Digital Gold and Programmable Money: Which Cryptocurrencies Suit Which Investor

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Abstract

Eighteen years after Nakamoto's (2008) white paper, cryptocurrencies form an asset class of their own, worth USD 2.73 trillion and reaching governments, central banks, pension funds, insurers, university endowments and sovereign wealth funds. This paper introduces the major cryptocurrencies — from Bitcoin and Ether through XRP, Solana, BNB, TRON and Cardano to the stablecoins Tether and USD Coin — naming their creators, their supply rules and their economic uses beyond speculation: cross-border remittances at a fraction of traditional cost, contracts that execute themselves on the blockchain, and the tokenisation of money market funds and bank deposits.

The paper documents who invests at the institutional level: the United States with a strategic reserve of roughly 200,000 forfeited bitcoin, El Salvador and Bhutan with sovereign holdings, the Czech National Bank with the first direct purchase by a Western central bank, BlackRock's bitcoin fund holding 777,666 bitcoin, and pension funds, insurers and university endowments from Wisconsin through MassMutual to Harvard. It also shows the other side of the ledger: peak-to-trough losses of 52 to 94 per cent per market cycle, volatility running at three to four times that of major equity indices, and a correlation with equity markets that has risen markedly since 2020.

From supply rules, usefulness, valuation and risk, the paper derives which currency suits which investor: Bitcoin as a scarce store of value for patient investors holding across full market cycles of at least four years; Ether and selected platform currencies for investors able to bear technology risk; stablecoins as payment and

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liquidity instruments without upside; small currencies at most as a side bet funded from money whose total loss would be bearable. The paper recommends combinations built on a Bitcoin core plus a small number of platform currencies, capped at a few per cent of liquid wealth.

Keywords: Cryptocurrencies · Bitcoin · Ethereum · Blockchain · Stablecoins · Digital assets · Institutional investors · Volatility · Portfolio choice.

JEL codes: E42, G11, G23, O33.

Non-Technical Summary

Cryptocurrencies have grown up — not in their price swings, but in their reach. At the end of August 2026 all cryptocurrencies together are worth USD 2.73 trillion; Bitcoin alone accounts for 1.6 trillion. The United States holds a strategic bitcoin reserve, the Czech National Bank has become the first Western central bank to buy bitcoin, BlackRock's bitcoin fund safekeeps more than three per cent of all bitcoin that will ever exist, and Harvard — the world's richest university — for a time reported a bitcoin fund as its largest disclosed equity-market position. Whoever talks about Bitcoin today is no longer talking about a fringe phenomenon.

This paper first explains what separates the major cryptocurrencies. Bitcoin is capped at 21 million units and serves above all as a digital store of value — hence the nickname digital gold. Ethereum is a platform on which contracts execute themselves; its currency Ether is the fee paid for that computing service. Stablecoins such as Tether and USD Coin are pegged to the US dollar and now move trillions in payments — they are tools, not bets. Alongside them stand platform currencies such as Solana, XRP or BNB, whose value rests on the success of their respective blockchains, and joke currencies such as Dogecoin, whose value rests mainly on attention.

Whoever buys cryptocurrencies must be able to endure crashes: in every market cycle so far, Bitcoin has lost between 52 and 94 per cent — most recently more than half between October 2025 and February 2026. Those who cannot bear that, or who need their money within a few years, should stay away. For everyone else three rules carry most of the weight: position size — a few per cent of liquid wealth — matters more than currency selection; a core of Bitcoin, complemented by Ether and at most one further large platform currency, covers the market well; and the holding period should span a full market cycle, meaning four years or more. Small currencies whose purpose cannot be explained in one sentence are play money — not retirement savings.

Contents

1 Introduction

When Nakamoto (2008) described an electronic payment system without banks on nine pages, the white paper answered a crisis of trust: it appeared six and a half weeks after the collapse of Lehman Brothers. Eighteen years later the experiment has become an asset class weighing some USD 2.73 trillion at the end of August 2026 — more than the combined value of all listed companies in Germany. The road there was no steady ascent but a sequence of manias and crashes: five times Bitcoin lost more than half its value, four times more than three quarters — and still rose above every previous peak.[2]

Academic economics took its time with the subject, then delivered thoroughly: Yermack (2015) tested whether Bitcoin fulfils the classical functions of money, and answered no; Baur, Hong and Lee (2018) showed that bitcoin is predominantly held as a speculative asset and hardly used for payments; Schilling and Uhlig (2019) showed that the value of an unbacked digital money rests solely on the self-fulfilling expectation of future acceptance; Liu and Tsyvinski (2021) measured the risks and returns of the new asset class; and Makarov and Schoar (2020) documented price gaps between exchanges that mature markets would not allow. This paper stands on the shoulders of that literature and translates it into a practical question: which cryptocurrency suits which investor?[3]

The occasion for that question is practical: cryptocurrencies have arrived in regulated distribution. Since January 2024 the United States has had exchange-traded spot bitcoin funds, which together now hold six per cent of all bitcoin; since July 2025 a federal statute has governed dollar stablecoins; and the European Union's Markets in Crypto-Assets Regulation has provided a complete legal framework since the end of 2024. Cryptocurrencies thus reach investors who would never open an account at a crypto exchange — through the brokerage account, the fund savings plan, in some places the pension fund. All the more important becomes the distinction of which currency serves which purpose, and which investor can reasonably be asked to hold it.[4]

The paper proceeds as follows. Chapter 1 serves as an introduction. Chapter 2 explains the origins, the technology and the market order of cryptocurrencies. Chapter 3 portrays the major currencies — their creators, their supply rules, their particularities. Chapter 4 asks about economic usefulness beyond speculation. Chapter 5 documents which governments, central banks and institutional investors are invested. Chapter 6 measures return, volatility and correlation. Chapter 7 matches currencies, investor types and holding

[2] Market data here and throughout, unless stated otherwise: CoinGecko (2026), reference date 30 August 2026; total market value USD 2.73 trillion.

[3] Surveys of the research are provided by Härdle, Harvey and Reule (2020) and John, O'Hara and Saleh (2022).

[4] US spot bitcoin funds: approval 10 January 2024, first trading 11 January 2024; holdings of roughly 1.26 million bitcoin at the end of August 2026. GENIUS Act: 18 July 2025.

periods; chapter 8 reasons about recommendable combinations; chapter 9 concludes. All market data carry the reference date 30 August 2026; older figures are dated.[5]

2 What Cryptocurrencies Are: Origins, Technology, Market Order

2.1 From Nakamoto to Buterin: two founding ideas

At the beginning stand two texts. The white paper of Nakamoto (2008) — the person or group behind the pseudonym remains unknown — solved an old problem of electronic money: how to prevent the same digital coin from being spent twice without calling on a central authority. Nakamoto's answer is the blockchain: a public record of all payments, kept jointly by thousands of independent computers and extendable only when one of them solves a costly computational puzzle — proof of work. Whoever solves the puzzle may append the next block to the chain and receives newly created bitcoin in return. On 3 January 2009 Nakamoto mined the first block; written into it is that day's headline from the London Times about bank bailouts.[6]

The second founding idea came from Vitalik Buterin, then a nineteen-year-old Russian-Canadian programmer. His white paper (Buterin, 2014) extended Nakamoto's payment record into a world computer: Ethereum can not only book transfers but run arbitrary programs — so-called smart contracts, agreements that execute themselves once their conditions are met. The blockchain thus turned from a monetary system into a platform carrying applications from securities settlement to lending. The currency Ether is the fee for that computing service: whoever uses the platform pays in Ether. Catalini and Gans (2020) summarise the economic core of both ideas: blockchains lower the cost of verification and the cost of networking — trust is replaced by computation and game theory.[7]

How robust that replacement of trust is has since been examined formally. Biais, Bisière, Bouvard and Casamatta (2019) show that extending the chain is a coordination game: it is rational for every computer to follow the longest chain — but only because all others do so too; besides the good equilibrium there exist others in which the chain splits. Such splits have in fact occurred — Bitcoin Cash branched off Bitcoin in 2017, Ethereum Classic off Ethereum in 2016 — without lastingly damaging the main chains. For investors

[5] The paper builds on Rupprechter (2026d) on institutional long-term investors and Rupprechter (2026e) on pension funds; cryptocurrencies complete that picture with the youngest institutional asset class.

