

Stablecoins: Mechanisms, Applications, and Regulation

By Johnson Chen

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ABSTRACT

As a type of cryptocurrency designed to maintain a stable value, stablecoins have been attracting more and more attention over the last decade, particularly due to their low cost and high efficiency for cross-border payments and remittances. In recent months, stablecoins have made frequent headlines in global media as governments and regulatory bodies in several major economies, especially in the United States, advance efforts to establish clear legal frameworks for their use. This paper introduces the evolution, classification, mechanisms, and applications of stablecoins, including fiat-collateralized, commodity-backed, crypto-collateralized, and algorithmic stablecoins. The benefits of stablecoins used in cross-border transactions, decentralized finance (DeFi), and emerging markets, as well as the risks associated with depegging, regulatory uncertainty, lack of transparency for certain stablecoins, and systemic vulnerabilities, are discussed from the economic perspectives. This paper also clarifies common misconceptions and assesses the future outlook of stablecoins in the global financial landscape.

Keywords: *Stablecoin, cryptocurrency, blockchain, fiat-collateralized, commodity-backed, crypto-collateralized, algorithmic, central bank digital currency (CBDC)*

INTRODUCTION

During the 2008 global financial crisis, Bitcoin, which is commonly thought to be the first cryptocurrency, was designed by “Satoshi Nakamoto”, whose identity is still unknown, as a response to the deep distrust in traditional banking system and centralized financial institutions (“History of bitcoin,” 2025). Bitcoin uses a decentralized network of computers (nodes) and cryptography to record and validate transactions on a public ledger called the blockchain. Unlike traditional currencies issued by central banks, Bitcoin is created through a predetermined cryptographic algorithm that relies on intensive computational processes. Bitcoin allows its users to transfer funds directly between them without third-party intermediaries such as banks, offering unique features including decentralization, limited supply, secure transactions, and public transparency. Its emergence marked the beginning of a new era in cryptocurrency, and spurred research and development of many other cryptocurrencies.

On the other hand, due to limited real-world adoption, speculative trading, regulatory uncertainty, and the absence of a value peg, Bitcoin and similar cryptocurrencies have experienced significant price volatility, making it difficult to function effectively as a medium of exchange or a reliable store of value, which are the most fundamental requirements for “real” currencies. In order to provide an alternative to the high volatility of cryptocurrencies, a specific type of cryptocurrency, Stablecoin, was created in 2014 by Dan Larimer and Charles Hoskinson (Deltec Bank, n.d.). The value of stablecoin is designed to keep stable by being pegged to a reserve asset such as a fiat currency [like U.S. dollar (USD)], a commodity (like gold), another cryptocurrency, or a basket of assets. Stablecoins combine the benefits of blockchain technology including speed, transparency, and global access with price stability of traditional fiat currencies.

Unlike common cryptocurrencies and stablecoins issued by private entities, in recent years, central banks in many countries and regions have been developing and launching their own digital currencies – Central Bank Digital Currencies (CBDCs). These currencies utilize blockchain technology either fully or partially. As fiat currencies, CBDCs are entirely centralized and derive their value from government backing (Seth, 2024).

Cryptocurrencies, stablecoins, and CBDCs are all generally classified as digital currencies, as they are issued, stored, and transacted through digital infrastructure, typically over the internet. Stablecoins function as an intermediate category between decentralized cryptocurrencies and highly centralized CBDCs. Stablecoins provide greater flexibility and less centralized control compared to CBDCs, while maintaining significantly lower price volatility than common cryptocurrencies. Consequently, stablecoins have been gaining increased global credibility and adoption.

This paper examines the evolution, classification, operational mechanisms, and applications of stablecoins. It analyzes benefits and risks associated with stablecoins, while also reviewing recent regulation developments, all from economic perspectives. Furthermore, it addresses common misconceptions and evaluates the future role of stablecoins within the global financial system.

