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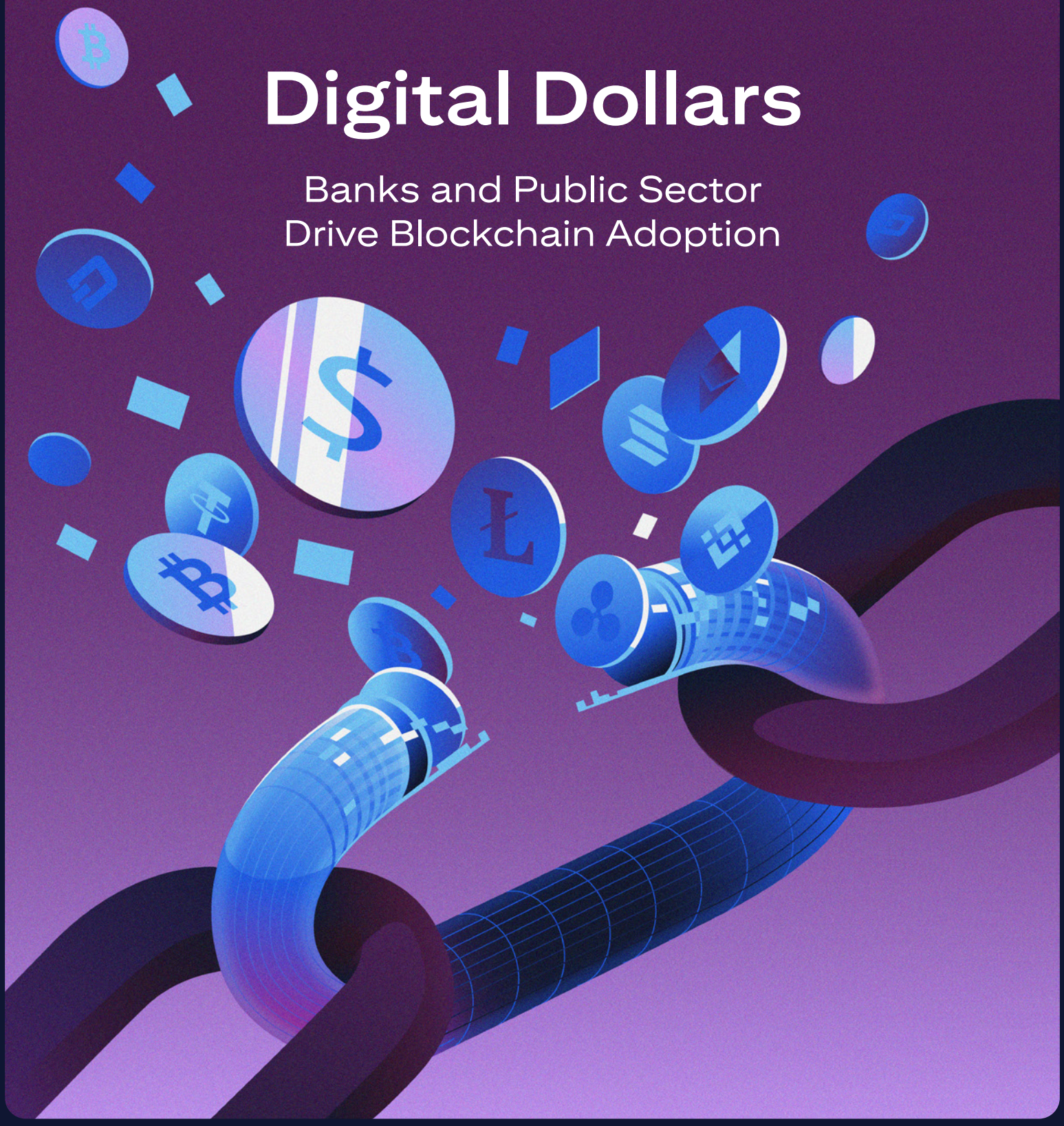
# Digital Dollars

## Banks and Public Sector Drive Blockchain Adoption



Citi Institute

Global Perspectives & Solutions

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# Digital Dollars

## Banks and Public Sector Drive Blockchain Adoption

Blockchain's adoption is being driven by evolving regulation and a growing emphasis on transparency and accountability. This GPS report focuses on two key areas: enabling new financial instruments – such as stablecoins – and modernizing legacy systems.

With the tailwind of regulatory support and factors such as the increased integration of digital assets into incumbent financial institutions and favorable macroeconomics, we expect increased demand for stablecoins ahead.

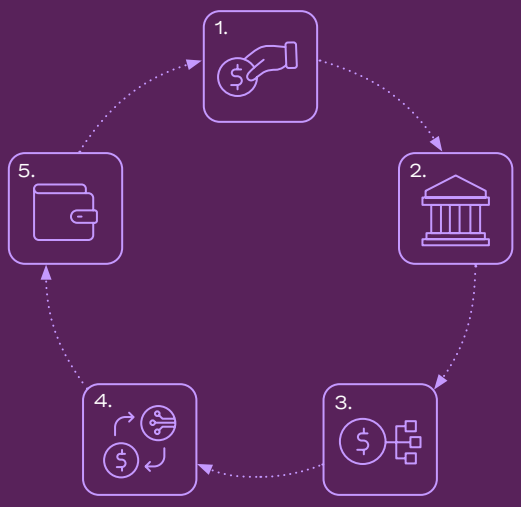
Blockchain introduces a decentralized, trust-based approach to managing public sector data. Unlike traditional systems, where trust is established through a central authority – such as a government verifying its own records – blockchain relies on cryptographic proof.

Globally, government processes broadly remain a series of discrete, siloed steps, which are still dependent on large amounts of paper and manual work.

Blockchain offers significant potential to replace existing centralized systems with streamlined operational efficiency, better data protection and reduced fraud.

Of course substantial risks and challenges remain. These include vulnerability to potential fraud, confidentiality concerns and secure access to digital assets.

## How Fiat Collateralized Stablecoins Work




1. User deposits traditional fiat currency (e.g. USD) to stablecoin issuer.
2. Being pegged to fiat currency, the issuer maintains a reserve of fiat currencies in a secure account.
3. Some reserves are held in cash, the rest is invested in short-term treasuries/ cash equivalents.
4. User is provided value of stablecoins equivalent to their initial deposit.
5. User can deploy stablecoin as deemed fit – hold with centralized custodian or self-custodial wallet.

*Source: Fireblocks, Global X Japan, Kraken, Citi Institute*

# Key Takeaways

1. 2025 has the potential to be blockchain's 'ChatGPT' moment for adoption in the financial and public sector, driven by regulatory change.
2. The total outstanding supply of stablecoins could grow to $1.6 trillion by 2030 in our base case and to $3.7 trillion in our bull case. That said, the number could be closer to half a trillion dollars if adoption and integration challenges persist.
3. We expect the stablecoin supply will remain US dollar denominated (approx. 90%), with non-US countries promoting national currency CBDCs.
4. A US regulatory framework for stablecoin could drive net new demand for US Treasuries, making stablecoin issuers among the biggest holders of US Treasuries by 2030.
5. Stablecoins pose some threat to traditional banking ecosystems via deposit substitution. But they are likely to offer banks/financial institutions opportunities for new services.
6. Blockchain adoption in the public sector is also gaining traction, driven by an ongoing focus on transparency and accountability in public spending, evident in the US government's DOGE (Department of Government Efficiency) initiative and blockchain pilots by central banks and Multilateral Development Banks.
7. Key public sector use-cases of blockchain include: tracking spending, disbursement of subsidies, public records management, humanitarian aid campaigns, tokenization of assets, and digital identity.
8. While public sector on-chain volumes are initially likely to be small, and risks remain high and challenges plenty, increased interest from the public sector could be an important signal for wider blockchain adoption.

**30x**

Stablecoin supply has grown in the past five years

*Source: DefiLlama*

**$1.6 trillion**

Our base case estimate for stablecoin market size by 2030

**$1 trillion**

We estimate net new purchases of US Treasuries by 2030 in our base case


# Blockchain – Why Now?

We consider whether 2025 has the potential to be blockchain's 'ChatGPT moment' for adoption in the financial and public sectors.

A supportive US regulatory stance on blockchain is expected to be the driver of what could be a game changing year. This could lead to greater adoption of blockchain-based money and spur other use cases, financial and beyond, in the US private and public sector. Another potential catalyst is an ongoing focus on transparency and accountability in public spending.

These changes build on developments over the past 12-15 months, including the European Union's Markets in Crypto Asset Regulation (MiCA), growing user demand demonstrated by crypto ETF launches, institutionalization of crypto trading and custody and the US Government establishing the Strategic Bitcoin Reserve.

While involvement in blockchain by banks, asset management, and public sector and government institutions has increased, they have lagged some of the more bullish expectations. But times are changing.

Digital finance already exists for consumer and institutional finance, including internet banking, but this is built on proprietary databases and centralized systems. We are now seeing the process of accelerating the integration of internet native technology, money and use cases that are blockchain and digitally native.

> Government adoption of blockchain falls into two categories: enabling new financial instruments and system modernization. Stablecoins are now major holders of US Treasuries, starting to influence global financial flows. Their growing adoption reflects sustained demand for US dollar-denominated assets. Systems are upgraded by integrating shared ledgers to enhance data synchronization, transparency and efficiency.
>
> *Artem Korenyuk, Digital Assets – Client, Citi*

## Stablecoins are Making an Entrance

Stablecoins are cryptocurrencies that are pegged to a stable asset- like the US dollar. The main catalyst for their greater acceptance may be regulatory clarity in the US, which could enable greater integration of stablecoins specifically, and blockchain more widely, into the existing financial system. Given the US dollar's dominance in international finance, changes in the US will impact the wider system.

