

# DECRYPTING CRYPTO: CENTRAL BANK DIGITAL CURRENCIES AND STABLECOINS

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## KEY INSIGHT

CBDCs and stablecoins are emerging as new potential payment methods, largely inspired by the rise of cryptocurrencies and blockchain technology. Although their usage and regulatory treatment are in the early stages of development, many governments and industry players are exploring how these innovations could make financial transactions more efficient and useful for the public.

## SUMMARY

A Central Bank Digital Currency (CBDC) is a public digital form of money issued by a central bank, typically denominated in the national currency and convertible to other forms of central bank money. CBDCs can serve different purposes: retail CBDCs are accessible to the general public and can substitute cash for everyday consumer payments, while wholesale CBDCs are limited to large-scale transactions between financial institutions to enhance financial market efficiency. In contrast, a stablecoin is a crypto asset designed to maintain a stable value relative to a specified asset or a pool of assets. Stablecoins pegged to sovereign currencies are more likely to guard against price volatility and function as a form of digital money, making them more attractive for payments than regular cryptocurrencies.

## KEY INSTITUTIONS

- *Bank for International Settlements (BIS)*: Provides research, guidance, and coordination among central banks for the development of CBDCs, including frameworks for cross-border interoperability.
- *Circle*: U.S.-based financial technology company responsible for issuing USD Coin (USDC), the 2nd largest stablecoin by market size.
- *MakerDAO*: A **Decentralized Autonomous Organization (DAO)** that governs the DAI stablecoin.
- *European Central Bank (ECB)*: Currently researching and piloting the digital euro, contributing to the advancement of CBDCs in the Eurozone.
- *Financial Stability Board (FSB)*: Evaluates risks to global financial stability and develops international regulatory standards for, among other things, **cross-border payments, DeFi**, and crypto-assets activities. In particular, the FSB has published a report on global stablecoins arrangements that “seek to promote consistent and effective regulation, supervision and oversight of global stablecoin arrangements (GSCs) across jurisdictions.” Regarding CBDCs, the FSB does not directly focus on them but examines their implications within the

broader context of financial stability and cross-border payments.

- *G7 Working Group on Stablecoins*: Assesses the potential benefits and risks of stablecoins and CBDCs in the global economy and promotes collaborative regulatory approaches.
- *International Monetary Fund (IMF)*: Researches the policy implications of CBDCs and provides technical assistance to countries exploring their potential integration. While the IMF has extensively analyzed CBDCs, its engagement with stablecoins has been more limited, primarily focusing on their regulatory and macroeconomic implications.
- *Tether*: British Virgin Islands-based company that issues USDT, the most widely used stablecoin today.

## BACKGROUND

The first Central Bank Digital Currency (CBDC) was introduced in 1993 when Finland launched the Avant smart card, an electronic form of cash. The Avant operated until 2000 when it was discontinued. For well over the next decade, CBDCs were not a significant focus for central banks. However, by 2014, central bankers began discussing the technological advancements of Bitcoin, leading to formal government research in digital currency technology. A significant milestone that year was the Bank of England's report *Innovations in Payment Technologies and the Emergence of Digital Currencies*, which identified the distributed ledger as a key technological innovation in digital currencies. It emphasized the potential of **distributed ledger technology (DLT)** to fundamentally transform payment systems by enabling decentralization and pointed to its potential for broader applications in financial markets. This growing interest in digital currencies paved the way for central banks to actively

explore CBDCs. As a result, by 2021, nearly 100 CBDCs were in the research or development stages, with two fully launched: Nigeria's eNaira, unveiled in October 2021, and the Bahamas' Sand Dollar, introduced in October 2020. By the end of 2024, two additional CBDCs became operational—Jamaica's Jam-Dex and Zimbabwe's ZiG.

On the other hand, stablecoins emerged in 2014 with early examples such as BitUSD, NuBits, and Tether. While BitUSD and NuBits failed due to factors such as reliance on volatile collateral or weaknesses in their peg mechanisms, Tether (USDT) was marketed as backed by U.S. dollars, making it appear more stable and secure. As a result, this stablecoin not only remained in circulation while the others collapsed but also gained significant popularity.

The next major milestone in the stablecoin space was in 2017 with the launch of DAI by MakerDAO. What made DAI unique is that it was the first to combine elements of both traditional and **algorithmic stablecoins**. DAI is collateralized, but instead of **fiat currency**, it is backed by multiple cryptocurrencies, which aims to increase its stability. It also employs an algorithmic system of smart contracts that actively manage risk by enforcing over-collateralization and automatically triggers liquidations when thresholds are breached. These liquidations not only protect the system from under-collateralization but also contribute to long-term stability by indirectly reducing the amount of circulating DAI when necessary. DAI gained popularity as decentralized finance (DeFi) grew because it enabled lending protocols, trading platforms, and yield farming strategies by providing a stable, intermediary-free medium of exchange.