BACKGROUND, CLASSIFICATION, AND OPERATIONAL MECHANISMS

Historical Evolution

Stablecoin is designed primarily to maintain a stable value by pegging its value to other conventional and valuable assets. As the first stablecoin, BitUSD was created and launched in 2014 on BitShares blockchain. It was backed by the core token of BitShares, BTS, and pegged to USD via smart contracts for stability. Also in 2014, Tether (USDT) introduced a game-changing model by directly pegging its value to USD, using real-world fiat reserves to reduce volatility and increase use in trading. Since then, other types of stablecoins with the different operational mechanisms have kept emerging with the progresses of regulations and compliances, which helped to bridge the stablecoins with daily finance. On July 18, 2025, the Guiding and Establishing National Innovation for U.S. Stablecoins Act (the GENIUS Act) was officially signed into U.S. law, marking the first federal legislation regulating stablecoins in the U.S. and setting clear rules for their issuance, reserves, and consumer protections (U.S. Congress, 2025). As of July 25, 2025, according to CoinMarketCap’s website (<https://coinmarketcap.com/>), the global market capitalization (market cap) of stablecoins is approximately \$272 billion (\$272B), with USDT (Tether) and USDC (Circle) commanding ~60% and ~24% of the stablecoin market, respectively, indicating USD-collateralized stablecoins overwhelmingly dominate the stablecoin market; the stablecoins also account for ~7% of the cryptocurrency market (\$3.86 trillion, or \$3.86T). The history of stablecoins is briefly summarized in Table 1.

Table 1
Timeline of Key Stablecoin Events and Outcomes

Year	Launch/Event	Key Details	Outcome/Legacy
2014	BitUSD	First stablecoin; Crypto-collateralized and pegged to USD via BitShares’ smart contract	Lost peg in 2018 due to volatile reserves; highlighted risks of crypto backing
2014	USDT by Tether	First fiat-collateralized stablecoin, pegged 1:1 to USD	Dominated market (~\$163B cap, July 25, 2025) despite early transparency controversies
2017	DAI by MakerDAO	Decentralized, crypto-collateralized, pegged to USD, governed by a Decentralized Autonomous Organization (DAO) using Ethereum smart contracts	Backed by other cryptocurrencies; with a ~\$5.4B cap as of July 25, 2025 (4th largest stablecoin based on market cap)
2018	USD Coin (USDC) by Circle/Coinbase	Fully fiat-backed, regulated and audited, pegged 1:1 to USD	Grew to ~\$64B cap as of July 25, 2025; favored for transparency
2020	TerraUSD (UST) by Terraform Labs	Algorithmic stablecoin backed by LUNA reserve asset (cryptocurrency)	Collapsed in May 2022 (~\$60B loss); exposed risks of algorithms
2022	Regulatory milestones (MiCA, Markets in Crypto-Assets) in EU	The first comprehensive crypto framework in the EU, focusing on reserve transparency and consumer protection	MiCA effective in 2024 with strict reserve, disclosure, and redemption standards

2025	US regulation breakthrough & market maturity	Circle became the first publicly traded stablecoin issuer in the U.S. (June 5); GENIUS Act was signed into U.S. law (July 18)	Created federal framework for payment stablecoins in the U.S.
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*Note. The content of the table is summarized from articles (Chainalysis Team, 2024; Cole, 2024; Deltec Bank, n.d.). The data of stablecoin market cap are from <https://coinmarketcap.com/view/stablecoin/>.
Note. Circle now takes full control of USDC issuance and governance, and shares revenue generated from USDC with Coinbase.*

Classification and Operational Mechanisms

According to Investopedia (Hayes, 2024), “Stablecoins are cryptocurrencies whose value is pegged, or tied, to that of another currency, commodity, or financial instrument.” Therefore, although there are several methods for stablecoin classification, the most commonly recognized classification is based on the backing assets or how the stablecoins maintain their stable values, which is shown in Table 2. The key characteristics and representative examples of each type of stablecoins are also summarized (Table 2). Note that the classification boundaries are not clear cut. For instance, Tether – the issuer of USDT, the world’s largest stablecoin – backs the value of USDT dominantly with USD cash, cash equivalents & other short-term deposits, along with a small proportion of other assets including precious metals, Bitcoins, and so on (Table 3); Therefore, despite the mixed backing asset compositions, USDT is still considered a fiat-collateralized stablecoin. In addition, each type of stablecoins features distinct operational mechanisms, cost structures, profit models, and issuer strategies, which will be described as follows with the emphasis on fiat-collateralized stablecoins.