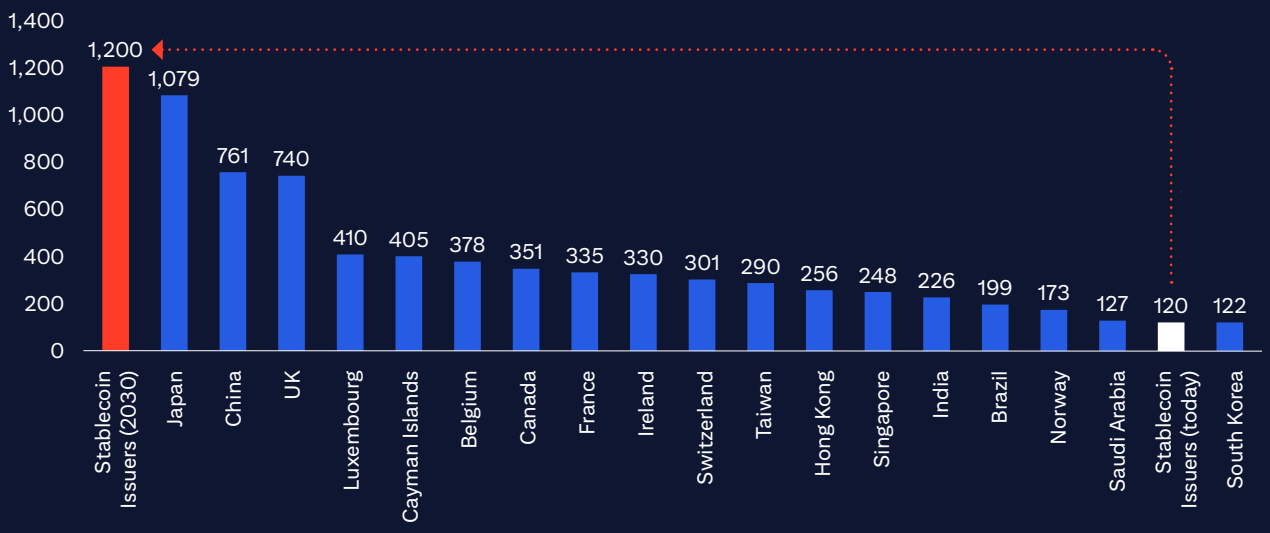
The US administration appears keen to promote the growth of the onshore digital asset sector as part of its focus on boosting innovation and efficiency. The January 2025 US presidential executive order, titled "Strengthening American Leadership in Digital Financial Technology", established a working group on digital asset markets tasked with developing a federal regulatory framework for the sector.

The tailwinds of regulatory support and the increased integration of digital assets into incumbent financial institutions are setting the scene for increased usage of stablecoins. This is further supported by macroeconomic factors such as the demand for the US dollar in emerging and frontier markets.

At end March 2025, the total value of stablecoins exceeded $230 billion – 30x larger than five years ago according to DefiLlama. This partly reflects the growth in the total value of public cryptocurrency (+1400% in the five years to end March 2025) and growing institutional demand. It is hard to make future estimates, but our scenario analysis suggests total outstanding stablecoin supply could reach $1.6 trillion (base case) and in bear and bull case reach approx. $0.5-3.7 trillion respectively.

**Captive US Treasury demand:** Creating a US regulatory framework for stablecoin would support demand for dollar risk-free assets inside and outside the US. The stablecoin issuers will have to buy US Treasuries, or comparable low risk assets, against each stablecoin as a measure of having safe underlying collateral. In our base case stablecoin issuance scenario, we expect an additional $1 trillion plus of US Treasury purchases. Stablecoin issuers could hold more US Treasuries by 2030 than any single jurisdiction today.

**Figure 1.** Stablecoin Issuers Could be One of the Largest Holders of US Treasuries by 2030 ($ Billion)




Note: Data as of January 2025. Red line indicates Citi Institute estimate.
*Source: US Treasury, Tagus Capital, Citi Institute*

If our base case forecast – which requires a good deal of caution – holds true, stablecoin issuers could become one of the largest holders of US Treasuries relative to any other jurisdiction today, as depicted in Figure 1.

## Challenges Lie Ahead

Headwinds and challenges also exist for the growth of stablecoins. While the dollar's dominance may evolve over time, with the euro or other currencies being promoted by national regulations, stablecoins may be viewed by many non-US policy makers as an instrument of dollar hegemony.

> The goal is to align money movement with the speed of the internet and global commerce. Stablecoins could serve as the key utility to achieve that. The first step is legislative and regulatory clarity. There also need to be legal safeguards, such as limiting liability for multiple transaction 'hops'.
>
> *Ryan Rugg, Digital Assets – Services, Citi*

Geopolitics remain fluid. Should the world continue to drift into a multi-polar system it is likely that policymakers in China and Europe will be keen to promote central bank digital currencies (CBDCs) or stablecoins issued in their own currency. Emerging and frontier market policy makers will also be vigilant with respect to their local risks from dollarization.

Stablecoins and CBDCs are both attempts to create digital money, but they are different in their technical architecture and governance. The issuer of CBDCs is central banks while private entities can issue stablecoins. CBDCs are usually inspired by blockchain principles but are not based on public blockchains.

Stablecoins may play a role as a Eurodollar 2.0, given demand for US dollars from wholesale and financial transactions in general – and specifically from jurisdictions with volatile currencies.

Hence, we expect the world of stablecoins to remain US dollar-dominated in the coming years. Our base case estimate for 2030 stablecoin supply assumes it will be approximately 90% dollar-denominated, albeit lower than today's almost 100%.

Stablecoins carry run-risk, and could cause contagion effect. Stablecoins de-pegged about 1,900 times in 2023, with around 600 of these being large-cap stablecoins.[1]

A major de-pegging event would likely dampen crypto market liquidity, trigger automated liquidations, impair trading platforms' ability to meet redemptions, and potentially have broader contagion effects for the financial system. For example, in March 2023 mass redemptions in USDC were triggered by news of Silicon Valley Bank's failure.

A recent Galaxy Digital report[2] suggested that Tether provides approx. $8bn or c.25% of the total crypto lending business, and stated that if this lending is extended using depositors' money, "it's a violation of fractional banking and exposes Tether to serious systemic risk."

[1] Moodys, Large Fiat-Backed Stablecoins Depegged 600+ Times in 2023, 01 November 2023.
[2] Galaxy Research, The State of Crypto Lending, 14 April 2025

**Figure 2.** Stablecoins vs CBDCs

| FACTOR | DEPOSIT TOKENS/ TOKENIZED DEPOSITS | STABLECOINS | CBDCS |
|---|---|---|---|
| **Issuer** | Regulated commercial banks | Non-bank entities or banks (in some cases) | Central banks |
| **Backing Assets** | Deposits in commercial bank accounts | Reserves (cash, T-bills, commercial paper, crypto, etc.) | Direct liability of the central bank |
| **Regulation** | Subject to banking regulation and supervision | Varies: some are regulated (e.g., USDC), others less regulated | Issued and governed by central bank laws and regulation |
| **Risk Profile** | Similar to holding a traditional bank deposit | Depends on issuers transparency and reserve quality | Lower risk vs stablecoins |
| **Use Cases** | Institutional payments, programmable finance, settlement | Retail payments, crypto trading, Decentralized Finance (DeFi), remittances | Retail and wholesale payments, financial inclusion, monetary policy |

Note: Tokenized deposits are token representation of the commercial deposits where each token is backed by retail or institutional deposits. Whereas a deposit token is the native token on blockchain which directly represents the retail or institutional deposits in form of tokens. Most bank projects to date can be classified as 'tokenized deposits'. Deposit tokens are mostly in pilot or early stages, such as Project Guardian, the Regulated Liability Network (RLN) or Project Helvetia.

*Source: Citi Institute*

## Does the Public Sector Need Blockchain?

Trust and transparency are important for maintaining public support for governments and institutions.

> Trust is the new currency of governments. [They need to] build confidence and faith with their citizens. Governments can continue using centralized databases and traditional software solutions but [will] likely miss out on the fundamental evolution that blockchain enables.
>
> *Saqr Ereiqat, Secretary General, Dubai Digital Asset Association*

Blockchain introduces a trust-based, decentralized approach to managing public sector data. Unlike traditional systems, where trust is derived from an authority – such as a government verifying its own records – blockchain allows for cryptographic proof of authenticity. Trust is embedded into the technology itself.

Blockchain's immutability ensures that once information is recorded, it cannot be altered, providing tamper-proof records for sensitive public data, such as land registries, voting systems, and financial transactions. While other technologies can also achieve immutability, they often require a trusted party to enforce it.

Cross-border activities, especially disbursements of international funds via agencies such as the World Bank or humanitarian aid projects, are important blockchain use cases.

International fund flows can be opaque, making it difficult to efficiently verify whether resources reach their intended recipients. Blockchain can provide transparency into complex transactions, even in remote or unstable regions where financial institutions are not functioning efficiently.

> Building a blockchain where a simple database would suffice, is like driving a Ferrari to the corner store – expensive, inefficient, and unnecessary. If a single entity controls all inputs and outputs, blockchain offers no real advantage. Its true value emerges where trustless value exchange is needed.
>
> *Artem Korenyuk, Digital Assets – Client, Citi*

Siim Sikkut is the former government chief information officer for Estonia (2017-2022) and continues to serve as a member of the Presidential Digital Advisory Council of Estonia. He is also the managing partner of Digital Nation.