[6] Nakamoto (2008); genesis block of 3 January 2009 carrying the line “Chancellor on brink of second bailout for banks”.

[7] Buterin (2014); launch of the Ethereum network on 30 July 2015; co-founders included Gavin Wood and Joseph Lubin. Catalini and Gans (2020), pp. 80-90.

the insight remains: the security of a blockchain is not a property of its code but of the incentive system holding thousands of self-serving participants together.[8]

2.2 Supply rules: scarcity by design

What separates cryptocurrencies from any state money is a money supply written into the rules. For Bitcoin the rule is strict: there will never be more than 21 million units, and the issue of new coins halves every four years — most recently on 20 April 2024, to 3.125 bitcoin per block, with the next halving expected in spring 2028. By the end of August 2026 20.08 million bitcoin have been mined, 95.6 per cent of the final amount; annual growth of the stock runs below one per cent and thus below that of gold. This predictable scarcity underpins the nickname digital gold — and it is the core of the investment case: demand may fluctuate, supply cannot respond.[9]

Other currencies choose other rules, and the differences matter to investors. Ether has no cap; since the switch to proof of stake in September 2022 part of the usage fees has been destroyed, so that the stock of roughly 120.7 million ether at times even shrank. XRP was created in full at the outset: 100 billion units, of which roughly 62.7 billion circulate while the remainder sits largely in escrow accounts of the company Ripple, releasable in monthly tranches. Dogecoin, finally, grows without end: five billion new units every year, forever. Schilling and Uhlig (2019) have shown why the supply rule matters so much: the value of unbacked digital money rests solely on the expectation of future acceptance — a currency without a quantity anchor carries a heavier burden of proof.[10]

The supply rule says nothing, however, about availability: a sizeable share of all bitcoin is permanently withdrawn from the market. Chainalysis estimates up to 3.79 million bitcoin as lost — forgotten keys, destroyed hard drives, deceased owners without estate arrangements; a further 1.1 million sit unmoved in the holdings attributed to Nakamoto. The truly tradable stock — the free float — is thus markedly smaller than the mined amount, and it keeps shrinking as funds, companies and governments lock away holdings for the long term. Chapter 6 returns to this concentration; for price formation it means that even moderate demand surges can move prices a long way.[11]

[8] Biais, Bisière, Bouvard and Casamatta (2019), Review of Financial Studies 32(5), pp. 1662-1715.

[9] Halvings on 28 November 2012, 9 July 2016, 11 May 2020 and 20 April 2024; block reward since then 3.125 bitcoin per roughly ten minutes.

[10] Schilling and Uhlig (2019), Journal of Monetary Economics 106, pp. 16-26; circulation figures: CoinGecko (2026), reference date 30 August 2026.

[11] Chainalysis estimate of up to 3.79 million permanently lost bitcoin; holdings attributed to Nakamoto of roughly 1.1 million bitcoin, unmoved since 2009.

2.3 The market in August 2026

The crypto market of 2026 is large, top-heavy and bruised. Large: USD 2.73 trillion in market value, USD 89 billion in daily turnover. Top-heavy: Bitcoin alone accounts for 58.2 per cent of market value, Ether for a further eleven per cent; the ten largest currencies cover more than ninety per cent, while the rest spreads across tens of thousands of micro-currencies, most of which will disappear. Bruised: from the all-time high of USD 126,210 on 6 October 2025, Bitcoin fell below USD 61,000 by early February 2026 — minus 52 per cent — and has recovered to around USD 79,000 by the end of August 2026. Figure 1 shows the size of the leading currencies.[12]

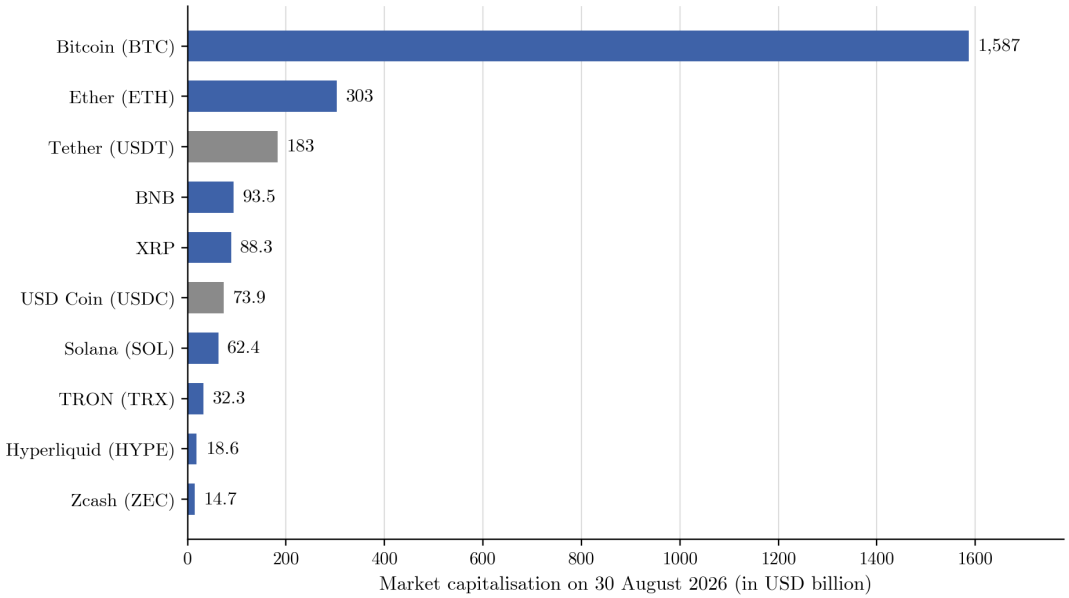

Figure 1: Market capitalisation of the ten largest cryptocurrencies on 30 August 2026, in USD billion; grey: stablecoins pegged to the US dollar. Source: CoinGecko (2026); own presentation.

What this ranking does not show is turnover — and that is telling. Measured by trading volume the most used cryptocurrency is not Bitcoin but the stablecoin Tether — roughly USD 74 billion a day against just under 15 billion for Bitcoin. That reveals the market's division of labour: Bitcoin is held, Tether is used. The dollar-pegged stablecoins are the cash of the crypto system — the unit of account of the exchanges, the shelter in crashes, the means of payment between currencies. Whoever wants to understand the asset class must therefore look at both: the scarce assets held for the long run and the working money that circulates.[13]

[12] CoinGecko (2026): total value USD 2.73 trillion, 24-hour turnover USD 89.1 billion, Bitcoin share 58.2 per cent, reference date 30 August 2026.

[13] Daily turnover on the reference date: Tether 73.7, Bitcoin 14.8, USD Coin 6.7, Ether 6.8 billion US dollars (CoinGecko, 2026).

