



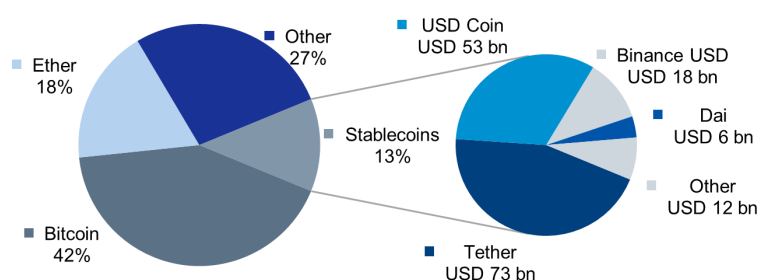
Stablecoins - DeFi, Libra and beyond*

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Keywords: stablecoins, cryptocurrencies, decentralized finance, crypto assets, crypto markets

Stablecoins are still a small segment of the crypto market but have grown robustly, recent turmoil notwithstanding. Today, they are mostly used for trading, lending and borrowing crypto assets in decentralized finance (DeFi). In the future, stablecoins could also gain traction in the real world – adding to competition in the fields of retail and corporate payments. Stablecoins differ considerably in their price stabilization mechanisms and can pose risks, which have come into the spotlight of regulators.

Figure 1: Distribution of crypto market capitalization, May 2022



Sources: CoinGecko, Deutsche Bank Research

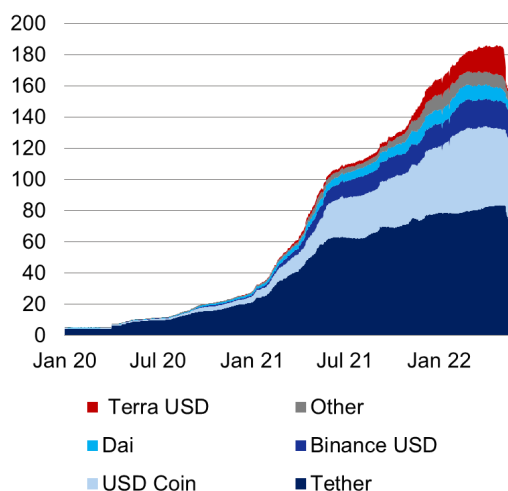
most importantly, stablecoins are the most traded coins in the entire crypto space. Tether, the leading stablecoin, represents only about 6% of the value of the entire cryptocurrency market. But Tether's share in cryptocurrency trading fluctuates around an impressive 50%. Thus, it surpasses even the "top dogs", Bitcoin and Ether.

Stablecoins are cryptocurrencies with a stable price in fiat currency – most of them are pegged 1:1 to the USD. Albeit a small segment of the crypto universe, their market capitalization has increased multifold since the beginning of 2021, even though the "traditional" crypto market has lost over half of its value since November (May: USD 1.3 tr). Also, most stablecoins withstood the turmoil when Terra USD crashed in May, leaving the market with a capitalization of USD 160 bn. But

*This Policy Brief is based on the publication "[Stablecoins – DeFi, Libra and beyond](#)" by Heike Mai, Deutsche Bank Research, March 2022.)

Figure 2: Stablecoin market cap

USD bn, until 24 May 2022



Sources: CoinGecko, Deutsche Bank Research

Stablecoins grow with DeFi

Stablecoins are now mostly used for trading, lending and borrowing crypto assets. They are a crucial facilitator of decentralized finance (DeFi) – financial services performed by applications on a permissionless blockchain. DeFi has been thriving on the back of innovation and speculative capital attracted by the prospect of higher returns than in traditional (“centralized”) markets. Total value locked (TVL) – i.e., the value of crypto assets placed in DeFi applications as collateral or liquidity – grew from USD 30 bn to USD 234 bn during 2021¹. Stablecoins are commonly used for trading crypto assets on and between exchanges, offering fast and efficient transactions without requiring users to convert their assets into fiat currencies or to use bank wire transfers during the process. Holders can earn income by depositing stablecoins, just like other cryptocurrencies, in liquidity pools which provide the funds needed for decentralized trading or

lending platforms. Of course, this does not go without the risk of loss². Stablecoins are essential for the functioning of DeFi, as they provide an anchor of stability and means of payment built on distributed ledger technology. At the same time, stablecoin use flourishes with DeFi expansion.

Stablecoins for (global) retail use – step by step instead of a big bang

Stablecoins first became widely known as a potential means of global retail payments when Meta (then Facebook) announced its Libra project in 2019³. While this far-reaching plan did not gain the anticipated traction, there are numerous other projects with more limited and step-by-step approaches targeting retail and corporate needs. PayPal confirmed it is working on a proprietary stablecoin for payment purposes, cooperating with financial authorities from the very beginning⁴. Meta is piloting payments via WhatsApp and the Novi wallet, which was originally created for Libra but now holds USD Paxos stablecoins⁵.