## Expert View

# Digital Trust Revolution

**Q: What led to Estonia's adoption of blockchain?**

Estonia's digital transformation was driven by necessity. As a small nation with just over a million people, efficiency and productivity have been paramount. In the late 1990s, as the internet gained prominence, Estonia began experimenting with digital solutions in government and banking. These early initiatives demonstrated significant benefits, enabling the country to operate beyond its size and resources.

This success led to a strategic commitment to digital innovation. Estonia adopted an iterative approach, testing emerging technologies, identifying what proved effective, and scaling successful solutions. This methodology gave rise to pioneering initiatives such as online voting and e-residency, both of which began as experimental projects before becoming integral to Estonia's digital infrastructure. Blockchain followed a similar trajectory. Estonia did not adopt it in response to a crisis, but rather as a commitment to secure an efficient digital governance.

**Q: How and why does Estonia use blockchain in government operations?**

Estonia primarily uses blockchain to ensure data integrity in government systems. The key challenge was maintaining trust – ensuring citizens could rely on the security and accuracy of their data. While encryption and cybersecurity can help address confidentiality and availability, the government needed a solution to verify the integrity of its records. The critical question was: how do you trust the system administrator and the log files they provided?

In the late 2000s, Estonia adopted a custom blockchain, KSI (Keyless Signature Infrastructure), as an additional trust layer. Today, it is used across various government databases including the national health registry. Notably, the blockchain does not store actual records, but instead logs metadata on when and by whom records are accessed or modified. For example, instead of storing an individual's blood type, it records when and by whom the entry was accessed or modified. This approach had two key advantages. First, it ensured user privacy and regulatory compliance. Second, storing large datasets on-chain were impractical in terms of cost and performance.

**Q: What potential blockchain use-cases do you see in the future?**

A promising area is digital documentation, where blockchain could enhance security, transparency and efficiency in distributing benefits, grants, and public sector resources. By providing an immutable ledger, blockchain could reduce fraud, improve accountability, and ensure seamless verification across institutions.

Another potential use is in managing and safeguarding stored value, particularly in government programs that allocate financial aid or subsidies. Tokenization also holds potential, especially for government sectors involved in financial redistribution.

Julie Monaco is the Global Head of Public Sector Banking at Citi.

## Expert View

# Holistic Digital Policy

**Q: What does a successful national digital policy look like?**

A successful national digital policy isn't just about technology. It's about vision and purpose. It starts with bold leadership and a commitment to building an inclusive, human-centered digital economy. Empowering a digital czar to align priorities across AI, data privacy, and cybersecurity is key. It is estimated that strategic investment in digital ID systems can unlock access for 1.7 billion people, reclaim 110 billion hours, and add up to 6% of GDP in emerging markets.[3] With 3.6 billion already enrolled globally, according to Juniper Research, the momentum is real. Countries like Estonia, India, and Singapore show what's possible when policy leads innovation.

**Q: What role, if any, should blockchain play as part of a successful digital policy in delivering accountability, transparency, and efficiency?**

Blockchain absolutely has a role to play in a successful digital policy – particularly in strengthening accountability, transparency, and efficiency. Its ability to create immutable records and automate audit trails through smart contracts can potentially reduce fraud, improve oversight, and build trust in public systems. On the efficiency side, it can streamline services like tax collection or benefit distribution by cutting through bureaucracy. It's not a silver bullet, but when used thoughtfully, blockchain can be a powerful tool in helping governments operate with greater integrity, responsiveness, and impact.

[3] McKinsey & Company, Digital Identification: A Key To Inclusive Growth, 17 April 2019.

# Stablecoins: A ChatGPT Moment?

## How do Stablecoins Work?

Stablecoins are a type of cryptocurrency designed to maintain a stable value by pegging their market price to a reference asset. This asset could be a fiat currency like the US dollar, a commodity like gold, or a basket of financial instruments. Key components of the stablecoin system include:

- **Stablecoin issuer:** The entity that issues the stablecoin and is responsible for managing its peg by typically holding value equivalent to the circulating supply of the stablecoins in underlying assets.
- **Blockchain ledger:** Once a stablecoin is issued to the public, transactions are recorded on a blockchain ledger. The ledger provides transparency and security by tracking ownership and movement of stablecoins across users.
- **Reserves and collateralization:** Reserves ensure each token can be redeemed for its pegged value. For fiat-collateralized stablecoins, these reserves typically consist of cash, short-term government securities and other liquid assets.
- **Digital wallet provider:** Provides a digital wallet, which can be mobile apps, hardware devices or software interfaces, that allows the owner of the stablecoin to store, send and receive their coins.

## How do Stablecoins Maintain Their Peg?

Stablecoins rely on different mechanisms to ensure their value is aligned with the underlying asset. Fiat-backed stablecoins maintain their peg by ensuring each issued token is redeemable for an equivalent amount of fiat.

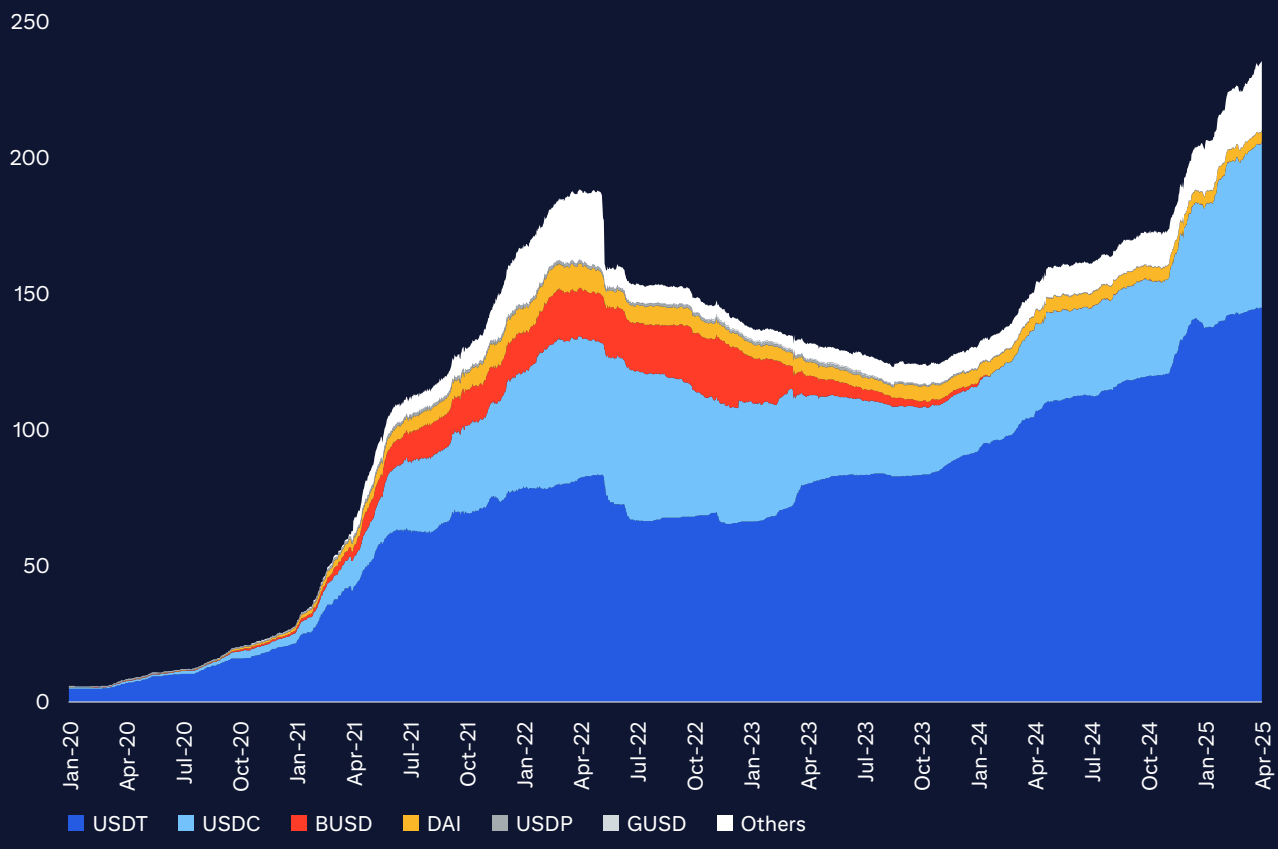
## The Big Stablecoins

As of April 2025, the total outstanding supply of stablecoin had crossed $230 billion, an increase of 54% since April 2024. The top two stablecoins dominate the ecosystem, with over 90% market share of volumes by value and transaction numbers, led by Tether (USDT) and followed by USD Coin (USDC).

Transaction volumes have grown fast in recent years. On an adjusted basis, stablecoin volumes have been running at $650-700 billion per month during 1Q25 or about double the levels of 2H2021 to 1H2024.[4] Supporting the crypto ecosystem has been the leading use case of stablecoins.