3 The Major Cryptocurrencies in Portrait

3.1 Bitcoin: digital gold

Bitcoin is the oldest, largest and simplest of the major cryptocurrencies — and that simplicity is precisely its investment case. At its core the network can do only one thing: move balances from one address to another, secured by the greatest computing power any open network has ever assembled. There is no company, no board, no distribution and nobody who could change the rules alone; changes require the consent of a majority of operators who do not know each other. Since its launch in 2009 the network has run without interruption. Whoever buys bitcoin is not buying payment technology — the chain, at roughly ten minutes per block, is too slow for that — but certified scarcity on a neutral record beyond any state's reach.[14]

Whether Bitcoin additionally protects against equity storms has been examined and largely rejected. Dyhrberg (2016) still placed bitcoin between gold and the dollar as a store of value with hedging properties; Bouri, Molnár, Azzi, Roubaud and Hagfors (2017) found instead that bitcoin serves as a safe haven only in few market conditions and is above all a diversifier; and since 2020 at the latest, bitcoin has moved with equity markets in crises, not against them — chapter 6 puts numbers on this. Investors should therefore treat bitcoin as a high-risk scarce asset in its own right, not as insurance.[15]

3.2 Ether: the currency of the world computer

Ether is economically something different from Bitcoin: not a scarce collectible but the working currency of a platform. The value of ether rests on people and firms using the Ethereum blockchain — for financial applications, for stablecoins, for the tokenisation of securities — because every use costs a fee in ether, and part of that fee has been destroyed since 2021. Cong, Li and Wang (2021) have formalised this interplay: platform currencies gain value as user numbers grow, and the tradable token in turn speeds the platform's adoption — a self-reinforcing loop that works in both directions. Whoever buys ether is thus betting on the future workload of the world computer, not on programmed scarcity.[16]

Twice Ethereum has proven that it can renew itself fundamentally. In September 2022 the network exchanged its security mechanism in mid-flight: instead of power-hungry computation, deposited ether balances have since vouched for the integrity of the chain — the switch to proof of stake cut electricity use by roughly 99.95 per cent and removed the main sustainability objection to the platform. At the same time a kind of interest emerged:

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[14] Baur, Hong and Lee (2018) show empirically that bitcoin is held predominantly as an investment and used only marginally for payments; Journal of International Financial Markets, Institutions and Money 54, pp. 177-189.

[15] Dyhrberg (2016), Finance Research Letters 16, pp. 85-92; Bouri, Molnár, Azzi, Roubaud and Hagfors (2017), Finance Research Letters 20, pp. 192-198.

[16] Cong, Li and Wang (2021), Review of Financial Studies 34(3), pp. 1105-1155.

whoever deposits ether currently earns roughly three per cent a year in rewards. The price, though, remains a rollercoaster: from the all-time high of USD 4,954 in August 2025, ether fell by half within a year to roughly USD 2,500 at the end of August 2026.[17]

3.3 Platform and payment currencies: XRP, Solana, BNB, TRON, Cardano

Behind the two giants follows a group of platform currencies with distinctly different business models. XRP, developed from 2012 by David Schwartz, Jed McCaleb and Arthur Britto and carried by the company Ripple, targets payments between banks: cross-border transfers in seconds rather than days, at fractions of a cent. Solana, designed in 2017 by Anatoly Yakovenko and live since March 2020, is the speed record holder among the platforms — thousands of transactions per second at negligible cost, popular for retail applications from trading to gaming, bought at the price of heavier hardware requirements and a younger, less battle-tested technology. The US government added both, alongside Ether and Cardano, to its digital asset stockpile in 2025.[18]

BNB, issued in 2017 as a discount voucher of the trading platform Binance by Changpeng Zhao, has become the currency of a blockchain of its own and displays one peculiarity: Binance uses part of its profits to buy back and destroy BNB every quarter — 133 million units remain in circulation, 100 million is the declared target; the currency is thus a bet on the persistence of the world's largest crypto trading house. TRON, founded in 2017 by Justin Sun, has secured an unglamorous but lucrative role: a large share of the world's Tether payments runs over its chain, above all in emerging markets. Cardano, finally, started in 2017 by Ethereum co-founder Charles Hoskinson with scientific ambition, has lost touch with usage: despite a loyal following it has fallen to rank 18 at roughly USD 7.6 billion — a reminder that academic rigour alone creates no demand.[19]

3.4 Special cases: Dogecoin, privacy currencies, Chainlink, Hyperliquid

Four special cases complete the picture. Dogecoin, assembled as a joke within hours in 2013 by Billy Markus and Jackson Palmer, is the archetype of the meme currency: unlimited supply, no development worth the name, yet a market value of USD 13 billion hanging on celebrity whim and crowd mood — Shiller (2019) has described how contagious narratives can carry prices, and nowhere is that on purer display. Monero and Zcash, by

[17] Switch to proof of stake ("Merge") on 15 September 2022; all-time high USD 4,953.73 on 24 August 2025; price on the reference date USD 2,513 (CoinGecko, 2026).

[18] XRP: ledger development from 2011/2012, founding of the company (initially OpenCoin, with Chris Larsen) in September 2012. Solana: white paper 2017, network launch March 2020.

[19] Howell, Niessner and Yermack (2020) examine initial coin offerings such as the 2017 BNB sale; Review of Financial Studies 33(9), pp. 3925-3974. Market values: CoinGecko (2026).

contrast, are technically demanding: they conceal sender, recipient and amount and are thus the digital counterpart of cash — valued by people under surveillance pressure as much as by criminals, which is why many exchanges have delisted them. For investors they are regulatory risk in its purest form.[20]

Chainlink, founded in 2017 by Sergey Nazarov, sells the blockchain world a supply service: verified data from outside — prices, interest rates, weather readings — without which no financial contract on a blockchain can compute. Hyperliquid, finally, built by Harvard graduate Jeff Yan and equipped with its own currency at the end of 2024, runs a derivatives exchange entirely on its own chain and is, at just under USD 19 billion in market value, the youngest riser among the majors. Both teach the same lesson: in the crypto market too, lasting value arises where a service is actually demanded — and vanishes where it is not. Table 1 summarises the origins and purposes of the most important currencies.[21]

[20] Dogecoin: launch 6 December 2013, growth of five billion units a year. Monero: emerged in 2014 from a predecessor project, pseudonymous creators; Zcash: launched 2016 by Zooko Wilcox-O'Hearn; Shiller (2019).
[21] Chainlink: network launch 2019. Hyperliquid: trading launch 2023, own currency since November 2024; market value USD 18.6 billion on the reference date (CoinGecko, 2026).

Table 1: The most important cryptocurrencies: origins and purpose

Currency	Launch	Creator(s)	Main purpose
Bitcoin (BTC)	2009	Satoshi Nakamoto (pseudonym)	Digital store of value, fixed at 21 m units
Ether (ETH)	2015	Vitalik Buterin et al.	Working currency of the smart contract platform
Tether (USDT)	2014	Pierce, Collins, Sellars	Dollar-pegged payment and trading money
BNB	2017	Changpeng Zhao (Binance)	Exchange and platform currency with buy-backs
XRP	2012	Schwartz, McCaleb, Britto	Payments between financial institutions
USD Coin (USDC)	2018	Circle and Coinbase	Regulated dollar stablecoin
Solana (SOL)	2020	Anatoly Yakovenko	Fast platform for retail applications
TRON (TRX)	2017	Justin Sun	Payment chain, leading in Tether transfers
Cardano (ADA)	2017	Charles Hoskinson	Research-driven smart contract platform
Dogecoin (DOGE)	2013	Markus and Palmer	Joke currency without supply cap
Monero (XMR)	2014	Pseudonymous developers	Payments with concealed parties
Zcash (ZEC)	2016	Zooko Wilcox-O'Hearn	Optionally confidential payments
Chainlink (LINK)	2017	Sergey Nazarov	Data supply for blockchain contracts
Hyperliquid (HYPE)	2023	Jeff Yan	Derivatives exchange on its own blockchain

Source: Nakamoto (2008); Buterin (2014); project documentation of the networks named; own compilation.

