalassets have a similar level of volatility. Stablecoins are designed to track the value of a real-world asset, such as gold, euros, or U.S. dollars (USD). Ideally, stable- coins hold reserves in the assets they are designed to track. Although tokens representing the top four layer-one blockchains comprise 75percent of the market capitalization of the crypto market, stablecoins add an additional $171 billion or 8 percent of the total. That leaves less than 17 percent of the $2-trillion market for the other 12,000 coins outstanding.

USD stablecoins include Tether ($118 billion), USDC ($34 billion), and DAI ($5.3 billion); Tether gold and PAX gold ($1.1 billion combined) track the gold market, and Stasis Euro ($137 million) tracks the euro cur- rency.24 A key application of the cryptocurrency market is cross-border transfers of value and serving as a store of value.

Citizens in countries with weak currencies, such as Venezuela, Zimbabwe, Turkey, and Argentina, are seeking refuge from inflation rates of 50 percent to 200 percent and more. The ability to invest in assets such as dollars or euros outside of their home-country bank- ing systems substantially reduces the impact of expansionary monetary policy and economic weakness. Investors, especially in emerging markets, may find stablecoins a viable alternative to their domestic banking systems, especially given the increased speed and low cost of remittances using stablecoins (see “Factors Affecting Cryptocurrency Adoption” below).

If stablecoins were to pay a yieldto U.S investors, there is a concernthat the SEC may deem them to be a security. Because investors have deposited$118 billion in Tether withoutdemanding to earn a yield, the yield on Tether’s $97.6 billion in Treasury holdings25 creates substantial profitsfor the stablecoin issuer. As a result,Tether reported a net profit of $12.7 billion from Q4 2022 to Q2 2024, largerthan BlackRock’s profit of $9.8 billion.26 AlthoughTether is not a sovereign nation, its Treasuryholdings rank nineteenth globally, with the stablecoin issuer holding more Treasury securities than Germany.27 The lack of yield paid on sta- blecoinsto investors may drive demand for decentralized finance plat- forms that may pay a yield on crypto holdings.

Financial inclusion is still a major problem for much of the developing world, and it is a problem that the crypto industry is well-positioned to resolve. In its 2022 report on financial inclusion, the World Bank reported that 1.4 billion people remained unbanked.28 Of course, the problem is the most severe in the developing world. According to the World Bank's data source, the Global Findex Database, 89 percent of people in high-income economies had accounts with financial institutions, with only 55 percent in East Asia and the Pacific, 45 percent in Eastern Europe and Central Asia, 39 percent in Latin America and the Caribbean, 33 percent in South Asia,24 percent in Sub-Saharan Africa, and 18 per- cent in the Middle East and NorthAfrica.29 There is also a striking gen- der gap, particularly in the developing world, where 46 percent of men but only 37 percent of women have accounts at financial institutions.

Crypto assets and infrastructure are well-positioned to fill this gap, particularly through the stablecoin format. The lack of access to traditional banking services in the developing world has been a result of fac- tors such as the high cost of banking services, difficulties in account opening due to lack of stable income and credit ratings, insufficient proof of address, and inaccessibility of physical bank locations, among others. These factors have made the use of traditional banking services infeasible for the underprivileged, especially in the developing world. The use of crypto assets, especially stablecoins, overcomes all these problems and opens broad access to banking services, such as deposit accounts and money transfers. These services are easily and cost-effectively made available to virtually everyone—provided they have a tool for accessing the internet. The use of stablecoins is clearly of fundamental importance for these services, because the volatility of other types of crypto coins would make them untenable for such
banking applications.

Evolving Global Regulations

Regulation has been a long-term worry for crypto investors, with concerns expressed that regulators might seek to constrain crypto growth, prohibit private crypto transactions, or ban cryptoaltogether. Although these concerns have faded over time, crypto regulation is still very much in its earlystages, and thereis an element of unpredictability regarding how things will play out.