Table 2
Types of Stablecoins

Type	Backing Asset	Key Characteristics	Examples
Fiat-Collateralized	Reserves of fiat currency (e.g., USD, Euro) held in regulated financial institutions	• Simple and widely used • Dependent on trust in centralized issuer • Subject to audits and regulatory oversight	• USDT & USDC, backed by USD • EURS, backed by Euro • GYEN, backed by Japanese Yen (JPY)
Commodity-Backed	Physical commodities (e.g., gold, oil)	• Stability tied to commodity value • Requires secure storage and audits	• Paxos Gold (PAXG) & Tether Gold (XAUT), backed by gold • (Former) Venezuela’s Petro, backed by oil, failed in 2024
Crypto-Collateralized	Other cryptocurrencies [e.g., ether (ETH)]	• Decentralized and transparent • Often over-collateralized to control volatility • Managed by smart contracts	DAI: backed by crypto assets such as ETH

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Algorithmic	No collateral; uses algorithms to regulate supply	• Peg maintained by supply/demand mechanism • Highly experimental and risky • Vulnerable to bank-run scenarios	• Ampleforth (AMPL) • (Former) TerraUSD (UST), peg failed in 2022
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Note. The content of the table is summarized from articles (Hayes, 2024; Bratcher, 2025).

Table 3

Compositions of Tether Reserve (as of March 31, 2025)

Reserve Asset	Percentage
Cash, cash equivalents & other short-term deposits	81.49%
U.S. Treasury Bills	66.00%
Overnight reverse repurchase agreements	10.11%
Term reverse repurchase agreements	1.08%
Money market funds	4.21%
Cash & bank deposits	0.04%
Non-U.S. Treasury Bills	0.04%
Corporate bonds	0.01%
Precious metals	4.46%
Bitcoins	5.13%
Other investments	2.99%
Secured loans (none to affiliated entities)	5.91%

Note. Original data from Tether (<https://tether.to/en/transparency/?tab=reports>).

Fiat-collateralized stablecoins are pegged to a fiat currency by backing the equivalent reserves of a fiat currency (e.g., USD) or highly liquid assets (e.g., U.S. Treasury Bills, T-bills, which maturities range from 4 to 52 weeks), typically held by a third party-regulated financial entity. The peg rate is usually 1:1 to the pegged fiat currency. This type of stablecoins can be traded on exchanges and are redeemable from the issuer so their prices are very stable. For example, as of July 17, 2025, USDC in circulation is \$64.5B, which is backed by \$64.7B reserves including \$10.1B cash held at regulated financial institutions and \$54.7B in the Circle Reserve Fund (custodied at The Bank of New York Mellon and managed by BlackRock), which contains short-dated U.S. Treasuries, overnight U.S. Treasury repurchase agreements, and cash (Circle, 2025).

The issuance and circulation of fiat-collateralized stablecoins usually follow a five-step process, and Tether is used here as an example: (1) Deposit: The stablecoin users deposit U.S. dollars (USD) into the stablecoin issuer's (Tether's) bank account. (2) Issuance (Minting): Tether creates a corresponding Tether account for the user and issues (or "mints") an equivalent amount of USDT in the account, typically pegged 1:1 to USD. (3) Reserve Maintenance: Tether holds the fiat currency in reserve, often in segregated bank accounts or low-risk assets like U.S. T-bills, to back the issued stablecoins. (4) Circulation and Usage: USDT can be freely traded and circulated between users. (5) Redemption: When the user needs to redeem to USD, the user returns USDT to Tether, then Tether destroys (or burns) the corresponding USDT and returns the corresponding amount of USD to the user's bank account.