3.5 Stablecoins: the dollar on the blockchain

Stablecoins are the least conspicuous and at the same time most useful family: digital IOUs meant to be worth one US dollar at all times, backed by bank balances and short-dated US government paper. Market leader Tether — founded in 2014 as Realcoin by Brock Pierce, Reeve Collins and Craig Sellars, today domiciled in El Salvador — weighs USD 183 billion, reports holding roughly USD 141 billion in US Treasuries, ranking among the largest creditors of the American state, and earned more than USD 10 billion in 2025. The challenger USD Coin, issued by the listed company Circle, takes the opposite route through regulation and monthly attestations and stands at USD 74 billion.[22]

For investors, stablecoins are not an investment — they never rise above one dollar — but they are a touchstone of market maturity. Griffin and Shams (2020) showed that Tether issuance in 2017 coincided suspiciously with episodes of bitcoin price support — the suspicion of market grooming never quite left the industry. The legislators' answer came in 2024 and 2025: the European Markets in Crypto-Assets Regulation has subjected

[22] Tether: market value USD 183.4 billion, Treasury holdings of roughly USD 141 billion, 2025 profit above USD 10 billion (company statements); USD Coin: USD 73.9 billion (CoinGecko, 2026).

stablecoin issuers to authorisation since mid-2024, and the American stablecoin statute has required full backing in cash and short-dated government paper plus a licence since July 2025. The family has thus arrived in the regulated financial system — and become the transmission belt between the dollar and the blockchain, whose usefulness chapter 4 measures. Table 2 assembles the market data of all major currencies.[23]

Table 2: Market data of the largest cryptocurrencies (30 August 2026)

Currency	Price (USD)	Market value (USD bn)	Daily turnover (USD bn)	Circulating / cap
Bitcoin	79,036	1,587	14.8	20.1 / 21 m*
Ether	2,513	303	6.8	120.7 m / none
Tether	1.00	183	73.7	183 bn / none
BNB	702	94	0.6	133 m / 100 m**
XRP	1.41	88	1.1	62.7 / 100 bn
USD Coin	1.00	74	6.7	74 bn / none
Solana	106.58	62	2.3	585 m / none
TRON	0.34	32	0.3	94.9 bn / none
Hyperliquid	83.52	19	0.8	223 m / 1 bn
Zcash	871	15	1.1	16.9 / 21 m
Dogecoin	0.0857	13	0.4	155.7 bn / none
Monero	495	9	0.1	18.8 m / none
Chainlink	11.63	9	0.2	748 m / 1 bn
Cardano	0.20	8	0.2	37.5 / 45 bn

Source: CoinGecko (2026), reference date 30 August 2026; circulation figures rounded; own compilation.
Notes: * In million units. ** Target of Binance's buy-back programme.

4 Economic Usefulness Beyond Speculation

4.1 Payments: transfers without detours

The oldest usefulness claim of cryptocurrencies — cheaper, faster payments — has come true where the traditional system is most expensive: in the remittances of migrant workers to their home countries. The World Bank puts the cost of a traditional cross-border transfer at 6.36 per cent of the amount on average; over dollar-pegged stablecoins the cost in well-worn corridors such as the one between the United States and Mexico falls below one per cent, and the money arrives in minutes rather than days. With global remittance flows of several hundred billion US dollars a year, the potential welfare gain is substantial — and it accrues mostly to households in emerging economies.[24]

[23] Griffin and Shams (2020), Journal of Finance 75(4), pp. 1913-1964; Markets in Crypto-Assets Regulation (EU) 2023/1114, stablecoin provisions applicable since 30 June 2024, remaining provisions since 30 December 2024; GENIUS Act of 18 July 2025.
[24] World Bank, Remittance Prices Worldwide (2025): average cost 6.36 per cent in the third quarter of 2025; stablecoin corridors below one per cent according to industry data.

The overall size of stablecoin payments now also bears comparison with the card networks — provided one counts honestly. The raw on-chain statistics showed some USD 46 trillion of stablecoins moved in 2025, almost three times Visa's volume; adjusted for machine-driven rebookings and arbitrage flows, the a16z count leaves roughly nine trillion — a good half of Visa and more than five times PayPal. Both readings carry the same message: the dollar on the blockchain has turned from a trading tool of the crypto exchanges into a general means of payment, and it is growing faster than any card network.[25]

Bitcoin itself plays a smaller but measurable role in payments. The base chain is deliberately slow; Easley, O'Hara and Basu (2019) have shown how competition for scarce block space gave rise to a fee market. Yet fees are low, averaging around 26 US cents per transaction in the summer of 2026, and for small payments a second layer has established itself: the Lightning network settles payments over pre-funded bilateral links in fractions of a second at near-zero cost — most recently moving around USD 1.2 billion a month and growing fast. For investors this is less a source of return than proof that the network is alive.[26]

4.2 Contracts on the blockchain: tokenisation as the second use

The second real use lies where Buterin's world computer meets old finance: in mapping traditional assets and agreements onto the blockchain. Schär (2021) surveyed these decentralised financial markets systematically — trading, lending, hedging without a central counterparty — and Harvey, Ramachandran and Santoro (2021) argued early that programmable settlement can replace intermediaries. By now the biggest names in finance supply the evidence: BlackRock launched BUIDL, a tokenised money market fund, in 2024, managing roughly USD 3 billion by mid-2026 and making fund units as transferable as cryptocurrencies; JPMorgan issued the deposit token JPMD in November 2025, letting corporate clients move bank balances around the clock on a public blockchain.[27]

For contracts on a blockchain to compute, they need reliable data from outside — prices, interest rates, delivery confirmations. That supply service is Chainlink's business and the economic reason why a data currency can be worth billions. The benefit of tokenisation itself is sober: shorter settlement times, round-the-clock operation, less reconciliation between houses that today send each other costly confirmations. Whether public chains such as Ethereum or the banks' own in-house chains will win that business

[25] a16z crypto, State of Crypto 2025 (2025): USD 46 trillion unadjusted, roughly USD 9 trillion adjusted; on-chain counts for 2025 of roughly USD 33 trillion against USD 25.5 trillion for Visa and Mastercard combined.

[26] Easley, O'Hara and Basu (2019), Journal of Financial Economics 134(1), pp. 91-109; average bitcoin fee around USD 0.26 (August 2026); Lightning volume around USD 1.17 billion a month (November 2025, up 266 per cent within a year).

[27] Schär (2021), Federal Reserve Bank of St. Louis Review 103(2), pp. 153-174; BlackRock BUIDL roughly USD 2.93 billion (July 2026); JPMD on the Base blockchain since 12 November 2025.

is open — and for ether investors it is the decisive question, because only traffic on public chains feeds through into ether fees.[28]

4.3 The dark sides: crime, energy, failures

An honest balance sheet includes three dark sides. First, crime: Foley, Karlsen and Putniņš (2019) estimated for the early years up to 2017 that roughly one quarter of bitcoin users and just under half of transactions were linked to illegal activity — bitcoin was the money of the darknet markets. That share has fallen drastically as adoption spread: the chain analysis of Chainalysis (2026) puts the illicit share of attributable crypto volume below one per cent — in absolute terms still tens of billions a year, from ransomware to fraud networks. Anonymity, meanwhile, is weaker than its reputation: public chains are a search register for investigators, as the multi-billion seizures in London and Washington show.[29]

Second, energy: the proof of work securing the Bitcoin network consumes electricity on the scale of a mid-sized industrial country. Stoll, Klaaßen and Gallersdörfer (2019) put its carbon footprint for November 2018 at 23.6 to 28.8 million tonnes, between the emissions of Jordan and Mongolia, and de Vries (2018) warned early about the growth dynamics. The industry's counter-arguments — rising shares of hydropower and waste-heat use, Bhutan's sovereign mining on mountain electricity — soften the picture but do not remove it. Ethereum has shown that another way exists: the 2022 switch to proof of stake cut electricity use by roughly 99.95 per cent. Investors bound by sustainability mandates will carry a reservation against bitcoin for the foreseeable future — or switch to proof-of-stake currencies.[30]

Third, failures: no mature market has produced so many total losses. The insolvencies of the exchange FTX and the lending platforms Celsius and Voyager in 2022, the collapse of the supposedly stable TerraUSD together with its sister currency Luna — roughly USD 45 billion erased within days — and thousands of quietly vanished micro-currencies belong to the history of the asset class as much as the price records do. For investors the conclusion is not abstinence but a ranking: custody risks can be contained through regulated funds and audited custodians, issuer risks by avoiding currencies whose promise depends on one firm. Table 3 summarises the usefulness balance of the most important currencies.[31]

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[28] On the economics of verification costs, foundationally Catalini and Gans (2020), Communications of the ACM 63(7), pp. 80-90.