The Atlantic Council's Cryptocurrency Regulation Tracker (AC Tracker), updated in May 2025, looks at the state of play of crypto regulation in sixty countries.[30] It documents that cryptocurrencies are generally banned in eleven countries, partially banned in seventeen, and legal in thirty-three. However, it is interesting to note that even where cryptocurrencies are banned, adoption rates can be meaningful. For example, crypto is officially banned in China, yet adoption rates there are the eleventh highest among the sixty countries in the AC Tracker.

The rapid pace of change in the regulatory framework cannot be overemphasized. In fact, 70 percent of the countries included in the AC Tracker are making substantial changes to their regulatory frameworks. Cryptocurrencies are fully legal in only twelve of the G20 countries, with the remaining members rapidly evolving their regulatory frameworks with the goal of achieving total legality.

Cryptocurrencies constitute an entire global ecosystem of inter- connected businesses. The World Economic Forum issued an interesting white paper on cryptocurrency regulation in 2023, "Pathways to the Regulation of Crypto-Assets: A Global Approach."[31] This paper starts with a notable observation concerning the difficulties regulators are facing:

How best to regulate something that's borderless, open-source, decentralized, and constantly evolving? This is the question policymakers, industry ,and users are grappling with as the crypto-asset ecosystem develops.

Stablecoins are one area of the cryptocurrency market that is receiving notable attention from regulators. The issue here is that crypto stablecoins represent possible substitutes for fiat currencies, particularly when they are tied to fiat currencies. Central banks around the world are watching developments in this area carefully and, in some cases, introducing their own regulations. Interestingly, 90 percent of the countries in the AC Tracker have Central Bank Digital Currency(CBDC) projects underway.

This final point is actually a favorable sign for the crypto ecosystem, because it underscores the fact that governments recognize the import- ant innovation that crypto technology represents. Rather than trying to squelch the creative power behind crypto, regulators are engaged in trying to balance the many benefits this innovative technology brings against the plethora of dangers that it represents.

Regulators are grappling with finding the best ways to maintain regulatory oversight of both the crypto industry and its impact on the other financial institutions that fall within their responsibility, such as banks. The FTX debacle brought this broader issue into clear focus because three of the largest banks that provided banking services to the crypto industry failed in the wake of the FTX collapse. These banks— Silicon Valley Bank, Signature Bank, and Silvergate—accepted depos- its and offered loans to crypto industry companies and actively pursued such business. Silvergate was particularly exposed to the crypto industry, reporting in its third-quarter report that 90 percent of its depos- its were crypto industry-related. Silvergate and Signature also issued Bitcoin-collateralized loans.

An insightful April 2023 report on this topic was issued by the U.S. Congressional Research Service.[32] Although the report doesn't attribute specific causality to the crypto industry for the bank failures, it does draw a strong link between the volatility in the crypto markets at that time and the significant deposit outflows, which were a root issue in the banks' failures. The report raises concerns about the liquidity risks for banks posed by the crypto industry and notes that regulators are looking carefully at these issues.

More generally, the issues that regulators are addressing include traditional financial industry risks of the following types:
› Cybersecurity
› Consumer protection
› Money laundering and terrorist financing
› Market integrity
› Economic and currency stability

The preponderance of regulatory and legal actions brought against promoters of cryptocurrencies and the crypto ecosystem have focused on these traditional issues and not on issues related to the unique features of cryptocurrencies or the blockchain. The actions and allegations have focused instead on traditional securities and criminal law, such as insider trading, Ponzi schemes, anti-money laundering violations, failure to register properly with regulators, lack of internal controls, misleading advertising, and misappropriation of investor monies, among others.

Behaviors that have provoked these actions are being treated as violations of long-standing rules and regulations that traditionally apply to securities markets and the broader institutional framework for capital markets. Crypto is merely seen as a new element of this traditional framework. New frameworks addressing issues unique to the crypto world have taken time to evolve but are now developing rapidly.

The regulatory approaches used to address this problem vary considerably across countries. The European Commission, which is the executive arm of the European Union(EU), was the first to introduce broad regulations directly addressing the crypto industry, with its Markets in Crypto-Assets Regulation (MiCA) introduced in June 2023 and focused on crypto-asset regulation.[33] In June 2024, it implemented regulations on fiat-backed stablecoins, with final implementation of all regulations taking place by December 2024.