The largest stablecoin, USDT, launched in 2014 on the Bitcoin blockchain and expanded to the Ethereum blockchain in 2017, enabling its use in Decentralized Finance (DeFi). In 2019, it further expanded to the Tron network, widely used in Asia, due to its faster speed and lower costs. USDT has largely operated offshore, but times are changing.[5]

**Figure 3.** Stablecoin Supply, 2020-2025

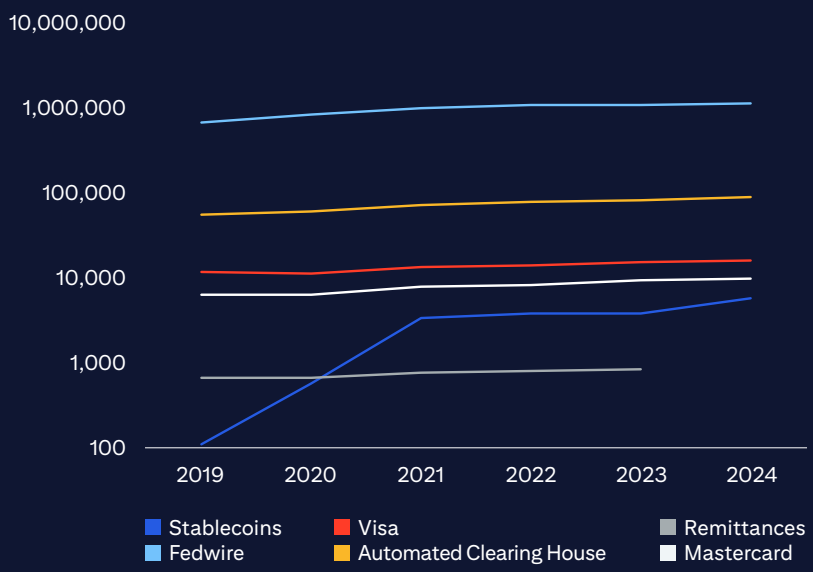



*Source: DeFi Llama, Citi Institute*

[4] See Visa's analysis of stablecoin transactions publicly available on visaonchainanalytics.com – the adjusted transaction volume data are based on methodology agreed by Visa and partners attempts to remove potential distortions in the data created from activity such as high-frequency trading and bots.

[5] The information, Tether Eyes Issuing New Stablecoin for US Market, April 2025.

**Figure 4.** Stablecoin Transaction Volume vs Other Modes ($ Billion)




Note: Logarithmic scale

*Source: Fedwire, ACH, Mastercard, Visa, Allium, World Bank, Citi Institute*

> We will certainly see more players (specifically banks and traditional players) enter the markets. USD-backed stablecoins will continue to dominate. Ultimately, the number of players will be determined by how many different products will be needed to cover the major use cases – and it is likely to feature more players than the card network market.
>
> *Matt Blumenfeld, Global And US Digital Assets Lead, PWC*

## What are the Drivers of Stablecoin Adoption in the US and Globally?

*Erin McCune, Founder & Principal Consultant, Forte FinTech*

- **Utility advantages (speed, low cost, 24x7 availability)** are creating demand both in advanced economies (particularly those without broad adoption of instant payments, where small and medium-sized business (SMBs) are underserved by incumbents, and multinationals want to move money globally much more easily) and emerging ones (where cross-border transaction costs remain high, banking technology is immature, and/or financial inclusion lags).
- **Macro needs (inflation hedging, financial inclusion)** are driving adoption in areas where stablecoins serve as a lifeline, sometimes literally. Consumers in Argentina, Turkey, Nigeria, Kenya, and Venezuela with volatile local currencies safeguard their funds with stablecoins. An increasing proportion of incoming remittances are now in the form of stablecoins, and unbanked consumers now have access to digital dollars.
- **The endorsement and integration by incumbent banks and payment providers** is key to legitimizing stablecoins (particularly for institutional and business users) and can rapidly expand both access and utility. Mature, scale operators of payment networks and core processors can bring transparency and facilitate integration with familiar solutions that corporates and merchants rely on. Clearing mechanisms across various stablecoins, between banks and non-banks, will also be necessary to achieve scale. Tech improvements for consumers (easy to use wallets) and merchants (embedding stablecoin acceptance into acquiring platforms made accessible via API) are removing barriers that once limited stablecoins to the crypto fringes.
- Finally, and perhaps most importantly, long awaited **regulatory clarity** is allowing banks and the broader financial services industry to incorporate stablecoin in both retail and wholesale contexts. Transparency (audit requirements) and consistent liquidity management (reliable par value) will ease operational integration as well.

*Matt Blumenfeld, Global and US Digital Assets Lead, PwC:*

- **User Experience:** The global payments landscape is increasingly shifting toward real-time digital transactions. But the challenge for adoption with each new payment method has been the customer experience – is it intuitive, can I see a use case, is the value clear. Any institution that successfully enhances the customer experience – whether for retail or institutional users – will emerge as a leader in its respective segment. Integration with the ways we pay today will enable the next wave of adoption. On the retail side, that will be in card or penetration of mobile wallets. On the institutional side, it will be about simpler, more flexible, cost-effective settlement.
- **Regulatory clarity:** In the wake of new stablecoin regulation, we can see just how significantly regulatory uncertainty had been stifling innovation and adoption globally. The launch of MiCA regulation, regulatory clarity in Hong Kong, and progress on stablecoin legislation in the US have sparked a surge in activity focused on simplifying money movement for both institutions and consumers.
- **Innovation and efficiency:** Institutions must view stablecoins as an enabler for more agile product development that cannot be easily achieved today. This means providing an easier, more creative or attractive medium to enhance traditional bank deposits in the form of – for instance – yield generation, programmability, and composability.

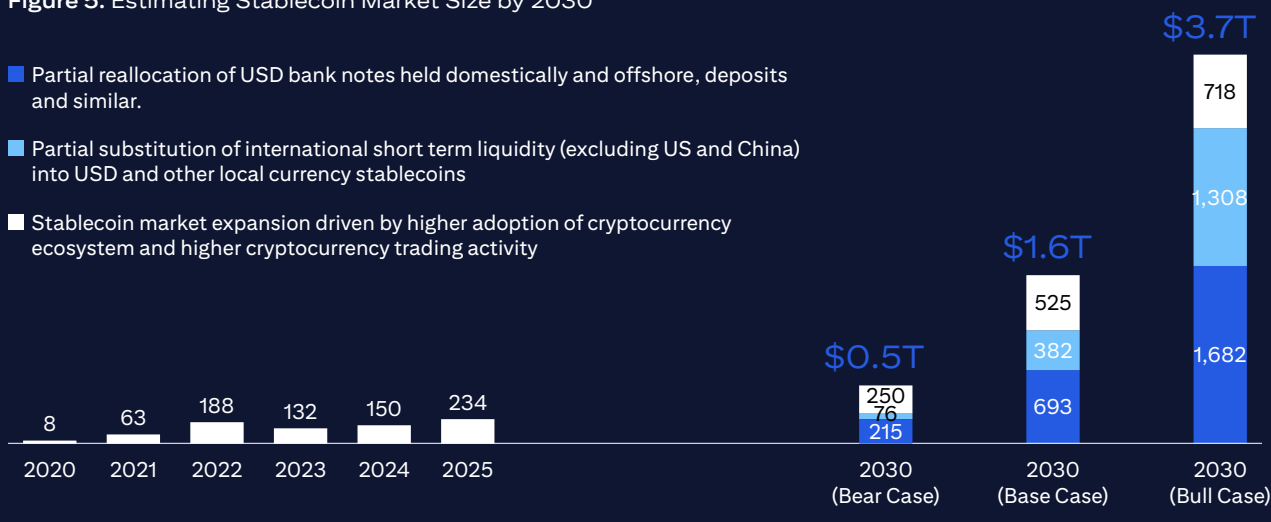
## The Potential Market for Stablecoin

Any forecast for the potential size of stablecoin market requires a certain amount of caution, as Erin McCune, founder of Forte Fintech, notes. There are a lot of moving parts and our own scenario analysis points to a wide range.

We built a forecast range based on growth in stablecoins demand driven by:

- Substitution of a part of overseas and domestic US currency holdings from banknotes to stablecoins – overseas holdings of US bank notes are typically a safe haven hedge against local volatility and stablecoins are an easier way to access such a hedge. Domestically, stablecoins could at the margin be used for some payment functions and held for this use.
- Reallocation of a part of USD short-term liquidity held by households and companies in the US and internationally into stablecoins to support cash management and payment operations due to ease of use (24x7 cross-border etc.) – and possibly as a partial substitution for yield bearing assets, if allowed by regulation.
- In addition, we assume a similar trend of short-term liquidity substitution for EUR/GBP as for USD short-term liquidity, held by households and companies domestically, albeit on a much smaller scale. Our overall base case and bull case 2030 forecasts assume the stablecoin market remains heavily USD driven (with approximately 90% share).
- Growth of the public cryptocurrency markets where stablecoins are used as a settlement or on/off ramp facilitator; partly driven by growth of institutional adoption of public cryptocurrency assets and usage of blockchain technology in general. In our base case we assume the stablecoin growth trend of 2021-2024, for issuance volumes, continues.
- Citi Institute's base case estimate for 2030 is $1.6 trillion stablecoin market size with a bull case estimate of $3.7 trillion and bear case of $0.5 trillion.