General characteristics and different types of stablecoins

Contrary to traditional crypto assets, which typically entail sizeable price volatility, stablecoins are tokens that aim to minimize price fluctuations by pegging their value to another asset or pool of assets. They use collateral and/or employ market-based strategies to keep their price stable relative to the reference asset. Revenue for stablecoin issuers may come from different sources. Depending on the design, income can include interest earned on the reserve assets (usually not paid out to coin holders) and fees for transactions, issuance and redemption. More novel revenue sources are secondary tokens, which can be issued in addition to the actual coin for special functions within the arrangement. They are designed to generate income for the issuer⁶.

¹ CoinGecko (2022). Yearly Report 2021.

² Adachi et al. (2021). The expanding functions and uses of stablecoins, in: ECB, Financial Stability Review, November.

³ Mai, Heike (2019). Libra – a global challenger in payments and for central banks? EU Monitor, Deutsche Bank Research, July 22.

⁴ Bloomberg (2022), PayPal Explores Launch of Own Stablecoin in Crypto Push, January 7.

⁵ PYMNTS.com (2021). Is Paxos the New Diem? The Stablecoin Issuer’s Facebook Pilot Just Expanded to 2B WhatsApp Customers, December 10.

⁶ Lipton et al. (2020). From Tether to Libra: Stablecoins, Digital Currency and the Future of Money, papers

While there are many different approaches to classifying stablecoins, a fairly obvious one is to look at their collateralization and price-stabilization mechanisms⁷. Following this approach, stablecoins can roughly be split into three groups: i) Off-chain collateralized, ii) on-chain collateralized, and iii) uncollateralized, purely algorithmic stablecoins.

- i. Off-chain collateralized stablecoins use traditional reserve assets to stabilize their value. These are typically fiat-currency bank deposits or short-term debt, with the US dollar being the most prominent reference currency. However, commodities or various other assets are also used as collateral. Off-chain stablecoins are tokens issued by a real company and redeemable at par. Users buy coins from the issuer against fiat currency or in secondary markets. As the reserves are not on the blockchain, a custodian is required. To maintain price stability, all outstanding stablecoins must be backed by reserve assets. If the coin is traded in secondary markets above or below its peg, arbitrageurs can buy or redeem coins, thus re-establishing parity across markets⁸. Prominent off-chain collateralized stablecoins are Tether, USD Coin and Binance USD.
- ii. On-chain collateralized projects, on the other hand, back their stablecoins with other crypto assets. They are typically issued by DeFi applications as collateralized debt positions, i.e., a user locks in collateral and in return receives coins created by the application. Thus, the collateral is held directly in the application on the blockchain and no external custodian is needed. This puts investors in a better position to check the collateral holdings of the coin arrangement. Given that the value of the locked crypto assets can be very volatile, most projects overcollateralize their coins. On top of collateralization, on-chain stablecoins usually rely on several additional stabilization mechanisms embedded in their smart contracts. For example, interest rates to be paid on the stablecoin – a debt position – can be adjusted to reduce or increase demand for the coin as a means to support price stability⁹. Some coin arrangements (e.g., Dai) allow for redeemability, leading arbitrageurs to support price parity as with off-chain coins – albeit to a lesser degree, since arbitrage is riskier given the volatility of the collateral. Instead, or in addition, coin arrangements can use the collateral or accumulated “own funds” (e.g., from interest payments received) for open market operations to stabilize the coin’s peg, similar to a real-world central bank managing its foreign exchange rate.
- iii. Uncollateralized stablecoins try to keep prices constant by algorithmically adjusting the outstanding number of tokens according to demand. If prices are above the peg, the algorithm will distribute new coins to users, thereby eventually reducing the price. If prices fall below the peg, the system will sell a sort of bond to users in exchange for stablecoins. The stablecoins received will then be destroyed, leading to a price increase. If prices then move above the peg again, bondholders will be prioritized in the distribution of new coins. In theory, this system incentivizes users to buy bonds if prices fall below the peg and rewards them afterwards as prices exceed the peg again. However, this approach has yet to prove its functionality. The pioneer coin Basis Cash broke its peg. The market capitalization of algorithmic Terra USD surged from USD 3 bn to USD 18 bn between November 2021 and May 2022 but was wiped out when coin holders lost confidence: the price for one coin crashed to USD 0.04.

⁷ Berentsen, Aleksander, and Fabian Schär (2019). Stablecoins: The quest for a low volatility cryptocurrency, in: VoxEU, The Economics of Fintech and Digital Currencies.

⁸ Lyons, Richard K., and Ganesh Viswanath-Natraj (2020). What keeps stablecoins stable?, NBER, Working Paper Series, May.

⁹ Schär, Fabian (2021). Decentralized Finance: On Blockchain- and Smart Contract-Based Financial Markets, in: Federal Reserve Bank of St. Louis Review, Second Quarter.