The situation is more complicated in the United States. The CME, under the regulatory auspices of the Commodity Futures Trading Commission (CFTC), introduced futures contracts on bitcoin in December 2017. The more recently introduced spot bitcoin ETFs fall under the regulatory authority of the SEC. The SEC and the CFTC are now vying for regulatory authority over the broader cryptocurrency market, with the CFTC arguing that cryptocurrencies are commodities and the SEC suggesting that they are securities. Things are further confused in the United States because crypto regulations vary by state.

The enforcement actions taken by the SEC, of which there have been many, rest on the application of traditional securities laws and the determination that cryptocurrencies are securities. The definition of a security relies on the long-standing Howey Test, which is a set of rules for determining when a financial transaction involves a security; it stems from a 1946 Supreme Court ruling in SEC v. WC Howey Co.[34] The Supreme Court determined that an "investment contract exists when there is the investment of money in a common enterprise with a reasonable expectation of profit to be derived from the actions of others." This ruling has served as the basis for determining when a financial transaction constitutes a security ever since. Crypto proponents argue that it makes no sense to apply a set of such antiquated rules to the brave new world of cryptocurrencies and that a new regulatory regime needs to be developed that reflects the unique features of crypto.

One area of the cryptosphere where the SEC has been particularly vigilant is with initial coin offerings (ICOs). ICOs are the crypto industry's form of capital raising to support the development of new tokens, blockchain apps, or services. Investors buy newly issued tokens, which bring ownership claims to the product or service being promoted (Black 2024b).

The issuance of ICOs has been focused on early-stage crypto projects, and the only issuance document required has been a white paper describing the intended project, the team, and the role of the project out- come in the crypto ecosystem. However, the required disclosures have been limited, with no risk disclosure documentation required.

ICOs raised $26.5 billion globally between 2016 and 2019, with the earliest big success occurring in 2014 when Ethereum raised $18 mil- lion over a forty-two-day period. The biggest single success overall has been the EOS Platform ICO, which raised$4 billion over the course of a year, in 2018. However, given the lax issuance documentation required, it should come as no surprise that ICOs have been subject to substantial abuse, and the SEC has severely clamped down on their issuance.

For one thing, in many instances, the SEC has deemed ICOs to be unregistered securities, with the fundraising stopped and promoters forced to return any money raised to investors. Fraud also has been a significant problem, with many promoters failing to deliver the promised outcomes and instead pocketing the money raised. ICO issuance has dropped sharply in recent years, mainly due to pressure from the SEC, and was less than $400 million in 2019. ICOs continued at very low levels, with less than $200 million in issuance in 2023.[3]5 However, according to UPay's January17, 2025, news alert, ICO volume picked up to about $8.7 billion in 2024. Not mentioned in this report is that a significant part of the increase was inflated by a plethora of scams around pump. fun, suggesting that the ICO market has yet to really recover. Pump.fun, launched in January 2024, is a platform for issuing tokens, largely meme- coins. Millions of these tokens have been issued since its inception, and "The 2025 Rug Pull Report" by Solidus Labs estimates that 98.6 percent of these have been fraudulent.

We are in the early stages of meaningful and constructive regulation of the cryptocurrency markets and the crypto ecosystem. Legitimate players in this industry are in favor of sensible constructive regulation that will bring clarity and confidence to both operators and investors. Fear of heavy-handed misguided regulation is holding the industry back and making it difficult for crypto to directly impact traditional financial systems.

New regulatory frameworks need to be developed that recognize the important features embodied in the cryptosphere. It is hoped that the new regulations will provide appropriate safeguards without discouraging innovation and facilitating effective integration with traditional financial systems. Ideally, there will be global uniformity in these new regimes, although this latter issue likely will be a long time coming if the incongruities in the traditional regulatory regimes are to serve as a harbinger of what to expect.

In spite of all the worries, it is important to note that the EU regulatory framework has established goals consistent with these ideals. The EU Financial Services website entry on crypto assets offers the following statement of their regulatory intentions:

This dedicated and harmonized framework for markets in crypto-assets will support innovation, will provide for the proportion- ate treatment of issuers of crypto assets and crypto service providers to scale up their business cross borders, and provide significant benefits in terms of cheaper, faster, and safer financial services and asset management.