**Figure 5.** Estimating Stablecoin Market Size by 2030




*Source: Federal Reserve Bank, Bank of England, European Central Bank, PBOC, Citi Institute*

**Figure 6.** Stablecoin Market Size 2030

| REGION/ SECTORS | DRIVERS | BEAR CASE ($ BILLION) | | BASE CASE ($ BILLION) | | BULL CASE ($ BILLION) | |
|---|---|---|---|---|---|---|---|
|  | Substitution of a part of overseas US currency holdings from banknotes to stablecoins. *(Total 2030E USD bank notes in circulation held outside the US $1.5 trillion)* | 1.0% | 15 | 10.0% | 149 | 25.0% | 372 |
| | Substitution of a part of domestic US currency holdings from banknotes to stablecoins. *(Total 2030E USD bank notes in circulation held within the US $1.8 trillion)* | 1.0% | 18 | 5.0% | 91 | 10.0% | 182 |
| | Reallocation of a part of US short-term liquidity held at banks, such as savings and current accounts held by households and companies. *(Total 2030E bank deposits: savings and current $18 trillion)* | 1.0% | 182 | 2.5% | 454 | 5.0% | 908 |
| | Reallocation of a part of US term deposits and retail money market funds (MMFs) if interest bearing stablecoins are issued. *(Total 2030E near-term term deposits and retail MMFs $4 trillion)* | - | - | - | - | 5.0% | 221 |
|  | Substitution of a Global M0 excluding US and China. *(Total 2030E M0 of $21.8 trillion)* | 0.1% | 22 | 0.5% | 109 | 1.0% | 218 |
| | Reallocation of a part of global short-term liquidity held at banks, such as savings and current accounts held by households and companies excluding US and China. *(Total 2030E bank deposits: savings and current $54.5 trillion)* | 0.1% | 55 | 0.5% | 273 | 1.0% | 545 |
| | Reallocation of a part of global term deposits and retail money market funds (MMFs) excluding US and China if interest bearing stablecoins are issued. *(Total 2030E near-term term deposits and retail MMFs $54.4 trillion)* | - | - | - | - | 1.0% | 544 |
|  | Growth in existing stock of stablecoin supply in line with the growth of the public cryptocurrency markets where stablecoins are used as a settlement or on/off ramp facilitator; and growth of institutional adoption of public cryptocurrency assets and usage of blockchain technology. *(Bear case: stablecoin supply to remain largely in-line with current market size; base case growth assumed to be average of last four year's YoY growth of daily supply i.e. 17.4% and bull case growth rate assumed at 25%)* | 1.7% | 250 | 17.4% | 525 | 25.0% | 718 |
| | **2030 Stablecoin Market Size ($ Billion)** | | **541** | | **1,600** | | **3,707** |

Note: 2030 stock of monetary aggregate (Cash in circulation, M0, M1 and M2) is calculated using nominal GDP growth. Euro Area and United Kingdom could see local currency stablecoin issuance and adoption. China likely to adopt sovereign CBDC and less likely a foreign privately issued stablecoin. 2030E non-USD stablecoin estimate for bear case: $21 billion; base case: $103 billion and bull case: $298 billion.

*Source: Federal Reserve, Bank of England, European Central Bank, DeFi Llama, Citi Institute*

Erin McCune is the founder and principal consultant at Forte Fintech. She has over 25 years consulting experience in payments. Her advisory work focuses on business payments, cross-border transactions, and the intersection of corporate finance, banking, and enterprise software. Prior to founding Forte Fintech, she was a partner at Bain & Co, and at Glenbrook Partners.

## Stablecoin Market Outlook

*Erin McCune, Forte FinTech*

**Q: What could be an optimistic and cautious outlook for the stablecoin market size in near future and underlying factors driving the trajectory?**

It requires supreme confidence (or hubris) to project global stablecoin market growth as there are many remaining unknowns. With that caveat, here are my bullish and bearish scenarios:

The most optimistic forecast anticipates the market expanding 5–10x as stablecoins become an everyday medium for instantaneous, low-cost, low-friction transactions worldwide. In a bullish scenario, stablecoins grow exponentially from c.$200 billion today to $1.5-2.0 trillion in value by 2030 permeating global trade payments, P2P remittances, and mainstream banking. This optimism is reliant on several critical assumptions:

- Favourable regulation in key geographies – not just Europe and North America, but also markets with the most demand for alternatives to local fiat in Sub-Saharan Africa and Latin America
- Genuine trust between incumbent banks and new entrants, and widespread consumer and business faith in the reserve integrity of stablecoins (e.g., $1 stablecoin = equivalent of $1 in preferred fiat)
- Intentional allocation of revenue (and savings) across the value chain to enable cooperation, and
- Widespread adoption of technology that will bridge old and new infrastructure, facilitating structural efficiency and scale. For example, merchant acquirers are already starting to use stablecoin. For wholesale payment applications, corporate treasury and AP solutions – and treasury bankers – will need to adapt. And commercial banks will need to deploy tokenization and smart contracts.

In a bearish scenario, stablecoins' usage remains limited to the crypto ecosystem and select cross-border use cases (primarily markets with illiquid currency, which today represent a modest portion of global GDP). Geopolitical factors, resistance to digital dollarization, and widespread adoption of CBDC would further hamper stablecoin growth. In this scenario stablecoins might plateau at $300-500 billion and have limited relevance in the mainstream economy. The following factors would result in a more bearish scenario:

- If one or more major stablecoins had reserve failures or de-pegging events it would significantly erode trust amongst retail investors and businesses.
- Friction and cost associated with using stablecoin for everyday purchasing – whether receivers of remittances unable to buy groceries, pay tuition and rent or businesses unable to easily use funds for payroll, inventory, etc.
- Retail CBDCs have not gained traction, but in geographies where a public-sector alternative for digital cash does scale stablecoins may be less relevant.
- Central bankers in geographies where stablecoins are gaining traction and further eroding relevance of local fiat may react by tightening regulation.
- If fully reserve backed stablecoins grew large enough, this could "tie up" large quantities of safe assets to back them, potentially constraining credit in the economy.[6]

[6] Federal Reserve Bank of New York, The Future of Payments Is Not Stablecoins, 07 February 2022.

### Q: What are the current and upcoming use-cases for stablecoins?

Just as with any other form of payment, stablecoin relevance and potential growth must be considered on a use case by use case basis. A few use cases have gained traction, while others remain theoretical or are clearly impractical. Below are stablecoin use-cases that make sense today (or in the near future) from largest to smallest contribution toward the ultimate stablecoin TAM:

- **Crypto Trading:** Individuals and institutions using stablecoins to trade digital assets are by far the largest use case today, representing 90-95% of stablecoin volume. Much of this activity is driven by algorithmic trading and arbitrage. In a mature state, trading (retail + DeFi activity) may still represent around 50% of stablecoin usage by value, given crypto markets' continued growth and reliance on stablecoins for liquidity.
- **B2B Payments (Corporate Payments):** According to Swift, the vast majority of traditional correspondent banking transaction value arrives at the destination within minutes via Swift gpi. But that's mostly between money centre banks, in liquid currencies, during banking hours. There's still a lot of inefficiency and unpredictability, particularly when conducting business in low- and middle-income countries. Businesses using stablecoins to pay overseas suppliers and manage treasury operations could be a significant share of the stablecoin market. With global B2B flows in the tens of trillions, even a small share moving to stablecoins corresponds to perhaps c.20-25% of stablecoin TAM in the long run.
- **Consumer Remittances:** Despite a steady shift from cash to digital, pressure from regulators, and focused efforts by new entrants, payments from overseas workers to friends/family back home still cost a lot of money (5% of an average $200 transaction: 5x higher than the G20 target). With lower fees and faster speed, stablecoins are poised to capture a significant share of the c.$1 trillion remittance market. If promised immediacy and dramatically lower cost prove true, this could amount to perhaps 10-20% of the market in a high-adoption scenario.
- **Institutional Trading and Capital Markets:** An expanding use case where stablecoins settle trades for professional investors or tokenized securities. Large financial flows (FX, security settlement) could start using stablecoins to accelerate settlement. Stablecoins could also streamline funding for retail purchasing of stocks and bonds which today is often enabled by batch automated clearing house processing. Already, large asset managers are piloting stablecoin settlements for funds, laying the groundwork for broad adoption in capital markets. Given the significant payment flows between financial institutions, even modest adoption could amount to c.10-15% of the stablecoin market.
- **Interbank Liquidity and Treasury:** Banks and financial institutions using stablecoins internally or for interbank settlement represent a smaller, but potentially high-impact, slice (perhaps <10% of TAM). Leading industry players already have blockchain initiatives that move $1 billion+ daily, demonstrating potential, despite continued lack of regulatory clarity. This segment could grow significantly, although it may overlap with institutional usage above.

## Stablecoins: Cards, CBDCs & Strategic Autonomy

We believe stablecoin usage will likely grow and these new opportunities will create room for new entrants. The current issuer duopoly may persist in offshore markets, but each national onshore market will likely enable new players to join. As with the evolving card market in the past 10-15 years, the stablecoin market will change too.

Stablecoins have some similarities with the card industry or cross-border banking. All these sectors have high network/platform effects with strong reinforcement loops. More merchants accepting a certain trusted brand (Visa, Mastercard et al) leads to more cardholders with that card. Stablecoins have a similar usage loop.

Stablecoins have typically been outside financial regulations in the larger jurisdictions, but this is now changing in the EU (MICA, 2024) and the US (underway). The need for stricter financial regulations, and the high-cost requirement of partners, will likely lead to a concentration in stablecoin issuers, like we see with card networks.

> Ultimately, having a select few stablecoin issuers is beneficial to the wider ecosystem. While one or two major players might seem concentrated, an excess of stablecoins leads to fragmented, non-fungible money formats. Stablecoins flourish when there is scale and liquidity.
>
> *Raj Dhamodharan, Executive Vice President, Blockchain & Digital Assets, Mastercard*

However, growing political and technological developments, has led to increased heterogeneity in the card markets, especially outside the US. Could the same happen in stablecoins? Many countries have developed their own national card schemes, such as Elo in Brazil (2011), RuPay in India (2012), and more.

Many of these national card schemes were launched for national sovereignty reasons and were boosted by local regulatory changes and political encouragement of domestic financial institutions. They also enabled integration with new national real-time payment systems, such as Pix in Brazil and UPI in India.

The international card schemes, while continuing to grow in recent years, lost market share in many of the non-US markets. In many markets, technological change led to the rise of digital wallets, account-to-account payments and super apps. All of which led to the erosion of market share.

Just as in the card market we have seen a proliferation of national schemes, we are likely to see jurisdictions outside the US continue to focus on developing their own central bank digital currencies (CBDCs) as a tool of national strategic autonomy, especially in wholesale and corporate payments.