[29] Foley, Karlsen and Putniņš (2019), Review of Financial Studies 32(5), pp. 1798-1853; Chainalysis, Crypto Crime Report (2026): share below one per cent of attributable volume.

[30] Stoll, Klaaßen and Gallersdörfer (2019), Joule 3(7), pp. 1647-1661; de Vries (2018), Joule 2(5), pp. 801-805; energy saving of the switch roughly 99.95 per cent.

[31] TerraUSD/Luna: collapse in May 2022 with roughly USD 45 billion of value lost within a week; FTX: insolvency November 2022.

Table 3: Issuer, real economic use and free float at a glance

Currency	Issuer / sponsor	Real economic use	Free float
Bitcoin	No issuer; open network	Store of value; payments via second layer	High, but ~25% lost or dormant
Ether	Open network; foundation	Contract platform, tokenisation, stablecoins	High; ~30% staked
Tether	Tether Ltd. (El Salvador)	Payment and trading money, dollar substitute	Full; no upside beyond 1 USD
USD Coin	Circle (listed)	Regulated payment dollar for firms	Full; no upside beyond 1 USD
XRP	Ripple Labs (majority holder)	Bank payments; bridge currency	Restricted: ~37% in escrow
BNB	Binance	Fee discount and working asset of the exchange	Falling through buy-backs
Solana	Open network; foundation	Retail applications, trading, payments	High; large share staked
Dogecoin	No issuer	Little; tipping and joke payments	Full, growing every year

Source: CoinGecko (2026); company and network statements; own assessment of free float based on chapters 2.2 and 6.4.

5 Governments, Central Banks and Institutional Investors

5.1 Governments as bitcoin holders

The most surprising development of the years 2024 to 2026 is the entry of governments. On 6 March 2025 the United States established a strategic bitcoin reserve by executive order: roughly 200,000 bitcoin forfeited in criminal proceedings — up to 328,000 by broader counts — are no longer auctioned but held permanently; additional purchases are permitted if budget-neutral, and none had been made by mid-2026. Alongside it, Washington keeps a digital asset stockpile of forfeited Ether, XRP, Solana and Cardano. Individual states followed: New Hampshire in May 2025 became the first to allow public funds to be invested in bitcoin, and Texas endowed a reserve of its own with budget money in June 2025.[32]

Two small states moved earlier — along very different paths. El Salvador made bitcoin legal tender in September 2021 and has bought out of the budget ever since; at the end of August 2026 the country holds 7,759 bitcoin worth roughly USD 606 million. The price was steep: the International Monetary Fund made a USD 1.4 billion credit programme conditional on repealing the acceptance obligation in 2024; the obligation fell, the purchases — smaller and quieter — remained. Bhutan, by contrast, never bought: the Himalayan kingdom's sovereign fund has mined with surplus hydropower since 2019; of a peak of roughly 13,000 bitcoin in October 2024, extensive sales have left little more than 3,000 —

[32] Executive order of 6 March 2025 (Strategic Bitcoin Reserve and United States Digital Asset Stockpile); New Hampshire: law of 6 May 2025; Texas: law of 22 June 2025.

the proceeds financed, among other things, pay rises in the civil service. Table 4 orders the sovereign holdings.[33]

Table 4: Sovereign bitcoin holdings (end of August 2026)

Country	Holding (BTC)	Origin	Remark
USA	ca. 200,000	Forfeitures	Strategic reserve since March 2025
China	ca. 194,000	Forfeiture (PlusToken)	Attributed; whereabouts unconfirmed
United Kingdom	61,245	Forfeiture (fraud case)	Disposal before the courts
El Salvador	7,759	Ongoing purchases	Legal tender since 2021
Bhutan	3,100-3,800	Own mining	Hydropower; holding largely sold
Germany	0	—	49,858 BTC sold in July 2024
Czechia	Test purchase	Central bank purchase	USD 1 m test portfolio since Nov. 2025

Source: Executive order of 6 March 2025; court records and chain analyses; Czech National Bank (2025); own compilation. China's holding is attributed, not officially confirmed.

Germany stands in this table as a cautionary tale: in the summer of 2024 the Saxon judiciary sold just under 50,000 forfeited bitcoin at an average of USD 57,900, raising USD 2.89 billion. Measured against the all-time high of October 2025 the treasury forwent some three and a half billion US dollars; measured at the August 2026 price, still roughly one billion. The sale was legally required — an emergency disposal on account of price risk — but it illustrates the difference between two schools of thought: since 2025 Washington treats forfeited bitcoin as a strategic holding, Berlin as a risk position. Which school proves right will be decided by the price of the coming decades.[34]

5.2 Central banks: Prague moves first, Berne declines

Central banks are the most cautious class of investors in the world — which makes the Czech precedent all the more remarkable. Following a board decision of October 2025, the Czech National Bank acquired in November 2025 a test portfolio of roughly one million US dollars comprising bitcoin, a dollar stablecoin and a tokenised deposit — by common count the first direct bitcoin purchase by a Western central bank. The stated purpose is learning in live operation: custody, settlement, accounting; no increase is planned. The Swiss National Bank, over the same period, repeatedly declined to add bitcoin to its currency reserves; a popular initiative meant to compel it failed in May 2026 for lack of signatures.[35]

[33] El Salvador: 7,759 bitcoin (roughly USD 606 million, 30 August 2026); IMF agreement of December 2024; Bhutan: roughly 3,100 to 3,800 bitcoin by chain analyses in the summer of 2026, after a peak of roughly 13,000 in October 2024; mining by Druk Holding since 2019.

[34] Sale of 49,858 bitcoin in June/July 2024 at an average of roughly USD 57,900; proceeds USD 2.89 billion.

[35] Czech National Bank (2025), press release of 13 November 2025; Swiss popular initiative: collection abandoned in May 2026 at roughly 50,000 of the 100,000 signatures required.

Behind both decisions stands the same trade-off that Auer and Claessens (2018) measured for regulation: crypto markets respond strongly to official signals — bans depress prices, recognition lifts them. A central bank that buys confers recognition and thereby supports what it meant to examine; a central bank that declines keeps itself free to warn. For investors the lesson is sober: the sector remains regulation-driven, and the most powerful price movers of 2024 to 2026 — fund approvals, the stablecoin statute, the reserve order — came from legislatures and agencies, not from the technology.[36]

5.3 The gateway: exchange-traded funds

Institutions enter mostly not through crypto exchanges but through the fund industry's most familiar vehicle. The American spot bitcoin funds approved in January 2024 gathered cumulative net inflows of roughly USD 55 billion within two and a half years and hold, at the end of August 2026, a combined 1.26 million bitcoin — six per cent of the final supply. The largest, BlackRock's IBIT, alone safekeeps 777,666 bitcoin worth USD 61 billion — 3.7 per cent of all bitcoin that will ever exist — making it the fastest-growing fund in industry history. The ether funds that followed in July 2024 stayed smaller and faced their first trial in 2026: their assets halved in the crash from USD 18.6 to 8.6 billion before recovering to roughly 12 to 13 billion.[37]

The funds have changed the market's structure — for better and for riskier. For better: custody with audited houses, exchange trading every business day, portfolio-account eligibility, clean tax handling; the fragmented, arbitrage-prone access that Makarov and Schoar (2020) described has become orderly for fund investors. For riskier: the funds bundle demand and supply into a single direction of travel — in 2024 and 2025 their inflows carried the price, in February 2026 their outflows deepened the fall. Whoever invests through funds should know that they ride with the herd — comfortable uphill, crowded downhill.[38]

5.4 Pension funds, insurers, universities, sovereign funds, banks

Through the fund door then stepped investors whose names nobody would have expected in a crypto statistic a few years ago. The insurer MassMutual bought USD 100 million of bitcoin for its general account as early as December 2020. The State of Wisconsin Investment Board became the first American pension institution to buy bitcoin fund shares in 2024, built the position to USD 321 million — and sold out completely in May 2025; Michigan's retirement system, by contrast, holds its bitcoin and ether fund positions to

[36] Auer and Claessens (2018), BIS Quarterly Review, September 2018, pp. 51-65.