Factors Affecting Cryptocurrency Adoption

Many crypto advocatessuggest that ignoranceabout the importance of the blockchain and its potentially transformative impact on how com- merce and banking are conducted is one factor that has limited par- ticipation. As knowledge of this phenomenon grows, so will interest in crypto investing. Artificial intelligence (AI) is seen as another technol- ogy that will expedite this transformative process.

› Early crypto investing was viewed as highly speculative, and this has added to investorskepticism.
› Difficulty converting from crypto back to the cash markets is seen as anotherproblem.
› The headline events aroundFTX, Binance, and others greatlyunder- mined confidence, but these eventsnow appear to have, rather,sup- ported renewedconfidence.

Fears related to cyber risk have been another concern. This seems to be mostly an issue for the crypto exchanges and other such institutions offering wallets, etc., which have not had adequate cybersecurity frameworks and safeguards in place.

According to a 2024 report on cryptocurrency ownership by Triple-A, a payment services business, there are approximately 560 million cryptocurrency owners worldwide, for a 6.8-percent aver- age global population ownership rate.[38] Adoption rates vary substantially across the thirty countries included in the report, ranging from as high as 25.3 percent in the United Arab Emirates to as low as 4.2 per- cent in China. The report notes that adoption has grown at a rate of 99 percent per year on a compound basis.

The high historical growth rate is likely biased upward by crypto's early years when absolute user levels were low. We have seen a sharp attenuation in adoption growth in the past few years, with aver- age annual growth in adoption of just 16.2 percent over the three-year period through 2023.

Several academic studies have found that men generally have higher risk appetites than women (Barberand Odean 2001;Fisher and Yao 2017); consistent with that view,61 percent of crypto adopters are male and 39 percent female. Also, 72 percent of owners are younger than age 34. These numbers suggestthat risk appetiteis an important factor in the crypto investment decision.

FIGURE 4 **Trailing Six-Month Standard Deviation of Weekly Bitcoin Price Returns**

Source: Authors' calculations, Yahoo Finance.

Volatility has been extraordinarily high, as seen in figure 4, which shows the rolling six-month volatility of bitcoin prices over the ten years ending September 2024. You can see that volatility has generally been more than 50 percent, with occasional spikes above 80 percent and with a high of 140 percent. Volatility surged dramatically during 2017–2018 and again during 2021–2022 when the FTX debacle dominated news headlines. These volatility spikes likely impacted the appetite for crypto negatively over the past few years.

This view is supported by a recent poll conducted by Security.org, a security and safety company, which sought to determine the principal reasons for investors not buying cryptocurrencies.[39] This poll, published in September 2024, and conducted annually, included 1,500 participants exclusively in the United States.

Table 4, which contains the results of the survey, shows that three classes of would-be crypto investors were identified: “never-owners,” “current-owners,” and “past-owners.” They were asked which issues make them reluctant to add crypto to their portfolios. By far, the dominant answer across all three categories was “unstable value”—40 per- cent of never-owners, but 46 percent of current- and past-owners, said that high volatility was the top issue discouraging their participation. The next two categories of importance were “unprotected by government or bank oversight,” with 26 percent of never-owners, 10 percent of current-owners, and 13 percent of past-owners citing this factor; and “difficulty trusting exchanges,” with 14 percent of never-owners and current-owners, and 13 percent of past-owners citing this as an area of concern. Issues such as cybersecurity and environmental impact were cited as concerns by fewer than 10 percent of participants in all classes. One exception was that fear of cyberattacks was cited as a concern by 11 percent of current-owners. This poll included participants in only the United States, but it likely also reflects the concerns of a significant population base outside the United States.