An OMFIF survey of 34 central banks suggests 75% of central banks still plan to issue a CBDC. The proportion of respondents expecting to issue a CBDC in the next three to five years has grown to 34% in 2024 from 26% in 2023. At the same time, some practical implementation issues are also increasingly evident – 31% have delayed their issuance timeline, citing legislation and a desire to explore a wider range of solutions.[7]

CBDC projects emerged in 2014 when the People's Bank of China (PBoC) began to undertake research on the topic of a digital yuan. This was coincidentally also the year Tether was born. Stablecoins have grown rapidly in recent years, driven by private market forces.

By contrast, CBDCs have remained largely official pilot projects. The few smaller economies that have launched national CBDC projects have not seen a lot of organic user uptake. However, the recent increase in geopolitical tensions may lead to an increased interest in CBDC projects.

## Stablecoins & Banks: Opportunities & Risks

Stablecoin and digital assets adoption provide a new business opportunity for some banks and financial institutions to drive revenue growth:

### Role of Banks in the Stablecoin Ecosystem

*Matt Blumenfeld, Global and US Digital Assets Lead, PwC*

There are many opportunities for banks to engage with stablecoins. This could be a direct role as a stablecoin issuer or more indirect roles as part of the pay-in/pay-out solution, structured products around stablecoins, or liquidity provision in general. Banks will find a way to continue to be the interchange for money movement.

As users chase more attractive products and better experiences, we have seen deposits rotate out of the banking system. With stablecoin technology, banks have the opportunity to create better products and experiences while retaining deposits in the banking system – where users often prefer them to be secured – simply on new rails.

[7] OMFIF Digital Money Institute, CBDCs: It's Time for Action, 2025.

**Figure 7.** Banks and Stablecoin: Revenue and Business Opportunity

| OPPORTUNITY | DESCRIPTION |
|---|---|
| Custody and Reserve Management | Banks could provide custody functions for the US Treasuries backed stablecoins or the reserves and potentially provide services to the stablecoin issuer directly or to another entity that manages the stablecoin reserve. |
| Treasury Brokerage and FX | Banks could act as intermediaries between stablecoin issuers and the Treasury market. |
| Liquidity and Cash Management | Banks could assist stablecoin issuers manage liquidity by monetizing idle cash and generate yield from overnight lending. Banks could provide liquidity to FinTechs in the stablecoin network to access 24x7 settlements in illiquid corridors. |
| Stablecoins as an Infrastructure | Banks could use stablecoin as an infrastructure without having it on their balance sheet for optimizing payouts especially in emerging markets or treasury rebalancing between traditional currencies. |
| Payments; Card Integration | Banks could process trillions in transaction volume of stablecoin transactions; offer redemptions, pay-ins and payouts, enable merchant acceptance and even integrate stablecoin debit/credit cards into the existing or new payment networks. |

*Source: Citi Institute*

At a system level, stablecoins may have a similar impact as 'narrow banks'[8] and there is a long policy debate on the pluses and minuses of such institutions. The migration of bank deposits to stablecoins could impact banks' ability to lend. This reduction in lending capacity could constrain economic growth, at least during a transition period while the system adjusts.

[8] 'Narrow banks' – Limit banks to accept deposits and invest only in low risk assets such as government securities to promote financial stability, see Brookings 1987 paper by Robert Litan.

Traditional economic policy has come out against narrow banking, as summarized in the IMF 2001 paper[9] due to credit creation and growth concerns. Opposing views have been set out by Cato 2023 and similar voices who have argued that 'narrow banking' reduces systemic risks whereas credit and other flows will adapt.[10]

**Figure 8.** Narrow Banking: Opposing Views

| ASPECT | IMF (2001) | CATO INSTITUTE (2023) |
|---|---|---|
| Main argument | May harm credit and growth | Reduces systemic risk |
| Credit creation | Restricts lending | Credit adapts via markets |
| Financial stability | Partial stability gain | Strong stability benefit |
| Monetary policy | Weakens transmission | Policy can evolve |
| Policy recommendation | Tighter bank regulation | Legalize and allow choice |
| Regulatory view | Supports central oversight | Regulatory resistance criticized |

*Source: IMF, Cato Institute, Citi Institute*

[9] IMF, Should Banks be Narrowed?, October 2021.
[10] Cato Institute, Is It Finally Time for Narrow Banking, 2023.

# Blockchain in the Public Sector

*Trust and transparency are the core benefits of blockchain in public sector.*

Blockchain offers significant potential to replace existing centralized- often paper based- systems with streamlined operational efficiency, better data protection and reduced fraud.

While public sector on-chain volumes are initially likely to be smaller than the private sector, the increased interest from the public sector is important for blockchain adoption in general. In the rest of this chapter, we discuss some key public sector blockchain use cases.

- **Public Spending and Finance:** Blockchains can help consolidate financial and non-financial reporting across government agencies and external partners, enabling near real-time tracking of expenditures, reducing the risk of corruption/fraud and potentially improving trust in public institutions. Blockchain's immutability also makes auditing of public finance easier as records cannot be altered and are traceable.
- **Disbursement of Government Subsidies:** Many government welfare programs suffer from inefficiencies, mismanagement and fraud. Blockchain based payments and digital identities can ensure that subsidies, such as social security benefits, unemployment aid, or agricultural grants, reach the intended recipients without intermediaries siphoning off funds. Smart contracts can enable real-time disbursements, reducing delays and enhancing transparency.
- **Public Records Management:** Different government agencies handle vast amounts of citizen's data, including identity, medical history and land records. Blockchains can help digitize and secure these records, preventing manipulation, fraud or theft as well as reducing potential legal disputes. Use of blockchain can provide a single platform to access different datasets, facilitating ease of use and enhanced interdepartmental sharing of critical data across the government.
- **Humanitarian Aid Campaigns:** Blockchains can enhance efficiency in aid campaigns, ensuring resources reach intended persons without delays. Aid organizations can track donations and distributions in real-time, ensuring greater accountability. Digital identities can also help displaced populations access financial/government services, even without traditional identification documents.
- **Tokenization of Assets:** Tokenization aims to unlock value by digitally representing real-world and financial assets through tokens, enhancing efficiency, transparency, and accessibility. In the public sector, governments are exploring tokenization of bond issuance, with the aim to enhance efficiency and accessibility to a broader range of investors. Automation via smart contracts can also help minimize intermediaries, increase liquidity and enhance trust in public asset management.
- **Digital Identity:** Blockchain-based digital identity systems can provide secure, tamper-proof verification for citizens, ensuring seamless access to public services while also preventing identity theft and frauds. Unlike traditional identity systems that rely on centralized databases, blockchain enables individuals to control their credentials. This can be particularly relevant in developing countries, where many people lack official identification. Digital identity can also help streamline access to healthcare, education, agriculture, and social welfare.

## Public Spending and Finance

Blockchain technology has the potential to transform public spending and finance in government services by enhancing transparency, efficiency and accountability, while significantly reducing reliance on manual, paper-based processes.

By consolidating financial and non-financial reporting across government agencies and external partners, blockchain enables **real-time tracking of expenditures**. This should reduce risk of corruption while fostering greater trust in public institutions. The immutability of blockchain records ensures transactions remain traceable and verifiable, simplifying the auditing process and reinforcing accountability. Blockchains also provide real-time monitoring of financial allocations and **offer data-driven insights to access the impact of public spending**.

Use of **smart contracts can make the process of tendering more effective** by automating the process of bid submissions, evaluations, and contract awards. This reduces manual intervention and enhances transparency in awarding contracts, thereby addressing concerns of biases and favoritism often seen in human selection. Contract payments can also be structured in milestone-based stages, ensuring the release of funds only as project milestones are met.

Tax collection and compliance can be streamlined through blockchain integration into accounting systems, enabling **automated tax calculations and remittance to the government**. Since all transactions are permanently recorded on the blockchain, **tax evasion becomes more difficult**, strengthening revenue collection.

Blockchain-based **digital bonds** also enable faster and transparent issuance with automated interest payments. It also allows for fractional ownership, broadening investor participation. Real-time tracking of debt instruments over the tenure can further improve accountability and investor confidence.

Beyond efficiency and accountability, blockchain-based digitization of government services can **eliminate tons of paper documents** used annually for contracts, records and transactions. For example, Dubai's Paperless Strategy aims to reduce billions of sheets of paper produced each year by digitizing all services, including visa applications, bill payments, and license renewals, which will now be securely transacted using blockchain technology.

## Disbursement of Public Sector Funds & Grants

The traditional process of disbursing government and public sector funds and grants usually involves a lot of manual work – processing forms, validating claims, and managing cash flows. Blockchain presents a more effective alternative with streamlined processes, enhanced data security and integrity.

Use of blockchain also enables enhanced transparency, ensuring funds are distributed fairly with reduced opportunities for corruption and fraud. Blockchain also enables lower operational cost and improved efficiency in record keeping and reconciliation.

Cryptographically hashed data is incorporated into the blockchain system to strengthen integrity of transaction information and avoid unauthorized access. Smart contracts can also automate and secure the distribution process by programming predefined conditions, such as verification of eligibility criteria.

Blockchain technology is in many ways ideally suited for cross-border use cases, and a good example of this is the World Bank's FundsChain initiative, launched in September 2024.[11] The initiative has since onboarded nine projects across Moldova, the Philippines, Kenya, Bangladesh, Mauritius and Mozambique.

[11] World Bank, The FundsChain Initiative, 2024.

## FundsChain – World Bank's Blockchain for Disbursement Traceability

The World Bank is responsible for disbursing billions of dollars annually and ensuring that funds are used for their intended purpose. With numerous projects across multiple countries, tracking and verifying fund utilization has traditionally been a manual, time-consuming process. While some tasks have been automated, much of the oversight remains labour intensive. The FundsChain initiative seeks to improve transparency and efficiency in the fund distribution process.