[37] Holdings: 1,261,732 bitcoin across all US spot funds; IBIT 777,666 bitcoin, roughly USD 60.8 billion (BlackRock, 27 August 2026); cumulative net inflows roughly USD 54.7 billion.

[38] Makarov and Schoar (2020), Journal of Financial Economics 135(2), pp. 293-319; net outflows of the bitcoin funds in the first half of 2026 after cumulative inflows peaked at USD 61.2 billion in October 2025.

this day. In Britain, a company pension scheme in 2024 became the first to place three per cent directly in bitcoin, advised by the consultancy Cartwright — with the keys split across five custodians. These are single cases, not a wave — but every single case lowers the threshold for the next.[39]

The university endowments, whose craft Rupprechter (2026d) has described, deserve particular note: Harvard's endowment reported BlackRock bitcoin fund shares of roughly USD 266 million for the end of 2025 — for a time its largest disclosed equity-market position — alongside USD 87 million in the ether fund, then cut the bitcoin position by 43 per cent in the early-2026 crash and exited ether entirely; Emory meanwhile added, Brown holds a blockchain equity fund, and Dartmouth ventured first into a Solana fund. Among sovereign funds, Abu Dhabi's Mubadala reports bitcoin fund shares of USD 490 million, while Norway's fund — true to its index discipline — is exposed only indirectly through shares such as Strategy. Table 5 assembles the most important positions.[40]

Table 5: Selected institutional positions (filing status 2026)

Investor	Type	Position	Status
Strategy (USA)	Company	840,447 BTC direct	largest corporate holder
BlackRock IBIT	Fund	777,666 BTC in custody	3.7% of all BTC
Mubadala (Abu Dhabi)	Sovereign fund	USD 490 m in IBIT	held
Harvard endowment	University	USD 266 m in IBIT	cut by 43% in 2026
Michigan	Pension fund	BTC and ETH funds	held, added to
Wisconsin	Pension fund	up to USD 321 m IBIT	sold in 2025
MassMutual	Insurer	USD 100 m in BTC	since 2020
UK pension scheme	Pension fund	3% directly in BTC	since 2024
Czech National Bank	Central bank	USD 1 m test purchase	since Nov. 2025

Source: 13F filings with the US Securities and Exchange Commission; company statements; Czech National Bank (2025); Cartwright (2024); own compilation.

One special case deserves scepticism and respect alike: Strategy, the former software house MicroStrategy, has since 2020 narrowed its business model to buying bitcoin with raised capital — 840,447 units for a total of USD 63.4 billion, at an average of USD 75,385. At the price of late August 2026 that holding sits only just above cost; in 2026 the firm had to sell coins for the first time to service preferred dividends. The banks, finally, have become service providers more than buyers: BNY and State Street safekeep, JPMorgan tokenises deposits, Goldman Sachs builds settlement plumbing. That is the quietest but perhaps most consequential adoption of all: the infrastructure of the old world is learning to serve the new.[41]

[39] MassMutual: USD 100 million in December 2020; Wisconsin: built from May 2024, sale of roughly USD 350 million in May 2025; Cartwright (2024): 3 per cent of a GBP 50 million scheme.

[40] Positions from 13F filings with the US Securities and Exchange Commission for the fourth quarter of 2025 and the first quarters of 2026; Norway: indirect exposure equivalent to roughly 11,549 bitcoin (August 2026).

[41] Strategy: 840,447 bitcoin at total cost of roughly USD 63.4 billion (average USD 75,385, August 2026); BNY custody since 2022; State Street since January 2026.

6 Return and Risk: the Ordeal of Volatility

6.1 Returns and their drivers

Bitcoin's long-run return defies historical comparison — one US dollar of 2011 became several tens of thousands by 2026 — but investment decisions rest not on the past but on the structure of returns. Liu and Tsyvinski (2021) were the first to measure it systematically: crypto returns cannot be explained by the risk factors of equity, currency or commodity markets, but by crypto-specific forces — above all price momentum and investor attention. Liu, Tsyvinski and Wu (2022) condensed this into a three-factor model of market, size and momentum that explains the cross-section of crypto returns — the asset class thus has a return landscape of its own, by now well mapped.[42]

For practice this means two things. First: because attention drives returns, crypto markets are vulnerable to narratives, fashions and manipulation — Gandal, Hamrick, Moore and Oberman (2018) demonstrated how probably two trading programs carried the price surge of 2013, and Griffin and Shams (2020) suggested the like for 2017. Second: because the factors are crypto-specific, the patterns repeat across currencies — whoever holds three platform currencies holds the same risk three times in different wrapping. Hu, Parlour and Rajan (2019) show accordingly that the returns of most small currencies move closely with bitcoin — diversification within the asset class is available only in limited measure.[43]

6.2 Crashes as the rule

Nothing separates cryptocurrencies more sharply from traditional assets than the depth of their crashes. Figure 2 shows the five great Bitcoin cycles: every peak was followed by a loss of between 52 and 94 per cent — above eighty on average. The most recent case is the mildest: from the record of USD 126,210 on 6 October 2025 the price fell 52 per cent within four months, including more than ten per cent on 5 February 2026 alone — the worst trading day since the collapse of the FTX exchange. For comparison: the American stock market lost roughly 57 per cent in the financial crisis of 2008/2009 — the deepest fall in generations. What was the event of the century there is the normal course of a cycle here.[44]

[42] Liu and Tsyvinski (2021), Review of Financial Studies 34(6), pp. 2689-2727; Liu, Tsyvinski and Wu (2022), Journal of Finance 77(2), pp. 1133-1177.

[43] Gandal, Hamrick, Moore and Oberman (2018), Journal of Monetary Economics 95, pp. 86-96; Hu, Parlour and Rajan (2019), Financial Management 48(4), pp. 1049-1068.

[44] Declines: 2011 roughly −94 per cent; 2013-2015 roughly −87 per cent; 2017-2018 roughly −84 per cent; 2021-2022 roughly −78 per cent; 2025-2026 roughly −52 per cent (daily data of major trading venues).