TABLE 4 **Greatest Concerns Regarding Cryptocurrencies**

WHAT IS YOUR GREATEST CONCERN REGARDING CRYPTOCURRENCY?	NEVER-OWNERS	CURRENT-OWNERS	PAST-OWNERS
Unstable value	40%	46%	46%
Unprotected by government or bank oversight	26%	10%	13%
Difficulty trusting exchanges	14%	14%	13%
Cyberattacks	3%	11%	8%
Lost access	3%	7%	7%
Environmental impact	7%	2%	3%
Hard to trade	3%	3%	5%
Other reasons	3%	2%	2%
Overregulation/bans	0%	3%	0%
I have no concerns	1%	3%	2%

Source: Security.org.

TABLE 5 **Average Annual Volatility of Bitcoin and the Nasdaq-100 Index Weekly Returns**

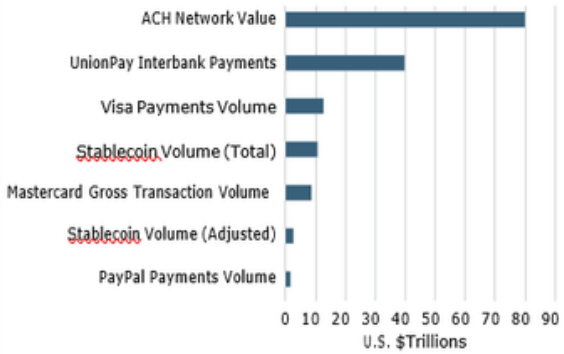
YEAR	ANNUAL AVERAGE BITCOIN VOLATILITY	ANNUAL AVERAGE NASDAQ VOLATILITY
2015	59.1%	17.9%
2016	48.2%	16.0%
2017	105.2%	9.6%
2018	87.2%	21.8%
2019	66.5%	12.9%
2020	66.5%	30.3%
2021	78.0%	16.3%
2022	55.0%	28.8%
2023	50.9%	17.6%
Q1-Q3 2024	51.4%	19.0%

Source: Authors' calculations, Yahoo Finance.

It is informative to compare bitcoin's volatility to a diversified equity index, and table 5 offers such a comparison. It presents the average annual volatilities of bitcoin and the NASDAQ Index from 2015 throughQ3 2024. The Nasdaq index is weighted heavily toward the technology sector and should trade at higher levels of volatility than, say, the S&P 500 Index. Bitcoin consistently traded at more than twice the volatility of Nasdaq over this period.

Although many investors are hesitant to invest in crypto assets due to volatility, it must be noted that the standard deviation of bitcoin returns recently has been declining, from 48–105 percent during 2017– 2021 to a much tighter range of 51–55 percent during the three years ending September 2024.As discussed above, the volatility of bitcoin prices should not be the only consideration of investors in a multi-asset port- folio context. Bitcoin's low correlations with both equities and bonds make it a significant source of diversification. Holding an allocation of less than 5 percent, with regular portfolio rebalancing, historically has added substantially to portfolio returns with a minimal impact on port- folio risk statistics.

FIGURE 5 **Transaction Volumes of Various Payment Systems in 2023**



Based on the full year 2023, not fiscal year. Adjusted stablecoin volumes remove "inorganic" activity.
Sources: Allium, Mastercard, Nacha, PayPal, People's Bank of China, Visa, and Coinbase.
Source: Coinbase.

High volatility seems to be a persistent problem for cryptocurrencies and is seen to be the dominant factor limiting broader adoption. One would expect cryptocurrency volatility to come down as the asset class becomes more broadly owned, particularly by those parties who are attracted to its unique advantages over fiat currencies, which should reduce the impact of speculative trading. The transition to the protocol economy will help to motivate the broader use of cryptocurrencies, but, again, volatility will be a problem.

Extreme levels of volatility can make it difficult for cryptocurrencies to serve as a medium of exchange. Near-zero volatility makes stablecoins appropriate for transactional purposes, which has led to rapidly growing volume in stablecoins as alternative payment mechanisms. According to a paper by Coinbase published in August 2024,40 “Stablecoins and the New Payments Landscape,” stablecoin payment transaction volume has been growing by 17 percent per year; it exceeded the volume of PayPal and was 25 percent of the volume of Mastercard in 2023 (figure 5). It seems highly likely that the use of stablecoins for payments and other financial transactions will continue to grow. They are substantially cheaper than traditional payment processing systems. According to the Coinbase paper, the average cost of sending $200 across borders using traditional payment systems is 6.35 percent, but using stablecoins costs only 0.5 to 3 percent. The costs of sending sta- blecoin should continue to decline with further system innovations and efficiencies.