Issuers of the fiat-collateralized stablecoins generate revenues primarily from the interest on the invested reserves, besides from the transaction and redemption fees as well as the income from partnerships (Ericonomic & Frugho, 2025; Onchain Research Team, 2024; Webisoft, 2025): (1) Issuers invest reserves in interest-bearing assets such as T-bills, money market funds, and bank deposit with yield, which is the primary source to create revenue. (2) Fees are often charged for minting, redeeming, and large conversions to provide income (and discourage excessive transactions); for example, Tether has a redemption fee and a fee on new token minting. (3) Collaborations with banks and payment processors expand adoption and generate revenue – Circle’s partnership with Visa and Coinbase helps to earn revenue from USDC holdings. The costs of fiat-collateralized stablecoin issuers include the operational costs, marketing and customer acquisition costs, technology development costs (e.g., the creation of blockchain infrastructure, smart contract integration, and security protocols and measures, etc.), legal and compliance expenses, as well as audit costs (e.g., regular audits and monitoring, etc.) (Blockchain App Factory, 2025; RisingMax, 2025). The difference between the generated revenue and the spent costs represents the profit earned by stablecoin issuers. Due to the stable value and high regulatory transparency, the fiat-collateralized stablecoins including USDT (Tether) and USDC (Circle) are the most widely-used stablecoins and currently dominating the global stablecoin market. Tether reported a record-breaking \$13B in net profits for 2024, among which \$7B was the investment incomes from T-bills and repurchase agreements, and \$5B from its holdings in gold and Bitcoin (Tether, 2025). Tether’s substantial profit in 2024 was driven by high interest rates, its dominant position in the stablecoin market, and its agility in responding faster than traditional financial institutions (Peak, 2025).

The direct cost of stablecoin users usually includes transaction fees and conversion fees when exchanging stablecoins for other assets. Generally, opening a stablecoin account is free, and transaction costs are lower than those in traditional payment and remittance systems. Under the GENIUS Act (U.S. Congress, 2025), payment stablecoin accounts do not accrue interest, meaning users have an indirect cost – the loss of potential interest income on deposited funds. As a result, the overall cost of using stablecoins will increase with rising interest rates and decrease with falling interest rates (Morgan Stanley, 2025).

Commodity-backed stablecoins are backed by a specific commodity like gold or other valuable commodities, and their issuance follows the similar principle for fiat-collateralized stablecoins. Among this type of stablecoins, Paxo’s Pax Gold (PAXG) and Tether’s XAUt are pegged to the price of gold and backed by physical gold reserves. Taking PAXG as an example, each PAXG token is backed by one fine troy ounce of gold, stored in LBMA (London Bullion Market Association) vaults in London and audited monthly. PAXG holders can redeem their PAXG tokens for physical gold, which can be physically delivered or stored securely on their behalf (Cascarilla, 2019). As of July 25, 2025, circulating supply of PAXG token is 281.75 thousand (281.75K) which market cap is ~\$946 million (~\$946M) (data from <https://coinmarketcap.com/currencies/pax-gold/>). The backing by commodities usually helps ensure lower volatility compared to crypto-collateralized and algorithmic stablecoins, and provides a hedge against currency fluctuations for fiat-collateralized stablecoins. Compared with fiat-collateralized stablecoins, commodities’ physical storage and security can be costly, and the liquidity of commodity-backed stablecoins is limited by the liquidity of the backing assets: one failure example is that Venezuela’s Petro, the first oil-backed stablecoin, failed in 2024 due to lack of redeemability, oil price volatility, regulation uncertainty, and poor market trust (Supra, 2023).

Crypto-collateralized stablecoins are backed by reserves of other cryptocurrencies (digital assets). Because cryptocurrencies are volatile, this type of stablecoin is often overcollateralized to help maintain a stable value, which means to keep the value of the cryptocurrency held in reserve exceed the value of the stablecoins issued. Platforms typically utilize smart contracts to manage collateral levels automatically. Currently, DAI (Dai) is the largest crypto-collateralized stablecoin and has a market cap of \$5.4B as of July 25, 2025 (<https://coinmarketcap.com/view/stablecoin/>). DAI is an Ethereum (ETH) based stablecoin which issuance and development are managed by the Maker Protocol and the MakerDAO decentralized autonomous organization. The price of DAI is soft-pegged to USD and collateralized by a mix of other cryptocurrencies which are deposited into smart-contract vaults every time new DAI is minted. Per MakerDAO, the stablecoin holders vote on what assets back DAI, which began with ETH but now includes other cryptocurrencies, USDC, and even real-world assets like U.S. T-bills, as well as the collateral ratios. The collateral ratio of the other cryptocurrency to DAI ranges from 101% to 175%, depending on the risk level of the cryptocurrency reserved (CoinMarketCap, n.d.).