The World Bank, in collaboration with EY (formerly Ernst & Young), developed a blockchain-based platform designed to track funds flow and spends in real time. FundsChain offers robust traceability of disbursements, granting stakeholders real-time visibility, fostering transparency and confidence that funds are reaching the intended beneficiaries, ultimately allowing the World Bank to support borrowing countries in their anti-corruption reforms agenda.

Non-crypto (shadow) tokens are minted when funds are recorded. These tokens are credited to digital wallets for each entity. Efficiency is improved by automating transactions through smart contracts, and security and data integrity are further enhanced by storing and notarizing uploaded resources on the blockchain. Consensus algorithms are used to validate transactions and prevent overspending.

Currently, this oversight is achieved via contractually required expenditure reports from borrowers and collecting additional supporting documents. This can be a highly-manual, labor-intensive, and time-consuming process, and requires significant coordination effort, time and cost. With FundsChain, all project stakeholders – including, borrowers, suppliers, auditors, and end beneficiaries – can see where disbursements are going and how and when they are being used, providing end-to-end transparency with all transactions recorded on-chain, enabling stakeholders to monitor flows real-time.

The World Bank uses a private blockchain for FundsChain as they want to have control over the platform and its future development. They do not want dependency on third party vendors given the sensitive nature of their public sector mission. They also wanted to ensure that any platform they use will be interoperable with those of other multilateral development banks to ensure seamless integration.

## Public Records Management

Blockchain technology offers a robust and secure platform for public records management, ensuring authenticity, integrity and accessibility of critical data. By leveraging immutable ledgers, blockchain allows records to remain complete, accurate and resistant to tampering, fostering greater trust in government systems.

Unlike traditional databases that store records centrally, making them vulnerable to hacking or manipulation, data on blockchains is distributed across a network of nodes. This ensures data remains accessible even if a single node fails, and reduces the risk of data breaches from cyberattacks.

Any modification to a record is cryptographically time-stamped and logged, creating an auditable trail that enhances accountability while protecting citizen data. Blockchains also improve the accessibility and availability of records as they can be easily retrieved and access when required.

Governments are exploring blockchain solutions for public records management. Singapore's OpenCerts for example, is a blockchain platform that enables educational institutions to issue and verify tamper-proof academic certificates. This helps reduce the risk of document forgery and simplifies credential verification.

Another area where blockchain can drive significant improvement is land ownership and property management. Often, the sector is plagued by fragmented record-keeping, outdated processes and corruption. The risk of fraud is particularly high in countries suffering from public sector corruption.

Georgia, for instance, has integrated its land title registry onto the Bitcoin blockchain, improving validation of property-related transactions, while enhancing security and service efficiency.[12]

> "In countries where institutional integrity is weak, there is an opportunity to provide enhanced transparency and restore trust in public institutions via decentralized ledgers that are auditable and transparent to the public and maintained by different parties with incentive not to collude."
>
> *Artem Korenyuk, Digital Assets – Client, Citi*

[12] Forbes, The First Government To Secure Land Titles On The Bitcoin Blockchain Expands Project, 07 February 2017.

## Humanitarian Aid Campaigns

Effective coordination is critical during a crisis, as multiple entities provide assistance in food, healthcare and shelter using disparate systems. Blockchain can streamline program design, resource allocation, and data sharing by providing a unified, shared ledger that prevents duplication of efforts and ensures aid reaches those most in need. A real-time, verifiable record of transactions also fosters collaboration between aid agencies, governments, and NGOs, improving overall response time.

Beyond coordination, blockchain has the potential to reinvent crisis crowdfunding, offering a transparent and decentralized mechanism for mobilizing funds. By leveraging digital currencies, blockchain allows donations to be collected and directly transferred to verified beneficiaries without intermediaries, reducing cost and delays. Use of smart contracts can further automate fund disbursement based on predefined conditions.

Ensuring integrity of humanitarian supply chains is another critical challenge that blockchain can potentially help address. By enabling end-to-end traceability, blockchains allow aid agencies to trace the origins, movement and use of humanitarian supplies. This breaks down data silos, prevents corruption, and ensures aid reaches affected communities effectively. It also enables real-time inventory tracking, helping organizations respond faster to shortages and prevent logistical bottlenecks.

### Blockchains for Humanitarian Aid Campaigns

*Denelle Dixon, CEO and Executive Director, Stellar Development Foundation*

A compelling example of blockchain's impact in the public sector is the United Nation's High Commissioner for Refugees (UNHCR) use of the Stellar blockchain to distribute humanitarian aid. The UNHCR implemented blockchain technology to streamline the process of delivering financial aid, successfully using it across Ukraine, Argentina and other parts of the world. A key benefit of blockchain was the significant cost savings from the overall digital transformation efforts.

Blockchain also introduced a new level of transparency. Traditionally, donors and aid organizers struggle to verify if financial assistance reached intended recipients. With blockchain, UNHCR could track aid in real-time, providing visibility into the flow of funds and confirming financial assistance was received by those in need.

The approach also provided greater security and autonomy for beneficiaries. In many crisis scenarios, displaced individuals may lack access to traditional banking services. By using blockchain-based wallets, aid recipients could receive and use funds without relying on third parties, reducing the risk associated with cash-based or bureaucratic distribution models.

## Tokenization of Assets

Tokenization promises to unlock value by digitally representing real-world and financial assets through tokens, enhancing efficiency, transparency, and accessibility. In the public sector, tokenization can be applied to both financial and physical assets.

Governments can tokenize debt instruments, making bond issuances more efficient and accessible to a broader range of investors. Similarly, natural resources and infrastructure assets such as roads, bridges, and utilities can be represented as digital tokens, enabling better tracking, management, and funding.

Beyond investment accessibility and fractional ownership models, tokenization helps financial institutions and public agencies streamline operations, reducing inefficiencies and systemic risks. Automation via smart contracts can minimize intermediaries, increase liquidity and enhance trust in public asset management.

Several bodies have explored the use of blockchain for digital bonds. For instance, the European Investment Bank (EIB) issued its first ever blockchain-based digital bond for EUR100 million in 2021. The issuance, in partnership with Banque de France, used blockchain for the registration and settlement of digital bonds.[13]

In 2022, the EIB launched Project Venus, issuing its first euro-denominated digital bond on a private blockchain using central bank money in the form of wholesale CBDC.[14] Similarly, the city of Lugano (Switzerland) completed three bond issuances using DLT/blockchain in 2023-24 using the Swiss National Bank's wholesale CBDC.

[13] European Investment Bank Newsroom, EIB Issues It First Ever Digital Bond on a Public Blockchain, 28 April 2021.

[14] European Investment Bank Newsroom, EIB Innovates Further with Project Venus, the First Euro-Denominated Digital Bond on a Private Blockchain, 29 November 2022.

## Promissa – Tokenized Promissory Notes

Many international financial institutions including multilateral development banks (MDBs) are partly funded by financial instruments known as promissory notes, most of which still exist in paper form. While the current system framework provides the operational controls for member nations countries to make subscription and contribution payments to public institutions like the World Bank, the custody of outstanding promissory notes can be digitized to address operational challenges and enhance further efficiency.

Project Promissa was launched by the BIS Innovation Hub, the Swiss National Bank, and the World Bank to build a prototype platform for digital tokenized promissory notes. Project Promissa explores using DLT to simplify the management of the promissory notes and provide a single source of truth for all counterparties throughout the notes' lifecycles. This would enable member country's central banks to have a holistic view of outstanding notes with MDBs and vice versa.

The volume of promissory notes across MDBs is significant: for example, two of the World Bank's largest entities, the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA), both have a substantial number of notes pledged by member nations countries since their establishment.

While the Project Promissa project aims to reimagine a "single source of truth" platform solution to simplify the management of promissory notes between member nations countries and MDBs, in the future it could be extended to include payments associated with such notes by integrating tokenized or existing payment systems.

## Digital Identity

A single digital identity can serve as valid proof for public and private transactions, enhancing secure storage and easy management. Blockchain based digital identity (ID) provides a decentralized, tamper-proof mechanism for identity verification that reduces the risk of fraud and identity theft.

Digital identities extend essential services to underserved communities and those without official documentation, such as displaced persons. With nearly 850 million people lacking official identification,[15] digital IDs can empower individuals through use of alternative data such as biometrics and community validation.

The immutable nature of blockchain creates a transparent record of every transaction, creating a verifiable digital audit trail, enhancing security and accountability. Its decentralized architecture and robust cryptographic protocols protect personal data from breaches and fraud.

Furthermore, self-sovereign identity ensures that individuals maintain ownership and control over their information, selectively sharing data as needed. Advanced techniques like Zero-Knowledge Proofs enable verification of identity attributes without compromising sensitive details.

An early example is the city of Zug in Switzerland, where a blockchain-based self-sovereign digital ID on the Ethereum blockchain provides residents with a single, verifiable electronic identity for diverse applications. Launched in 2017, the Zug blockchain based digital identity programme has seen limited adoption so far due to a mix of factors, including complexity and limited usability.

In 2023, Brazil introduced a new national identity card, leveraging blockchain. The new digital IDs can be accessed via mobile devices using facial recognition and QR codes. The IDs are stored on a private blockchain, known as b-Cadastros, built by Brazil's state-owned IT services corporation, and aim to boost security and reliability of data-sharing between public bodies.[16]

[15] World Bank, Identification for Development (ID4D) Global Dataset 2021.
[16] Forbes, Brazil Develops Blockchain Network To Support ID Rollout, 27 September 2023.