It also should be noted that Mastercard and Visa typically charge up to a 1-percent fee for cross-border purchases and other transac- tions. Furthermore, the retailer can be charged as much as 3.5 percent for accepting paymentsusing Visa, Mastercard, or American Express— and these fees often are passed on to consumers. None of these fees apply when stablecoins are used as the payment mechanism.

Volatility should not be a factor limiting interest in cryptocurrencies, either as an investment choice or as an electronic payment mechanism— providing the right coin is used for the intended purpose. As discussed elsewhere in this paper, the other issues noted in the Security.org sur- vey as hindering cryptocurrency adoption, such as regulation and environmental impact, are being addressed rapidly. However, one issue not explicitly addressed in the survey, which often is mentioned as a concern, is the use of cryptocurrencies for money-laundering purposes. Many people don’t understand that cryptocurrencies themselves are not a tool for money laundering. Although any party can purchase a cryptocurrency, this process alone doesn’t get the dirty money into the real economy. It’s much the same with cash; you can sell drugs for cash, but there’s another step that needs to be made to get that cash into the financial system.

Money launderers have developed complex techniques to move cryptocurrencies into the financial system. Nevertheless, established money laundering checks and procedures should be applied, and regulators are keeping a close eye on this issue. Yes, it is a problem. It's also a problem with cash transactions.

Clearly, time will tell, but cryptocurrency's role in the new emerging economy seems indisputable. The stated concerns limiting adoption are being largely addressed. Volatility appears to be the dominant limiting factor, but, as suggested in this paper, it seems a concern guided by a mis- understanding of the crypto ecosystem. Stablecoins will revolutionize the way payment processing is handled; however, this is one area where regulation needs to be further evolved in order for potential users to have sufficient confidence in the security of crypto-based payment systems.

Traditional banking is still considered superior from a risk perspective, and the need for security is still the top priority for many. In a 2023 survey by McKinsey on consumer digital payments that included1,810 consumer participants, 50 percent of the respondents expressed high levels of trust in the big banks but only 16 percent had similar trust for fintech systems.41One conclusion from this survey is that trust is not high in both categories, and it actually declined from 2022 by 8 percent for large banks and 12 percent for fintech.

Bernard Lietaer argues in a 2010 paper that economic resilience requires diversity in our global monetary ecosystem, just as resilience in a biological ecosystem requires biodiversity (Lietaer et al. 2010). He attributes the pattern of continuing financial crises to the dependence of our monetary system on a single reserve currency, the USD. The crypto ecosystem offers just such diversity. The seismic shifts happening in our payments systems and the growing use of cryptocurrencies have, indeed, created greater diversity in our monetary framework. Let's hope that this new monetary diversity results in greater economic resilience, with fewer financial disruptions and less volatility in the financial system. In any event, the changes are evolutionary—and their continuation is inevitable.

Central bank digital currencies (CBDCs) are another possible way to add resilience to our financial system. Macfarlane et al. (2017) notes that the bulk of the money supplying our modern financial systems is created by commercial banks through their lending activities. In our modern digital financial system, commercial banks create money by extending loans at the flick of a switch. The seigniorage earned by the banks in the process, basically a function of the spread between the lending and deposit rates, is a subsidy paid from the public sector.

This subsidy is a significant number in many economies. For example, the authors estimate it to be £23.2 billion per year in the United Kingdom. The problem here is that England's central bank (BOE) has no way to provide electronic money directly to non-bank economic agents. A CBDC would solve this problem and effectively remove all, or part, of the massive subsidy to the commercial banking system, bringing it back into the public sector coffers. This arrangement also would reduce the dependence of the financial system on commercial banks and greatly reduce the systemic risk of bank runs and related financial crises.