Algorithmic stablecoins are designed to maintain a stable value using mathematical algorithms and smart contracts. Unlike collateral-backed stablecoins including fiat-collateralized stablecoins, commodity-backed stablecoins, and crypto-collateralized stablecoins, algorithmic stablecoins dynamically adjust their supply based on market conditions to stabilize their value without needing backing assets: If prices rise, new stablecoins are minted to increase supply thus lower the price; if prices fall, stablecoins are burned (removed from circulation) to reduce supply thus push the price up. This model relies on code-based mechanisms to manage stability. For example, the former TerraUSD (UST) was designed to maintain its peg to USD through an algorithmic mechanism involving the minting and burning of its sister coin (or governance token), LUNA (Kaur, 2025). While algorithmic stablecoin offers a decentralized approach to price control, it is more vulnerable to market shocks.

Generally speaking, among the above four types of stablecoins, fiat-collateralized stablecoins and commodity-backed stablecoins are controlled by private companies that issued the stablecoins and thus are centralized stablecoins; crypto-collateralized stablecoins and algorithmic stablecoins are controlled by stablecoin holder community or algorithm and thus are decentralized stablecoins. The trust of centralized stablecoins and decentralized stablecoins relies on the third-party audits and public blockchain transparency, respectively. In terms of stability, algorithmic stablecoins are the most volatile, followed by crypto-collateralized stablecoins, while fiat-collateralized and commodity-backed stablecoins offer the highest level of stability.

APPLICATIONS, BENEFITS & RISKS

Stablecoins offer a reliable bridge between traditional finance and the digital economy by maintaining stable value while enabling faster, cheaper, and more accessible transactions without intermediaries with helps of blockchain technology. Due to these benefits, stablecoins have been widely used since their introduction, and the major applications of stablecoins include decentralized finance (DeFi), cross-border payments, tokenization of real-world assets (RWAs), as well as store of value and financial inclusion in emerging economies, etc.

Decentralized Finance: Due to their “stable value” feature, stablecoins serve as collaterals in DeFi, a blockchain-based, open, transparent, and low-cost system, which automates financial services

such as trading, lending, and insurance using smart contracts, without intermediaries. Stablecoin users pledge stablecoins to borrow other crypto assets, incurring interest on the loans. The stablecoins can be effective pricing anchors in DeFi, functioning as units of account for various cryptocurrencies and providing reference pricing for emerging cryptocurrencies. As of May 2022, stablecoins provided around 45% of the liquidity in decentralized exchanges (Adachi et al., 2022).

Cross-border payments and trade settlements: Stablecoins can replace traditional wire transfers such as SWIFT system, reducing the cross-border remittance cost from average 6.26% as of Q3 2024 (The World Bank, 2024) to around 1% or even less (Dixon, 2025), and reducing the time from 1-4 business days to minutes. The stablecoins users can make 24/7/365 global transactions, breaking through the time restrictions of traditional banks. Also, the high transparency of transaction and immutability based on blockchain technology help lower regulatory costs.

Tokenization of RWAs: RWA refers to the real-world assets such as real estate, company shares, art work, or infrastructure projects that can be divided and converted to digital tokens and traded on blockchain networks, and investors can purchase small fractions instead of whole assets, which significantly boosts liquidity and accessibility. The RWA market size is estimated to reach between \$2T and \$30T by 2030 (Tren Finance, n.d.), and currently most RWAs are priced and exchanged using stablecoins, making it easier to handle transactions online while maintaining stable value (BiFinance Team, 2024).

Store of value and financial inclusion in emerging economies: In high-inflation countries such as Nigeria and Argentina (TransFi, 2025), stablecoins such as USDT have become powerful tools for payments and savings. So far, approximately 1.7 billion people worldwide have no banking services. With just a smartphone and internet connection, anyone can open a digital wallet and engage in global cryptocurrency transactions. Between July 2023 and June 2024, Nigeria received approximately \$21.8B of stablecoin transaction (Young, 2024). One recent study (Murakami & Viswanath-Natraj, 2025) performed in a standard small open economy model confirms that the stablecoin adoption improves social welfare through consumption smoothing (by providing unbanked households with a more efficient savings tool) and hedging against macroeconomic volatility, and the welfare benefits increase with the magnitude of macroeconomic shocks, which explains the growing adoption of stablecoins in emerging economies.