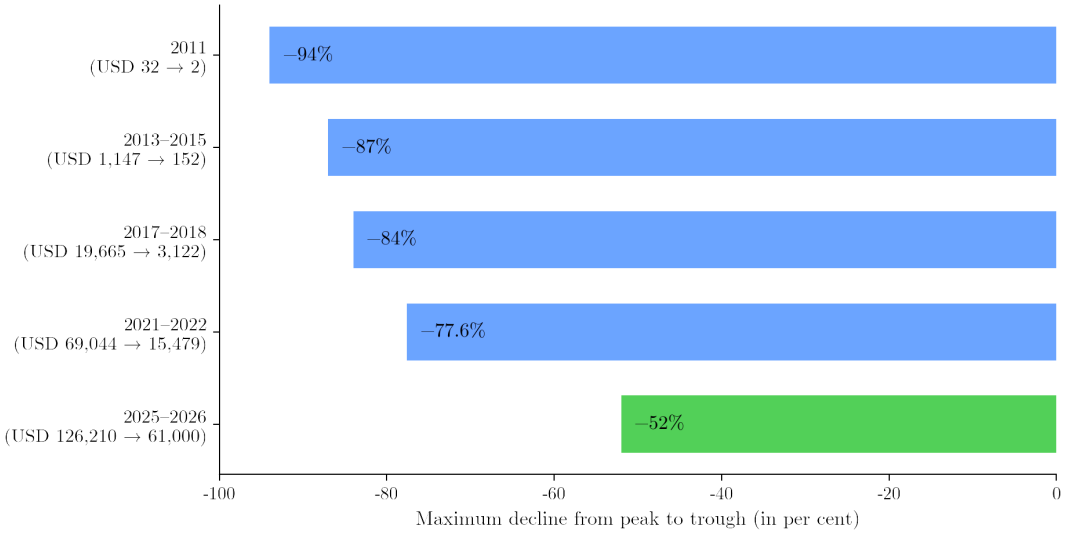

Figure 2: Maximum Bitcoin price declines per market cycle, from each peak to trough, in per cent; green: current cycle to August 2026. Source: price data of major trading venues; own presentation.

These declines are not accidents but the price of admission: the high expected returns of the asset class are, economically, the compensation for someone's willingness to sit out such losses. Behavioural economics explains why that is so hard: Kahneman and Tversky (1979) established loss aversion — losses weigh more heavily than equal gains — and Tversky and Kahneman (1992) later put the factor at roughly 2.25; Odean (1998) demonstrated that investors hold losers too long and sell winners too early. In the crypto market both errors combine into the classic pattern: entry near the peak, when the story is loudest, exit near the trough, when fear is greatest. Whoever cannot endure the crashes of Figure 2 without selling has no business in this asset class — and no profits either.[45]

6.3 Volatility and correlation: what the numbers say

In calm years, admittedly, Bitcoin has grown up. Annualised volatility, at times above 180 per cent in the early years, fell to roughly 35 per cent in 2024 and roughly 23 per cent in 2025 — the calmest year in Bitcoin's history, little more than twice that of the large equity indices; over longer windows Bitcoin still runs at three to four times equities by Fidelity's count. But the calm deceives, for the distribution has heavy tails: February 2026 proved that a daily loss above ten per cent remains possible at any time. Measures taken in quiet phases therefore understate the true risk systematically — Härdle, Harvey and Reule (2020) surveyed the asset class early and showed how patchy the data underlying such measures remain.[46]

[45] Kahneman and Tversky (1979), Econometrica 47(2), pp. 263-291; Tversky and Kahneman (1992), Journal of Risk and Uncertainty 5(4), pp. 297-323; Odean (1998), Journal of Finance 53(5), pp. 1775-1798.
[46] Volatility roughly 35 per cent in 2024 and 23 per cent in 2025 (Lunde, 2025); daily loss of 5 February 2026 roughly 10.5 per cent; Härdle, Harvey and Reule (2020), Journal of Financial Econometrics 18(2), pp. 181-208.

The diversification benefit has shrunk as well. Iyer (2022) measured, for the International Monetary Fund, a correlation of practically zero between Bitcoin and the American stock market for 2017 to 2019, but already 0.36 for 2020 to 2021; since 2020 the rolling correlation with the large equity indices has run around 0.5, rising further in stress phases. Bitcoin and Ether, in turn, move almost in lockstep, with correlations at times above 0.9. For portfolio construction it follows that cryptocurrencies diversify an equity portfolio far less than the early literature hoped — they are a return driver with risk of their own, not a safe haven: Bouri, Molnár, Azzi, Roubaud and Hagfors (2017) had classified bitcoin early on as a poor hedge suited above all to diversification.[47]

6.4 Who owns Bitcoin? Concentration and free float

The ownership map of the bitcoin stock answers an investor question of its own weight: how much is truly tradable? Table 6 lays out the arithmetic: of 21 million possible bitcoin, 20.08 million have been mined; up to 3.79 million are considered lost, 1.1 million rest with Nakamoto, 1.26 million sit in American funds, 840,000 with Strategy, roughly half a million with governments. Taken together, a good third of the mined stock is locked away long term or gone for good — the free float that makes the daily price is correspondingly smaller, and every further institutional buyer shrinks it. That amplifies both directions: purchases push harder, sales fall deeper.[48]

Table 6: Who owns Bitcoin? Locked and free holdings (estimate, end of August 2026)

Holding	BTC m	Share of final supply	Character
Lost (Chainalysis estimate)	up to 3.79	18.0%	gone for good
Attributed to Nakamoto, unmoved	1.10	5.2%	dormant since 2009
US spot funds (all issuers)	1.26	6.0%	locked, fund-held
Strategy (company)	0.84	4.0%	locked, corporate
Governments (USA, China, UK a. o.)	ca. 0.47	2.2%	mostly dormant
Remaining freely tradable stock	ca. 12.6	60.1%	free float
Not yet mined	0.92	4.4%	accruing until ca. 2140

Source: Chainalysis (loss estimate); BlackRock (2026) and fund filings; Strategy company statements; chain analyses of sovereign holdings; own calculation on a final supply of 21 million.
Notes: Categories do not overlap; rounding. The free float also contains dormant private long-term holdings.

[47] Iyer (2022): correlation 0.01 (2017-2019) against 0.36 (2020-2021); rolling values around 0.5 since 2020 (CME Group, 2025); Bitcoin-Ether correlation most recently around 0.96 over 30 days.
[48] Compilation from chain analyses and filing data; individual figures in chapters 2.2, 5.1 and 5.3.

7 Which Currency for Which Investor — and for Which Horizon

7.1 Four investor types

Matching currency and investor begins not with the currency but with the investor — with the capacity to bear losses, the horizon and the willingness to engage with the technology. Four types cover practice. The preserver wants to protect purchasing power over decades, abhors total-loss risk and adopts new things late; for this investor at most Bitcoin is worth discussing — as a small addition in the range of fractions of a per cent to a low single-digit share, through a regulated fund, with the express readiness to sit out halvings of the price. The participant wants a stake in the growth of the blockchain economy, as equities give a stake in the growth of the old economy; this investor combines Bitcoin with Ether and accepts carrying technology and platform risk in return.[49]

The builder understands the technology, may self-custody, earns staking rewards and trusts himself to select individual platform currencies — Solana alongside Ether, plus at most one specialist currency with a clearly recognisable business; he knows that this means holding threefold risk in similar wrapping, and caps the total accordingly. The gambler, finally, seeks quick multiplication in micro and joke currencies; he is not to be advised but merely to be limited: only money whose total loss would change nothing in his life, mentally written off on the day of purchase. Table 7 assigns currencies, shares and horizons to the four types — the shares refer to liquid wealth and are meant as ceilings, not as targets.[50]

Table 7: Investor types, suitable currencies, shares and minimum horizons

Investor type	Suitable currencies	Share of liquid wealth	Minimum horizon
Preserver	Bitcoin via funds	0 to 2%	4 years and more
Participant	Bitcoin and Ether	2 to 5%	4 to 5 years
Builder	BTC, ETH, plus e.g. SOL	5 to 10%	3 to 5 years
Gambler	small currencies	play money only	no recommendation

Source: Own assignment based on chapters 3 and 6; shares are ceilings per type, referred to liquid wealth.

7.2 Holding periods by category

The minimum horizons of Table 7 are no ornament; they follow from the market rhythm of chapter 6. Bitcoin has so far run through its cycles in roughly four years, in step with the halvings — whoever can stay less than one full cycle risks catching precisely the crash half. Historically it held that whoever bought bitcoin at any point and held for four years

[49] On anchoring investment policy in horizon and risk capacity rather than market views, see Rupprechter (2026d) and Rupprechter (2026e).

