Economics & Strategy

Digital Assets Update 2Q25: US Crypto Expansion

Currencies/monetary policy/economics/digital/banking/finance

Group Research

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This is our quarterly update on digital assets. Please refer to the end of this article for a set of useful resources and links to past publications

Summary

Cryptos continue to prove to be risk-on assets, facing considerable volatility lately. However, given the favourable regulatory environment in the US with Trump 2.0, the crypto ownership base is widening across retail and institutional investors. New exchanges, supporting infrastructure, and new mining developments are taking root. Stable coins have caught momentum. CBDCs are making progress. Also, a complementarity between stable coins and CBDCs is taking hold.

Main points

Recent crypto-friendly regulatory developments in the US provide additional comfort to financial institutions to expand in this space.

Morgan Stanley and Charles Schwab, with combined USD11T AUM are expected to provide access to spot crypto trading within the next twelve months.

Bitcoin mining's carbon footprint could be lower than commonly thought. Unique features about Bitcoin mining could see it complement renewable energy infrastructure.

CBDCs vs Stablecoins debate is likely to assume centre stage this year. Most central banks prefer to prepare the ground for a CBDC rollout, but not ready to roll out yet.

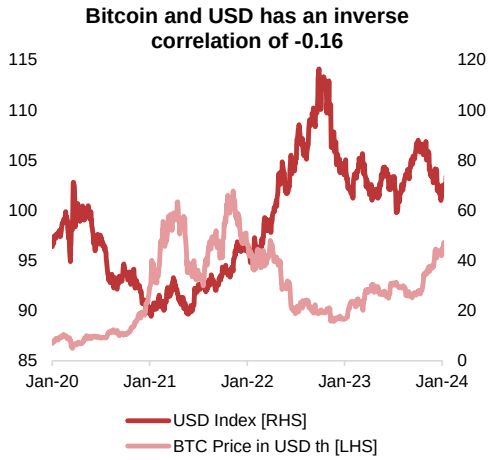
Introduction

In a quarter marked by tariff-related global market stress and subsequent relief, the digital asset space saw similar vacillation in risk sentiments. Cryptos continue to prove to be risk-on assets, but with the favourable regulatory environment in the US with Trump 2.0, their ownership base is widening. In this quarterly publication, we take stock of such developments in the US. New exchanges, supporting infrastructure, and new mining developments are taking root. We examine some analysis that Bitcoin mining's carbon footprint could be lower than commonly thought. We take stock of unique features about Bitcoin mining could see it complement renewable energy infrastructure.

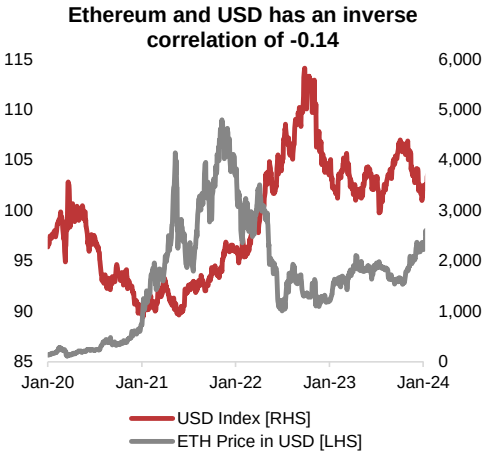
Stable coins have caught momentum while CBDCs are making progress. We delve into the brewing linkage between CBDCs and stablecoins. This is backed by two opposing views held by the US and the European Union.

Crypto market

The cryptocurrency market rebounded in late April following a weak 1Q25 performance and a broad-based sell-off triggered by Trump's Liberation Day retaliatory tariff policy announcement. Bitcoin (BTC) surged back above the psychological USD100k level after hitting a low of USD77.5k earlier in the month. Ethereum (ETH) mirrored this trend, recovering to around USD2500 after dipping to the USD1460 range. This rally was partly driven by a sharp rebound in global equities, and a concurrent weakening in the US dollar post Trump's introduction and subsequent pause of sweeping reciprocal tariffs. Our analysis of daily returns found that both Bitcoin and Ether have been inversely correlated to the DXY Index in the last 5 years.