While stablecoins offer significant benefits and thus are widely used, they also carry risks and limitations. Stablecoins are issued and managed by private and public entities, which can limit transparency and introduce centralized control. Regulatory uncertainty further complicates their use, as evolving policies may affect how stablecoins are issued, traded, or integrated into the current financial systems. In many cases, stablecoins have lost their pegs due to market volatility, poor collateral management, or technical vulnerabilities, etc., along with any of the above risks. From the stablecoin holders' viewpoints, the stablecoin depegging is the biggest risk.

Depegging risks: The stablecoin depeg is defined as its price fluctuates by more than 3% in a day against its fiat currency peg (Moody's, 2023). Depegging events is not uncommon in stablecoins market, and there were 707 large cap depegs and a total of 2,847 depegs in 2022 (Moody's, 2023). A major stablecoin de-pegging event could shake investor confidence and trigger withdrawals, which drains

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liquidity from crypto markets, prompts automatic sell-offs, and limits platforms' redemption ability. Two important depegging events in recent years are: (1) USDC depegging in March 2023, when Silicon Valley Bank (SVB), where Circle deposited its \$3.3B of cash (\$40B in total) as the reserves of USDC, went bankrupt: the run on SVB caused investor concern about whether these reserves would be lost, since \$3.3B far exceeded the federal deposit insurance limit of \$250,000. So, USDC fell to \$0.87 on March 11. On March 13, after the Federal Deposit Insurance Corporation (FDIC) announced "systemic risk exception" that all deposits at SVB would be fully guaranteed and available, USDC transferred its reserves to other banking partners and then USDC price stabilized (Galati & Capalbo, 2024). (2) TerraUSD (UST) Collapse in May 2022: instead of backed by fiat, commodity, or other cryptocurrencies, UST was backed by its sister coin LUNA. In order to attract more UST holdings, its issuer Terraform Labs offered 19.5% interest on a deposit ("Anchor protocol"), which surely cannot be guaranteed for a long period. When the high interest was not able to continue, the large withdrawals of money from UST happened and the UST's value depegged, which triggered the mass redemption of UST to LUNA so the supply of LUNA tremendously increased which eventually caused the collapse of both UST and LUNA (Liu et al., 2023). This collapse wiped out approximately \$60B of value.

Lack of transparency: Some stablecoin issuers have been criticized for a lack of transparency, especially transparency on their reserve assets, raising concerns about their stability. Taking Tether as an example: for a long time, Tether claimed USDT was fully backed by USD, but investigations revealed that only a portion was held in cash, with much in commercial paper and other assets. In 2021, Tether settled with the New York Attorney General's Office and the U.S. Commodity Futures Trading Commission, and paid fines of \$18.5M and \$41M, respectively, for lying about reserves (Robinson, 2021).

Regulatory uncertainty: Global regulation for stablecoins is still evolving, creating uncertainty for current and emerging stablecoin issuers and their users. In 2019, Facebook attempted to launch a stablecoin called Libra (later rebranded as Diem), which was to be pegged to the currency basket composed of 50% USD, 18% Euro, 14% Japanese Yen, 11% British Pound, and 7% Singapore Dollar. This plan failed in 2022, mainly due to the regulatory oppositions at that time from the U.S. and the European Union with the concerns of monetary sovereignty and global regulatory scrutiny (Mali, 2025).

Systemic risk: Similar to the conventional cryptocurrencies, stablecoin is also affected by various security vulnerabilities such as fraud, theft, and programming errors. In particular, all kinds of trading platforms are the main targets of hackers. In addition, the anonymity and decentralized nature of stablecoins could facilitate money laundering, Ponzi scheme, and other forms of illegal if stablecoins are not effectively regulated and monitored.

In addition to the above risks, if one country is flooded with foreign stablecoins, this country's monetary sovereignty will be threatened and its monetary policy implementation will be compromised. Bank for International Settlements (BIS) Annual Economic Report 2025 (BIS, 2025) states stablecoins "perform poorly" when assessed against three key tests for money: Singleness, where money can be issued by different banks and accepted without hesitation; Elasticity, where money has the flexibility to meet the need for large-value payments; and Integrity: the ability of the monetary system against illicit activity. These limitations reveal challenges in integrating stablecoins into the core financial infrastructure.