The BOE is considering issuing a CBDC, as are most central banks around the world, including those in all G20 countries. The interest in CBDCs increased dramatically in the wake of the sanctions imposed by the United States on Russia, which underscored the overwhelming hegemony of the USD in the global financial system. Jamaica, the Bahamas, and Nigeria already have introduced CBDCs.

Conclusion

Cryptocurrencies and the crypto ecosystem are undoubtedly a permanent feature of the modern financial system, and the innovations introduced are undeniably transformational. It seems inevitable that the digital economy is here to stay and that much of the crypto ecosystem will come to dominate the way payment systems, commercial transactions, and many other components of the financial system are structured and operated.

That said, there are many unknowns. President Donald Trump is an overt cryptocurrency enthusiast and his election as the 47th U.S. President has brought rapid, constructive change to the crypto ecosys-tem. He quickly announced that he is “going to do something great” with crypto during his presidency and suggested that he would add billions of dollarsof bitcoin to central bank reserves. While this hasn't happened, he has introduced an executive order allowing such a move. More sig- nificantly, he has had a major impact on crypto regulation by appoint- ing a crypto-friendly SEC Chair, Paul Atkins. This is in sharp contrastto President Joe Biden's choice of Gary Gensler,who pursued many enforce- ment cases against crypto businesses and exchanges, even when the industry claimed the rules were unclear. For example, crypto ETFs were approved only after the industry won lawsuits against the agency.42

On July 13, 2025, the Trump administration signed into law the first major piece of crypto legislation in the United States — the GENIUS Act. This path-breaking law has created a regulatory framework for the issuance and management of stablecoins and its impact is transformational. A few days after it was introduced, Jane Fraser of CitiGroup announced that Citi is looking to introduce their own stablecoin.

Presumably, this new enthusiasm in the United States will have a spillover effect on the rest of the world and should accelerate adoption rates. Broadening adoption should result in lower volatility, but it also could lead to increased correlations with other traditional assets and lower expected returns. These dynamics will play out over time and will be important factors in determining whether cryptocurrencies find increased inclusion in institutional portfolios. The May 2024 Fidelity Digital Assets Survey, mentioned above, offers an encouraging view of expected adoption rates among institutional investors. It reports that 65 percent of survey participants said that they plan to buy crypto assets in the future and 67 percent confirmed that digital assets have a role in investment portfolios.43 Notably, 30 percent of survey participants viewed crypto assets as an independent asset class.

The investment case for crypto is still, and undoubtedly will be for a long time, an unsettled issue. It is a new asset class, and the valuation models are continuing to develop. Importantly, much depends on how cryptocurrencies are classified. Fiat currencies have never achieved the status of an asset class. Commodities and gold have achieved that status but receive small allocations in institutional portfolios because long-term drivers of value are not well understood, difficult to capture, or deeply discounted. Are cryptocurrencies alternative currencies, commodities, or assets that are expected to generate long- term growth in value, like stocks? Without the potential for generating income streams and well-accepted valuation metrics, their use in traditional institutional portfolios likely will be limited.

Author Biography

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Edward Baker joined EthicalFin as a senior consultant in February 2025, bringing over 40 years of experience in the investment management industry, with expertise in quantitative investing, risk modeling, ESG investing, and sustainability. He also advises climate risk modeling firm Tipping Frontier, and provides ESG-related expert witness services as Managing Director of Seda Experts. Edward has been involved in various industry associations and nonprofits, including serving as Chairman of the Working Group on Corporate Governance for the Institute of International Finance. He currently serves as a trustee and Chairman of the Investment Committee at the Simons Laufer Mathematical Sciences Institute. He has published extensively on ESG and risk management topics and was honored with the 2023 IWI Investment Consulting Impact Award for his contributions to the industry.

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Firm Biography

EthicalFin

EthicalFin is a London-based, purpose driven, impact investment advisory firm, helping ethical entrepreneurs, investors and funds grow with integrity. Regulated by the FCA. Globally connected. We have broad expertise in sustainability and disruptive technologies, and with a passionate commitment provide unparalleled support to our like-minded clients' needs for capital raising, growth strategy development, and innovative business models. We act as trusted advisors to early-stage companies and funds in the UK, across Europe and beyond.

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