Source: Refinitiv, DBS



Source: Refinitiv, DBS

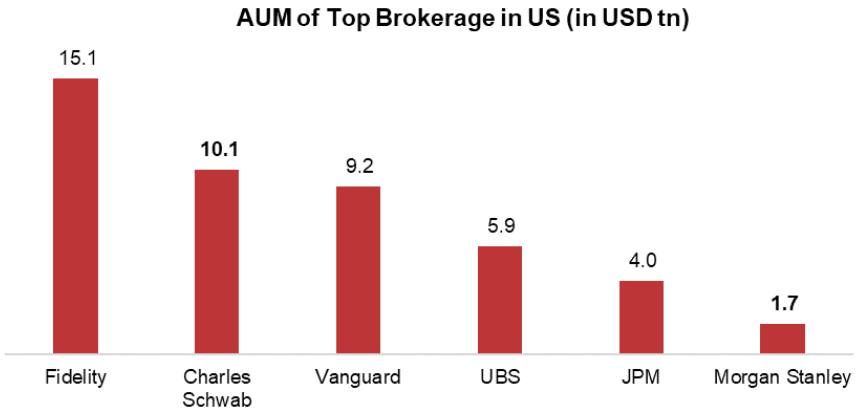
Update on crypto regulations in the US

Under President Trump, the US has seen a wave of crypto-friendly regulatory developments in recent months, and these are likely to accelerate institutional adoption of digital assets. Some of the key changes include:

1. **SEC Leadership Shift:** Paul Atkins, a pro-crypto figure with approximately USD6mn in crypto-related investments, was confirmed as the new SEC Chair on April 22.
2. **Reduced Legal Pressure:** The SEC has begun sequentially dropping lawsuits against major exchanges such as Coinbase and Kraken.
3. **Regulatory Clarity**: A working draft of a comprehensive "Digital Assets Regulation Bill" is currently circulating, signalling bipartisan momentum for clearer rules in the crypto space.

Pending regulatory clarity following these pro-crypto changes, major financial institutions are now planning to offer direct access to spot cryptocurrency trading for retail customers.

On May 1, Morgan Stanley became the first major US bank to announce plans to enable spot crypto trading for retail customers via its E*Trade platform. Shortly after, Charles Schwab, one of the country's largest brokerages, revealed that it would follow suit—planning to offer spot crypto trading services for Bitcoin and Ether as early as this year, and no later than May next year.



Source: Companies, DBS

Combined, Morgan Stanley and Charles Schwab hold more than USD 11 trillion in assets under management (AUM) and serve over 41 million customers. These plans could thus mark a transformative moment for crypto accessibility in the US, if they come to fruition.

While other large players like UBS and JPMorgan do not yet offer direct crypto trading, they continue to facilitate indirect access—such as allowing access to exchange platforms like Kraken or by offering crypto fund exposure.

Separately, Fidelity, one of the earliest institutional adopters of crypto, announced in early April that it will expand its crypto services to include Individual Retirement Accounts (IRAs). Nevertheless, crypto adoption amongst US institutions is not one of uniform progress towards acceptance and accessibility. Vanguard, the second-largest issuer of ETFs, stands out as a major institution that has decided against launching any crypto-related ETFs or products.

Reassessing Bitcoin's environment impact

There is a widespread belief that Bitcoin is too energy-intensive, as many computations are required by its proof-of-work (PoW) consensus algorithm to secure transactions. According to Digiconomist's Bitcoin Energy Consumption Index, the Bitcoin mining network uses 175 Twh on an annualized basis, which is comparable to the power consumption of Poland. Furthermore, the share of renewable power in the Bitcoin network is estimated to have fallen from over 40% in 2020 to around 25% following China's crackdown on Bitcoin mining in 2021 (Digiconomist, 2025). Thus, Bitcoin's carbon footprint has likely expanded further in recent years, even if there is no complete data on the carbon intensity of energy used in Bitcoin. The White House Office of Science and Technology Policy estimates that electricity generation associated with cryptocurrencies could have resulted in a combined 110m to 170m metric tons of carbon dioxide per year, or 0.3% of global annual greenhouse gas emissions (OSTP, 2022).

Indeed, the belief that Bitcoin is not environmentally friendly has also been accepted by leaders in the crypto community. One reason why Ethereum eventually switched from a proof-of-work to proof-of-stake (PoS) consensus is due to its founder's rejection of the excessively high energy needs to secure a PoW network, which "kills trees" in his own words (see Buterin, 2016).