REGULATION DEVELOPMENT

In response to the growing application and influence of stablecoins, major economies around the world have been actively developing regulatory frameworks over the past few years with the primary goals of: (1) Protecting consumers and investors by ensuring transparency; (2) Maintaining financial stability by managing potential risks of stablecoins to financial systems; and (3) Combating financial crime by implementing Anti-Money Laundering (AML) and Know Your Customer (KYC) standards. In 2023, the first wide-ranging regulatory frameworks, the Regulation on Markets in Crypto-Assets (MiCA) rules for stablecoins, were introduced in the European Union (the EU) (European Parliament and Council of the EU, 2023). In the U.S., the “GENIUS Act” (the Guiding and Establishing National Innovation for U.S. Stablecoins Act) (U.S. Congress, 2025) was signed into law on July 18, 2025. Other advanced economies such as Hong Kong, Japan, and Singapore have also introduced their own stablecoin regulations, each with different approaches tailored to local financial systems and policy priorities.

The GENIUS Act in the U.S.

The main goal of the GENIUS Act is to establish a federal framework for “payment stablecoin” – digital assets backed 1:1 by safe reserves – to regulate its issuance, use, and report. Implementation of the GENIUS Act will improve consumer protection, boost responsible innovation, and reinforce the U.S. dollar internationally.

According to the GENIUS act, the stablecoin issuers must be federally licensed or state-qualified entities, with those issuing over \$10B subject to federal oversight; Foreign issuers, such as Tether, must meet strict AML/sanctions criteria and hold reserves in U.S. institutions; Nonfinancial companies (e.g., tech firms) face major restrictions unless unanimously approved; Stablecoin issuers must hold reserves equal to 100% of outstanding coins in high-quality liquid assets – such as USD, bank deposits, or short-term Treasury securities (≤ 93 days), and reserves must remain unpledged, separate from the issuer’s own funds, and cannot be reused; Stablecoin issuers must publish monthly disclosures detailing reserve composition, maturity, custodial location, and audit verification.

To enhance consumer protection, the GENIUS Act requires prompt redemption, grants holder priority for claims in insolvency, prohibits yield-based or government-endorsed stablecoin promotions, and enforces anti-money laundering compliance.

In the GENIUS Act, stablecoins are limited to payment and settlement functions, and their investment and financing attributes are restricted.

On July 17, 2025 – the same day the GENIUS Act was passed – the U.S. House of Representatives also passed two other relevant bills: the Digital Asset Market Clarity Act of 2025 (the Clarity Act), which regulates digital assets beyond stablecoins; and the Anti-CBDC Surveillance State Act, which prohibits the Federal Reserve from issuing a CBDC, to block any potential use of CBDCs as a tool to monitor or control personal finances or to implement monetary policy.

The MiCA in the EU

The MiCA regulation, which fully took effect in December 2024, establishes strict rules for stablecoins in the EU. MiCA mandates full reserve backing, regular audits, and EU authorization for stablecoin issuers. Its core goal is to protect the sovereignty of the Euro and impose strict restrictions on non-Euro stablecoins.

According to MiCA, stablecoin issuers must publish a detailed whitepaper including the asset's functionality and use case, underlying technology, identified risks for investors, and legal and financial details; The issuers must meet uniform requirements to operate legally across the EU, by obtaining authorization from national authorities, meeting criteria for financial sustainability, corporate governance, and AML/CTF (Counter-Terrorism Financing) compliance, employing qualified staff and robust cybersecurity, conducting customer due diligence (CDD), and maintaining internal controls and risk management systems. MiCA also includes Anti-Monopoly Rules to ensure that no single entity can unfairly control or dominate the market, promoting fair competition and reliable market practices.

Regulations in Hong Kong and Mainland China

Hong Kong has taken a middle route of “regulatory adaptation + scenario innovation”. Its Stablecoins Ordinance (Hong Kong Legislative Council, 2025) was passed into law on May 21, 2025 and is effective on August 1, 2025, becoming the first comprehensive licensing system for fiat-collateralized stablecoins in the Asia-Pacific region. Hong Kong's regulation allows multi-currency anchoring [including Hong Kong dollars, USD, offshore Renminbi (RMB), etc.], allows commercial banks and some non-bank institutions to participate in issuance, and sets relatively low capital thresholds, aiming to build Hong Kong into a hub for multi-currency stablecoins and help RMB internationalization.