Risks to financial stability and the real economy

Operational risks specific to stablecoins arise from the difficulty of combining high levels of safety and efficiency on permissionless blockchains. Weak technical setups can increase the risk of compromised ledgers and cyber-theft. A lack of regulatory oversight gives rise to concerns about market integrity. There is little transparency about stablecoins' setup and financial transactions, especially for those who cannot read code. This opens the door for potential abusive market behaviour, theft and illegal payment flows. However, stablecoin volumes are too low to be abused at large scale for circumventing sanctions, a concern raised with regard to Western sanctions, which were imposed in response to Russia's attack on Ukraine¹⁰.

Off-chain stablecoins in particular can be prone to fraud, as holders are in a weak position to check if the issuance is fully collateralized as promised. Issuers could be tempted to cover their outstanding coins only fractionally or to lend reserve assets on – practices seen before in nascent and unregulated markets throughout monetary history. In October 2021, market leader Tether was fined by the Commodity Futures Trading Commission (CFTC) because it had misrepresented its reserves¹¹. Asset-backed coins are subject to run risk and could spread financial distress via asset markets to traditional finance, depending on the stablecoins' scale. Indeed, stablecoins backed by traditional fiat assets may not be so different from MMFs, as their reserves are quite similar (short-term debt).

Stablecoins are moving into the spotlight of regulators

Though spillover risks from stablecoins to the broader financial system are currently limited, they could quickly become reality. Therefore, international and national standard-setting bodies largely agree that prudential regulation will be necessary.

In the EU, the Regulation on Markets in Crypto-Assets (MiCA) (which is supposed to be finalised by end-2022) will be the regulatory basis for stablecoin arrangements and other crypto assets. Stablecoins will probably be classified as (i) e-money tokens (backed by a single fiat currency) subject to the existing E-Money Directive unless otherwise specified or as (ii) asset-referenced tokens (ARTs, referencing a basket of assets). The latter will be subject to standards regarding the reserve assets, as well as regarding own funds, governance, disclosure and consumer protection. MiCA will prohibit all stablecoin issuers from paying interest to users and will require any arrangement, including existing ones, to obtain authorization before commencing operations. In addition, "significant stablecoins" will have to meet higher requirements as regards liquidity management, interoperability and own funds¹².

In the US, the top government and oversight authorities (Treasury, Federal Reserve, SEC, CFTC, FDIC and OCC) jointly recommended in a Report on Stablecoins in November 2021 that Congress act promptly to regulate stablecoins. The agencies urged legislators to require stablecoin issuers to be insured depository institutions, to guard against run risks, and to comply with measures limiting systemic risk¹³. After the recent crash of Terra USD, the pressure on Congress to act has been mounting. Many officials are calling for prudential regulation of stablecoins and a clear assignment of supervisory powers.

¹⁰ Institute of International Finance (2022). Russia: Crypto Assets and Sanctions Avoidance, Macro Notes, June 1.

¹¹ CFTC (2021). CFTC Orders Tether and Bitfinex to Pay Fines Totaling \$42.5 Million, Release Number 8450-21, October 15.

¹² European Commission (2020). Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937, September 24.

¹³ President's Working Group on Financial Markets, FDIC and OCC (2021). Report on Stablecoins, November.

Outlook

Although currently a niche financial instrument, stablecoins might become established as a means of payment and store of value outside of the crypto market. Future regulation and the potential involvement of BigTechs or payments companies could make stablecoins an option for retail payments and support quick adoption by many users. Corporate demand could also become a driver for stablecoin adoption. As firms are increasingly interested in distributed ledger technology to underpin their internal processes, they will be looking for DLT-based financial services for seamless integration and as an enabler of new technical solutions like programmable payments. DeFi, the growth driver so far, will be tested with more restrictive monetary policies ahead. In the longer term, robust DeFi services could still become mainstream.

To sum it up, stablecoins can cater for DLT payment needs outside the hitherto parallel world of crypto assets but will face competition. So far, stablecoins are used only in the crypto space, and they carry a number of risks. Other options like tokenized bank deposits¹⁴ or digital currencies issued by central banks¹⁵ are mostly at conceptual or test stages, but first projects have gone live. Moreover, efficient traditional payment systems will rival blockchain-based solutions. Regulatory authorities will probably act if stablecoin volumes become significant, to enhance the stability of the financial system – be it traditional, crypto or merged – as well as the means and mechanisms of exchange it is built on. ■

About the author

Heike Mai is a Senior Economist at Deutsche Bank Research. Her recent work focuses on payment systems, digital currencies and non-bank finance. She has been with Deutsche Bank's research department since 2004, and specialized in research on banking, financial markets and regulation.

¹⁴ See for example Die Deutsche Kreditwirtschaft (2021). Europe needs new money – an ecosystem of CBDC, tokenised commercial bank money and trigger solutions, July 5.

¹⁵ See <https://cbdctracker.org> for an overview of current CBDC projects.

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