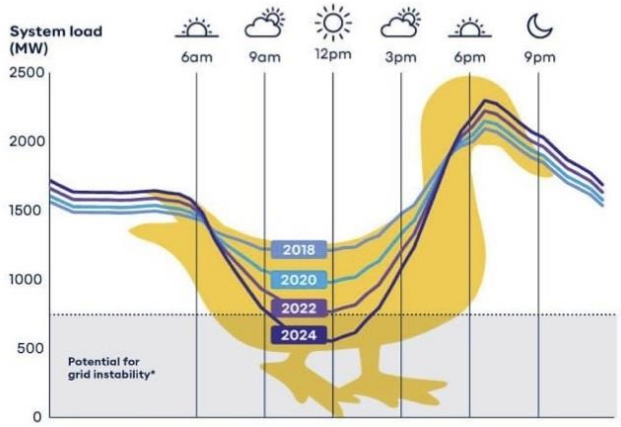
However, **the potential carbon footprint for Bitcoin could be much lower than assumed.** Research by Ibañez and Freier (2023) highlights a unique potential for Bitcoin mining to provide flexible load responses to the energy grid. They argue that this could facilitate renewable energy expansion and promote decarbonization efforts more broadly.

Limitations of Renewable Energy Sources

Many renewable energy sources, such as wind and solar power, face the problem of intermittent output. Hence, such Variable Renewable Energy (VRE) sources can exceed energy demand at certain times, and trigger shortfalls at other times. The imbalances facing a renewable energy grid are also difficult and expensive to address.

For instance, in temperate countries, daylight solar production does not align with peak energy demand in the evening. Hence, there are frequently recurring gluts of power supplied by solar in the afternoon that depress prices, which subsequently transition into a shortage in the evening that must be met by conventional power generators. Such a variation in the required energy load throughout the day, also known as the "duck curve", is a well-reported phenomenon in California (Cheng, et. al., 2023).

California Energy "duck curve"



Source: Chapman University

The misalignments in energy demand and supply result in volatile prices for VRE. It implies lower cost-efficiency for renewable energy infrastructure, and a need for government subsidies of VRE projects to be economically sustainable, amid a broader push for environmental sustainability.

In this context, PoW mining for Bitcoin could be an intriguing alternative to subsidies in facilitating VRE investment.

Features of Bitcoin mining

Ibañez and Freier pointed out the following unique characteristics for Bitcoin mining, namely:

1. Flexibility of Load
2. Interruptibility
3. Portability
4. Price Sensitivity
5. Scale Agnosticity
6. Consumption-level Granularity

7. Non-rival Energy Consumption
8. Waste Heat Utilization.

In our view, the first five features are of primary importance in distinguishing Bitcoin mining from other energy use cases, and imbue it the ability to provide a special service to VRE grids.

Bitcoin miners can be activated and deactivated with sub-second responsiveness, and with computations being non-time-sensitive, they can also be interrupted at no cost. As such, they can be used when VRE supply exceeds demand, helping to balance the load on the grid, thus supporting the profitability of VRE infrastructure. Furthermore, the Bitcoin network is not geographically bound. This portability creates the possibility for PoW computations to rotate across geographies based on where VRE energy loads are lightest, and power costs cheapest. The marginal carbon footprint of PoW mining can thus be substantially lower than the region average, or even close to zero in such a scenario.

Bitcoin and decarbonization

Given the low costs of entry and exit and the production of a homogenous good, the Bitcoin mining industry is also one close to perfect competition. This means that Bitcoin mining is extremely sensitive to price, with activity scaling up and down in response. This also implies that low-cost VRE miners, taking advantage of load-based pricing, should squeeze out miners that are based on higher-cost non-renewable energy. Assuming similar energy efficiency across the pool of Bitcoin miners, competitive entry and exit also means the network's average carbon footprint should converge to the marginal VRE carbon footprint, which is very low.

In conclusion, Bitcoin mining can increase the profitability of VRE, while driving out high-cost non-renewable energy usage. **Bitcoin could thus serve as a unique catalyst for de-carbonization through a broader utilization of VRE, and it may well have a lower carbon footprint than commonly appreciated.**

Central Bank Digital Currencies (CBDCs)

Stablecoins and CBDCs

The linkage between CBDCs and stablecoins is taking centre stage in 2025. This is backed by two opposing views held by the US and the European Union. Soon after taking office, US President Trump signed an executive order, which said the administration would take measures "to protect Americans from the risks of Central Bank Digital Currencies (CBDCs), which threaten the stability of the financial system, individual privacy, and the sovereignty of the United States." Instead, the government is in favour of promoting the development and growth of "lawful and legitimate dollar-backed stablecoins worldwide." By contrast, the European Union maintained its position that crypto assets could create risks for the Eurozone, keeping up with its work towards the digital euro. Despite differing views, these governments face common hurdles. Firstly, the need to pass appropriate legislation in a timely manner will be key. Secondly, the distrust in CBDCs is also backed by the narrative that non-US dollar CBDC networks could be used to evade Western sanctions. Next, these markets are of relatively small size now, but as they expand, there could amplify the ongoing shifts in the reserve currency. According to the Atlantic Council, the estimated stablecoin market size is $227bn in market capitalization vs $6.22trn for US capital markets and $3.39trn for global cryptocurrency markets. Lastly the European crypto rules are likely to promote the euro to deliver strategic and economic autonomy vs the US dollar.