In 2021, China banned all private cryptocurrencies, including stablecoins, while aggressively promoting its CBDC (e-CNY) to maintain monetary control and prevent capital outflows. Just recently, China started to adopt a “dual-track parallel” strategy: domestically, it accelerates the digital RMB pilot; internationally, it promotes offshore RMB stablecoins in Hong Kong to enhance cross-border settlement and advance RMB internationalization.

IMPACTS OF STABLECOINS

Impact on the U.S. Treasury Market

According to the U.S. Treasury Borrowing Advisory Committee (TBAC) (2025), the growth of stablecoins will boost demand for U.S. T-bills, and over \$1T of T-bills could be used to collateralize the stablecoin by 2028, up from approximately \$120B recently, potentially making the stablecoin issuers the world's second-largest holder of U.S. Treasury securities, just behind Japan. The additional demand for U.S. T-bills will provide the U.S. Treasury with much-needed flexibility to adjust its issuance strategy (lower yield rate or less issuance of the long-term maturities) and fund future deficit increases. Furthermore, diversification from foreign buyers supports U.S. fiscal stability and strengthens the dollar's global dominance. However, increasing reliance on shorter-term maturities also introduces risk: if the

yield curve inverts and short-term interest rates surpass long-term rates, the shift could lead to significantly higher borrowing costs.

Impact on Traditional Payment Networks

In 2024, the overall stablecoin transaction volume reached \$27.6B, or 7.68% greater than the combined total volume of Visa and Mastercard (Otychenko, 2025). Undoubtedly, the transaction volume of stablecoins will continue to surge, but the impact should be limited as the credit card companies have been preparing for years to enable stablecoin usage. Therefore, the stablecoins will complement rather than replace traditional payment systems (Morgan Stanley, 2025).

Impact on the Foreign Exchange Market

Although the daily trading volume of stablecoins is about \$196B (data as of July 25, 2025, from <https://coinmarketcap.com/view/stablecoin/>) and has been growing steadily, the volume is still insignificant compared to the global currency market, where net daily transactions in 2022 surpassed \$7.5T (Stefanova, 2025). Therefore, stablecoins are insufficient to drive the trend of liquid currencies, and may only significantly impact the foreign exchange market in the future under very high growth rate scenarios (Morgan Stanley, 2025).

Impact on Monetary Policy Implementation

Park and Kwon (2023) studied the effect of introducing stablecoins on monetary policy implementation and found that the open-market operations are ineffective in a channel system (where the central bank sets two interest rates, standing lending facility rate and deposit facility rate), while the interest on reserves is effective in a floor system (where the central bank sets a minimum interest rate that it guarantees to pay on excess reserves deposited by commercial banks).

Impact on Consumers

Despite growing public interest, there remains significant misunderstanding and confusion about the nature, function, and risks of stablecoin. Therefore, education about the stablecoins is crucial for the protection of consumers' interest: (1) Stablecoins, even "payment stablecoins", are not fiat currency, i.e., their values are not backed by government and no one has obligation to accept them as payment unless agreement in advance. For example, Connecticut prohibits the state and local governments from accepting payments, investing in, or holding cryptocurrencies including the stablecoins (Partz, 2025). (2) Payment stablecoin account is not a saving account – holding payment stablecoins does not generate interest. (3) Stablecoins are not insured or protected by FDIC or the National Credit Union Administration (NCUA).

CONCLUSION

Stablecoins are essential to the digital asset ecosystem, offering price stability and efficient value transfer across borders and supporting diverse financial use cases including daily payments and trading to decentralized finance. Centralized stablecoins are advancing integration into enterprise platforms and payment infrastructure, while decentralized stablecoins emphasize transparency and programmability. As

financial activity increasingly moves on-chain, stablecoins are playing a larger role in enabling global value transfer and digital financial services.

The future monetary system will be an ecosystem with multiple levels and forms: cryptocurrencies will be the financial innovation catalyst, offering new models for value creation, transfer, and governance; CBDC will dominate the digitalization process of sovereign currency; and stablecoins will become a liquidity bridge connecting traditional finance and the crypto world.

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