## Blockchain Adoption Challenges in the Public Sector

Blockchain holds great promise for government service, offering benefits such as transparency, security and efficiency. However, its adoption at scale also faces significant challenges discussed below.

> Developing standardized protocols and practices will help public blockchains gain wider acceptance and trust among banks and governments. Fostering collaboration between public and private sectors can drive innovation and ensure that blockchain solutions meet the needs of all stakeholders.
>
> *Ricardo Correia, Partner, Bain & Company*

- **Lack of Trust:** Many blockchain solutions still tend to be experimental and untested, making it difficult to build trust in the ecosystem. There is a need to raise awareness and develop relevant skills across the ecosystem. This takes times and requires investment.
- **Interoperability and Scalability:** Blockchain solutions need to be interoperable and scalable to handle a high volume of transactions, if they are to be adopted at national or global scale. Efforts are underway to develop global standards for adoption of blockchain with wide acceptance across different markets.
- **Transformation Challenges:** Overhauling existing infrastructure can be challenging and involves significant investment of time and resources. Insufficient evidence of actual gains, perceived immaturity of blockchain technology, and existence of complex legacy systems further hampers new investments.
- **Regulatory Issues:** Blockchain's decentralized nature poses a challenge for adoption at scale, necessitating regulatory frameworks that recognize the legal nature of blockchains, validity of documents stored, and financial instruments issued. Lack of clarity around regulations has slowed adoption.
- **Addressing Risk of Misuse:** While it is difficult to quantify the scale of cryptocurrencies for illicit use, estimates suggest $51 billion of cryptocurrencies were received by illicit addresses in 2024, up 11% from the previous year. Yet, as a percent of all on-chain transaction volumes, the number is usually sub-1%.[17]

[17] Chainalysis, Illicit Volumes Portend Record Year as On-Chain Crime Becomes Increasingly Diverse and Professionalized, 15 January 2025.

## Resistance to Change and Public Perception

*Saqr Ereiqat, Secretary General, Dubai Digital Asset Association*

Implementing blockchain often represents a complete overhaul of existing systems, potentially changing aspects of the job performed by public officials, including their day-to-day activities. While some may see blockchain as a positive change to improve administrative processes, many may often resist it as they see blockchain as a threat.

Public perception also plays a crucial role. Blockchain is sometimes associated with the speculative crypto markets and meme coins, overshadowing the real-world benefits of the underlying technology. This may fuel skepticism, making mainstream adoption for public sector use slower.

# Appendix

## Stablecoin Regulations: GENIUS Bill vs. Stablecoin Act

In this section we highlight the two major pieces of stablecoin legislation currently being considered by US Congress. Both aim to establish a regulatory framework that could bring stablecoins into the mainstream financial ecosystem.

The Guiding and Establishing National Innovation for U.S. Stablecoins (GENIUS) Act[18] proposes a two-pronged approach to supervising stablecoin issuers depending on their level of market cap.

A stablecoin issuer with a total market cap of less than $10 billion may opt to be regulated and supervised by State-level regulation (if the State-level regulatory regime is substantially similar to the federal regulatory framework). Those over the $10 billion market cap threshold would be regulated federally. Both banks and non-banks could issue stablecoins with regulatory approval.

The Act outlines issuer obligations including 1:1 reserve backing, disclosure and redemption procedures, monthly reserve composition reports and certification, prudential standards; and a series of consumer protection measures.

The second piece of legislation is the Stablecoin Transparency and Accountability for a Better Ledger Economy Act of 2025 (STABLE Act).[19] It mirrors much of the GENIUS Act in the types of firms that are permitted to issue stablecoins, and has similar requirements on issuers maintaining reserves 1:1 (but is different in the reserve composition) similar requirements on disclosures, monthly certifications etc. Unlike the GENIUS Act, it does not distinguish issuers based on a $10 billion market threshold.

Given these Acts would provide certain stablecoin issuers the ability to opt into a state-level regulatory regime, they may create a regulatory arbitrage risk whereby some states could introduce less stringent regimes to attract stablecoin issuers. Variations in state-level regulatory regimes could make it difficult for banks to do business with issuers that are subject to multiple different regulatory regimes.

While both Acts would open the door for banks to provide certain services to payment stablecoins, including providing custody services, private keys or reserves backing of payment stablecoins, ensuring that legislation provides appropriate illicit finance protections will be key to enabling banks to fully take advantage of such opportunities.

Both Acts would take effect either 18 months after the date of enactment (which is to be determined) or 120 days after the date on which a federal banking regulator issues final implementing regulations, whichever is earlier. Both bills must go through a reconciliation process, with the full House and Senate voting on the same version of legislation, before being passed into law. During that process, the bills still have the potential to change in substance.

[18] Congress.gov, S.394 – GENIUS Act of 2025, 02 April 2025.
[19] STABLE Act, 05 February 2025.

## Public vs. Private Blockchain

While exploring blockchain-based infrastructure, one must consider the trade-offs between private and public blockchains. Public blockchains are permissionless networks allowing anyone to participate, validate transactions and access data. This openness makes them a powerful tool for accessibility and transparency, but also presents challenges in areas like regulatory enforcement and scalability.

> We can draw similarities with what happened with public cloud computing and hosting. Banks and financial institutions regulators were worried about safety and control over data stored in public clouds. There is a similar aversion around public blockchains this time around. Banks need to bring appropriate controls and risk mitigations, build rulebooks and educate people on the topic.
>
> *Biser Dimitrov, Digital Assets – Technology, Citi*

- **Decentralized and Authority-free:** Public blockchains tend to operate independently of any single entity, reducing the risk of government overreach, censorship or unilateral manipulation. Governance is typically decentralized, achieved through consensus mechanisms such as Proof-of-Work (PoW) or Proof-of-Stake (PoS).
- **Transparency and Auditability:** Public blockchains ensure transactions are permanently recorded and publicly accessible. This transparency enhances accountability, reduces corruption, and helps foster trust in the financial system.
- **Interoperability and Open Accessibility:** Stablecoins issued on public blockchains can be used across multiple applications and services, without requiring custom integrations. They also foster global accessibility, allowing anyone with an internet connection to access and use them.
- **Security and Resilience:** The decentralized nature of public blockchains, secured by a large network of nodes and cryptographic mechanisms, makes them more resistant to single points of failure, cyberattacks, and centralized breaches compared to private systems.

On the other hand, public blockchains may not make be a fit for all use-cases.

- **Scalability and Transaction Throughput:** Public blockchains may struggle with transaction throughput, particularly while dealing with large transaction volumes, leading to slower transactions processing and higher fees. This makes them less practical for high-volume, real-time financial transactions.
- **Lack of Privacy and Anonymity:** Since all transactions are publicly visible, public blockchains may not be ideal for handling sensitive financial or other government data. Anonymity may vary depending on the type of blockchain.
- **Regulatory Compliance Challenge:** The pseudonymous nature of public blockchains make it difficult to enforce Anti-Money Laundering (AML) and Know Your Customer (KYC) regulations. Governments may struggle to track illicit financial activities or enforce financial policies effectively.
- **Limited Bespoke Customizations:** While stablecoins issued on public blockchains provide an established framework, they offer limited flexibility for bespoke solutions tailored to specific use-cases.

Other concerns for policy makers and risk mangers may include: (1) uptime and reliability and (2) identifying the most credible among tokens associated with public chains. For some, this is coupled with a negative perception surrounding crypto (due to its initial association with illicit activity).

Banks and large institutions, in the private and public sector, have traditionally relied on proprietary on-premise technology. Open source and cloud took time to penetrate these institutions. Public, permissionless blockchains will be a challenge to integrate – but change is underway, supported by regulatory and policy change.

## From Cypherpunks to Banks and Governments

Public blockchain networks date from 2008 (the Bitcoin whitepaper) and 2009 (Genesis block mined). The conceptual foundations of blockchains were built out in the decades from the 1970s onwards. But adoption in the financial and public sector has been limited to date.

- Blockchain's open source and decentralized roots are based on the idea that mathematics and code could secure privacy and freedom. In its cypherpunk roots, blockchain was about politics as much as technology, and it was philosophically anti-establishment, representing a stand against existing institutions; be it banks or governments. A cypherpunk is someone who advocates for the use of cryptography and privacy-enhancing technologies as a means of achieving social and political change.
- Public key cryptography was first worked on in the mid-1970s, hash functions and Merkle Trees in the late 1970s. The modern internet evolved through the 1980s (adoption of TCP/IP by Arpanet) and the early 1990s (World Wide Web). As the internet grew in the 1990s it was missing one piece: digital money.
- The Bitcoin Whitepaper (2008) promised a 'Peer-to-Peer Electronic Cash System'. Over the subsequent years, bitcoin usage has grown significantly. As of April 2025, Bitcoin remains one of the dominant cryptocurrencies in the crypto ecosystem, with 64% market share.
- Fast forward to the 2020s and the narrative around blockchain has shifted almost 180 degrees. What started as an anti-establishment movement has become firmly mainstream. During 2023-24, 'Real World Assets' or RWAs, become a dominant narrative in the crypto ecosystem.
- By end March 2025, the largest holders of Bitcoin included the US Bitcoin ETF funds. Other US institutions, including the US Government, are also among top 10 holders of Bitcoin. The $TRUMP meme coin was launched on the Solana blockchain just days before the inauguration of the 47th US President in 2025.
- Stablecoins have the potential to become the digital money choice for blockchain based networks. Their use has grown rapidly in recent years but could become much bigger still over 2025-2030, driven by increasing regulatory clarity, especially in the US.
- Public blockchains also offer the promise of greater transparency and enhanced trust – attributes in demand in countries rich and poor as public institutions seek to improve their trust quotients.

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