IMF Fintech Note explores legal aspects of token-based CBDCs

In March 2025, a Fintech Note titled "Private Law Aspects of Token-Based Central Bank Digital Currencies" was released, building on an earlier paper that examined the public law dimensions of CBDCs, which covered the legal foundations under central bank and monetary law. This new note focuses on the private law considerations, which concern the legal relationships between individuals and entities (natural or legal persons), in contrast to public law, which governs the relationship between the state and its citizens. A token-based CBDC represents a form of central bank-

issued digital money, where transferring the token effectively transfers the underlying claim.

IMF's handbook discusses the implication of CBDCs on monetary operations

In continuation of its work on CBDCs, the IMF has published a series of virtual handbooks, which aim to reflect evolving experiences, findings, and policy views. Of the six papers, we briefly discussed "Positioning CBDC in the Payments Landscape" in our 4Q24 update on Digital Assets. Another relevant paper for the real economy and policy was "Implications of Central Bank Digital Currencies for Monetary Operations." This explores a part of domestic considerations that requires central banks to use different instruments to manage the demand for and supply of reserves to achieve a desired policy stance.

The extent of impact will rest on three scenarios:

1) Do CBDCs partially replace cash in the system?
2) Do CBDCs substitute commercial bank deposits, held by households, businesses, and non-banks?
3) Can CBDCs substitute for central banks' reserves directly if commercial banks settle interbank payments in CBDC instead of reserves held in traditional real-time gross settlement systems?

The paper adds that the first two instances refer to situations which work under the 'retail CBDC' framework and the last under 'wholesale'.

Europe

The European Central Bank's digital euro project is about three-quarters of the way through a two-year preparation phase, starting in November 2023 and running until October 2025. This period is for the various stakeholders, especially the ECB and national central banks, to finalize the operational rulebook, select service providers, and test technical aspects of the digital euro. Under this framework, the ECB has announced plans to engage with about 70 private sector companies through a short-term innovation platform. The private sector players are likely to be a combination of payment service providers, merchants, research institutes, fintech companies, etc.

This platform is meant to simulate the digital euro ecosystem, backed by the central bank's technical and regulatory support as well as infrastructure. The applications received have likely joined one or both workstreams - 'pioneer' and 'visionary' partnerships. In a recent speech, the European Parliament's Committee on Economic and Monetary Affairs Cipollone highlighted that the central bank was in the midst of the procurement process to establish framework agreements with possible future providers of digital euro services. The procurement process is yet to be completed.

Others

China: Reports in the domestic media cited officials expressing concern over the US's plans to encourage dollar-backed stable coins. A recent report by a media reportedly published by the deputy director of the National Finance and Development Laboratory (NFDL), warned that US stablecoins have the potential to reshape global financial markets. As a result, China must expedite the adoption of its central bank digital currency (CBDC) to compete with US stablecoins. One of the modes to achieve this would be to expand the usage of e-CNY beyond retail use to other modes of exchange involving B2B as well as institutional usage, besides cross-border transactions. Authorities might also explore stablecoins backed by the yuan.

UK: In its progress update published at the start of the year, BOE and HM highlighted that a firm decision on whether to introduce a digital pound is yet to be made, with plans afoot to complete the design phase over the next couple of years. Introduction of a digital pound will require primary legislation, which will followed by the parliament's approval. One of the workstreams of the design phase is the blueprint framework, which is classified around four main components: a) Product Vision and Strategy; b) scheme and Regulation; c) Technology, which involves the conceptual and structural design of the digital pound's core infrastructure; d) Operational aspects. The next key steps involve developing detailed design notes for the blueprint and establishing a Digital Pound Lab. This Lab will enable practical testing of APIs, use cases, and business models. As a result, the Technology Forum will be phased out in favor of more focused and direct engagement, supported by the Lab.

UAE: The Central Bank of UAE plans to introduce a retail CBDC i.e.; a digital dirham by end-2025. This follows the launch of the 'Financial Infrastructure Transformation (FIT) Programme' in February 2023, which was intended to boost digital transformation and promote innovation. Earlier in the year, the CBUAE had highlighted that the FIT program was more than four-fifths complete, spanning over nine domains. Beyond the introduction of the e-dirham by the end of this year, the integration across stakeholders is set to be completed by 2026. Once implemented, the blockchain-based CBDC is expected to be distributed via banks, exchanges, finance companies, and fintech companies.

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