## BENEFITS & CHALLENGES

CBDCs:

- *Financial inclusion:* Experts argue that retail CBDCs in developing countries could significantly enhance financial inclusion by expanding access to banking and digital payment services for previously unbanked populations. CBDC issuance could incentivize individuals to open bank accounts to access CBDC wallets, potentially bringing new deposits into the banking system. Additionally, CBDC usage could generate valuable data that helps reduce credit-risk information asymmetry, enabling banks to offer lower interest rates and more accessible loans.
- *Improved cross-border payment efficiency:* CBDCs could improve cross-border payment efficiency by addressing common frictions such as high costs, long settlement times, and complex compliance processes. Additionally, CBDCs have the potential to operate 24/7, reducing mismatches in operating hours that hinder traditional payment methods. If effectively implemented, these features could enhance interoperability between domestic and foreign payment systems, positioning CBDCs as a potentially transformative tool in global finance.

#### Stablecoins:

- *Fast settlement and Programmability:* Unlike traditional bank transfers, stablecoin transfers move directly from wallet to wallet without a centralized intermediary, providing near-instant settlement. They are also available 24/7 and can function within blockchain smart contracts for programmable transactions.
- *Liquidity in DeFi:* Stablecoins provide significant liquidity for decentralized exchanges (DEXes) and lending protocols. In May 2022, they accounted for about 45% of the liquidity in DEXes, with algorithmic stablecoins like DAI

contributing a substantial share relative to their market capitalization.

- *Lack of tangible asset backing:* While algorithmic stablecoins are an innovative concept, major concerns remain about their functionality. Following the Terra Luna crash in 2022, markets became increasingly cautious about their stabilization mechanisms and the absence of tangible asset backing, which has proven to undermine their ability to maintain stability during periods of market stress.

## POLICY AND REGULATION ISSUES

#### CBDCs:

- *Legal classification:* Determining whether CBDCs should be classified as cash, deposits, or e-money is a key challenge. Each approach has implications for its integration into existing legal frameworks.
- *Privacy vs. Compliance:* CBDC systems face challenges in balancing user privacy with financial crime prevention. While anti-money laundering (AML) and countering the financing of terrorism (CFT) are crucial considerations in monitoring CBDC transactions, there is a fine line between regulatory oversight and the unauthorized use of private data, which could result in excessive government surveillance. Additionally, because CBDCs facilitate cross-border transactions, they involve multiple jurisdictions and regulatory frameworks, making compliance even more complex. This interconnected nature also increases the risk of data breaches and unauthorized access, as sensitive financial information may be shared across various institutions with differing security standards.

- **Cross-Border Use:** Jurisdictional rules are needed for international CBDC transactions, such as determining applicable laws and models for interoperability, pose significant regulatory hurdles.

#### Stablecoins:

- **Varied Regulatory Frameworks:** Globally, there are not many regulations for stablecoins yet. However, the EU's MiCA categorizes stablecoins as **electronic money tokens (EMTs)** or **asset-referenced tokens (ARTs)**, requiring reserves and authorization. In the U.S., there is little federal regulation, but at the state-level, New York is enforcing measures like 1:1 liquid reserves under the BitLicense system.
- **Common Regulatory Principles:** Considering the heterogeneous and insufficient regulatory frameworks, common principles are emerging. Some of the most important ones are: stablecoin issuances require explicit regulatory approval, reserves must be liquid and stable to maintain a 1:1 backing, and stablecoin payment services must align with financial regulations to ensure user protections, including redemption rights and transparency.

## GLOSSARY

**Algorithmic Stablecoin:** A type of cryptocurrency token that uses an algorithm to adjust supply and demand dynamically to maintain price stability.

#### **Asset-Referenced Tokens (ARTs):**

Stablecoins backed by a mix of assets, such as multiple currencies, commodities, or financial instruments, to distribute risk.

**Cross-Border Payments:** Payments that involve transactions between parties in different countries.

#### **Decentralized Autonomous Organization**

**(DAO):** A blockchain-based entity governed by rules encoded in smart contracts, managed collectively by its members without centralized authority. DAO decisions are made through voting mechanisms, which are usually tied to members' token ownership, and operates without centralized authority or government interference.

**Decentralized Finance (DeFi):** Innovative approach to banking and financial services centered on peer-to-peer transactions powered by blockchain technology.

#### **Distributed Ledger Technology (DLT):**

Technological infrastructure and protocols that enable simultaneous access, record validation, and immutable record updating across a network that is dispersed across numerous entities and multiple locations. A distributed ledger is a digital system that does not have a central data store or management features, in contrast to traditional databases.

**Electronic Money Tokens (EMTs):** EMTs is a classification introduced under the European Union's Markets in Crypto-Assets Regulation (MiCA) and refers to stablecoins pegged to a single fiat currency, regulated as electronic money, and requiring issuers to hold liquid reserves to ensure redemption at par value. This term is specific to the EU regulatory framework and is not commonly used in the United States, where a unified regulatory classification for stablecoins has yet to be established.

**Fiat-Backed Stablecoin:** A cryptocurrency token that is fully backed by reserves of fiat currency or cash equivalents, ensuring a fixed price or value.

**Settlement:** The completion of a financial transaction, where the asset or funds have moved from the originator's account to the beneficiary's account.

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