[50] Barber and Odean (2000) show that frequent trading systematically lowers the returns of private investors; Journal of Finance 55(2), pp. 773-806.

suffered no loss in almost any starting month — an observation, not a guarantee, for the 2025/2026 cycle already shows a different face: the shallowest crash, but also a break in the pattern of ever-higher peaks per halving. For Ether the four-year rule applies in spirit, sharpened by platform risk: the horizon must last until it becomes clear whether tokenisation settles on public chains.[51]

The further down the size ranking, the shorter the defensible commitment — not because small currencies mature faster, but because their survival is less certain. Second-tier platform currencies such as Solana or BNB deserve review at least once a year: is usage growing? Does the sponsor hold? Does regulation change the picture? Micro currencies deserve no horizon at all but a time value like an admission ticket. Stablecoins stand outside this logic: they are due daily, carry no upside and belong in a portfolio only as long as a payment or a re-entry lies ahead — as a permanent store they cannot beat money market funds, whose yield they withhold.[52]

7.3 Position size and rules of conduct

More important than any selection is size. A five per cent position that falls 80 per cent costs the portfolio four per cent — annoying but bearable; the same move in a one-fifth position costs sixteen per cent and, experience shows, worse: the nerves for everything else. Position size is the only tool that reliably translates the volatility of chapter 6 into a bearable portfolio loss, because it works even when all correlations fail. Three rules have proven themselves in practice: set the ceiling in writing before the first purchase; buy in instalments rather than at once; and after strong rises cut back to the original quota, so that the market does not quietly raise the limit.[53]

The rules of conduct follow from the errors the research has documented. Against buying in euphoria and selling in fear — the costliest sequence, which Kahneman and Tversky (1979) make intelligible — the fixed savings plan helps, because it never consults moods. Against overtrading, whose costs Barber and Odean (2000) have quantified, the rule helps of making changes only on fixed dates. And against the greatest crypto error of all — losing the keys or trusting the wrong custodian — the choice of regulated funds or audited custodians helps; the failures of 2022 struck almost exclusively customers of unregulated platforms. Whoever sets these three safeguards has brought the controllable part of the risk under control.[54]

[51] Four-year rhythm along the halvings of 2012, 2016, 2020 and 2024; the next halving is expected in the spring of 2028.

[52] Under the GENIUS Act, licensed dollar stablecoins may not pay their holders interest; the investment income on the backing assets stays with the issuer.

[53] On the discipline of written investment guidelines as an institutional virtue, see Rupprechter (2026e).

[54] Kahneman and Tversky (1979); Barber and Odean (2000); on the custody failures of 2022 see chapter 4.3.

8 Combinations: What Belongs Together and What Does Not

8.1 Roles, not names

A crypto portfolio is built like any portfolio: from roles, not names — the founding idea of diversification since Markowitz (1952). Four roles are to be filled. The value core is Bitcoin: the scarcest, oldest, most widely held currency with the lowest issuer risk — zero, for there is no issuer. The platform role falls to Ether, whose value hangs on the workload of the world computer and which thus carries a different economic risk from the pure scarcity bet. The complement role can be filled by one or two currencies with a clearly recognisable business — Solana, say, for fast retail traffic. The liquidity role, finally, goes to a regulated stablecoin as a staging post for purchases and sales — a tool, not an investment.[55]

In honesty, the diversification gain within the asset class is limited: correlations between the major currencies approach one in stress phases — when Bitcoin falls, everything falls, only to different depths; chapters 6.1 and 6.3 have shown as much. Combining currencies therefore does not spread the crash risk but the success risk: it protects against backing the wrong platform while the asset class as a whole succeeds. Whoever wants to hold only one currency holds Bitcoin; whoever holds two adds Ether; only whoever can name the business a third currency wins that the first two do not cover should add a third. More than four is a collection, not diversification.[56]

8.2 Three model combinations

Table 8 translates the roles into three model combinations along the investor types of chapter 7. The preserving combination holds Bitcoin only — whoever wants just the value core needs no admixture to dilute it. The participating combination weights Bitcoin at seventy and Ether at thirty per cent: the core dominates, the platform bet is palpable but not defining. The building combination adds a second platform and a stablecoin balance — sixty per cent Bitcoin, twenty-five Ether, ten Solana, five stablecoin as room for manoeuvre. Common to all three is what they do not contain: no joke currencies, no currencies without a recognisable business, no leveraged products.[57]

[55] Markowitz (1952), Journal of Finance 7(1), pp. 77-91.

[56] Hu, Parlour and Rajan (2019) on the co-movement of small currencies with bitcoin; Bitcoin-Ether correlation most recently around 0.96 (chapter 6.3).

[57] Weights as shares within the crypto position; the crypto position itself stays within the ceilings of Table 7.

Table 8: Three model combinations for the crypto position

Role	Preserving	Participating	Building
Value core: Bitcoin	100%	70%	60%
Platform: Ether	—	30%	25%
Complement: e.g. Solana	—	—	10%
Liquidity: stablecoin	—	—	5%
Share of liquid wealth	up to 2%	2-5%	5-10%

Source: Own presentation; roles as in chapter 8.1, investor types as in chapter 7.1.

The return expectation should be stated soberly. The case for Bitcoin rests on the continued migration into the balance sheets of funds, firms and governments against a fixed supply — it needs no new technology, only continued trust. The case for Ether and the platforms rests on real value creation — payments, settlement, tokenisation — shifting onto public chains; it is larger if it succeeds, but tied to conditions that can fail. Whoever holds both holds two different bets on the same underlying technology — that is the economic justification of the combination, and it carries only as long as the position size allows both bets to fail.[58]

9 Conclusion

Eighteen years after Nakamoto's white paper, the opening question of this paper can be answered soberly. Cryptocurrencies are not a homogeneous asset class but a collective name for very different goods: a programmatically scarce store of value (Bitcoin), working currencies of economically used platforms (Ether, Solana), dollar-pegged payment money (Tether, USD Coin), company-tied currencies (BNB, XRP) and attention goods without a business (Dogecoin). The economic usefulness is real but unevenly distributed: today it lies above all in stablecoin payments and in beginning tokenisation — not in paying with bitcoin, which Baur, Hong and Lee (2018) rightly described as a side show.

Institutionally the asset class has arrived: an American reserve of forfeited holdings, a central bank test purchase in Prague, six per cent of all bitcoin in exchange-traded funds, positions held by insurers, pension funds, university endowments and sovereign wealth funds. But arrived does not mean becalmed: per cycle Bitcoin has lost between 52 and 94 per cent, the correlation with equity markets has risen, and prices hang on recognition by legislators as much as on investor mood. Whoever enters buys the ordeal along with the asset: volatility here is not a passing phase but the price of the possible return.

The recommendation of this paper fits into four sentences. First: position size comes before currency choice — a few per cent of liquid wealth, capped in writing, is the most important single decision. Second: the core belongs to Bitcoin, the first complement to

[58] On the valuation logic of platform currencies, Cong, Li and Wang (2021); on the dependence of prices on official recognition, Auer and Claessens (2018).

Ether; whoever holds more currencies must be able to name, for each, a business the others do not cover. Third: the horizon must carry a full market cycle — four years and more — otherwise abstention is the better investment. Fourth: stablecoins are tools, micro currencies are play money, and neither belongs in retirement savings. Whoever takes these four sentences to heart can afford the new asset class — even if its boldest promises never come true.[59]

[59] This paper completes the series on institutional investors; on endowments and sovereign funds see Rupprechter (2026d), on pension funds Rupprechter (2026e).

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Preliminary note: Market data without a separate reference are from CoinGecko (2026), reference date 30 August 2026. Holdings and filings of institutional investors follow the 13F filings with the US Securities and Exchange Commission and the company and agency sources cited.

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