



Tokenization of cash

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Beyond Speculation: Payment Stablecoins for Real-time Gross Settlements

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Overview

- ▶ Stablecoins, originally employed for trading digital assets like Bitcoin and Ethereum, have evolved to become tokenized cash
- ▶ An encouraging trend: 90% drop in speculative trading via stablecoins (2019-2023)
- ▶ Payment stablecoins, such as USDC, were introduced for broader payment use. Their trading turnover: 10% of trading stablecoins and 60% of fiat M2 dollar
- ▶ Payment stablecoins have less leverage than fiat dollars and supports more real-world value transfers per dollar

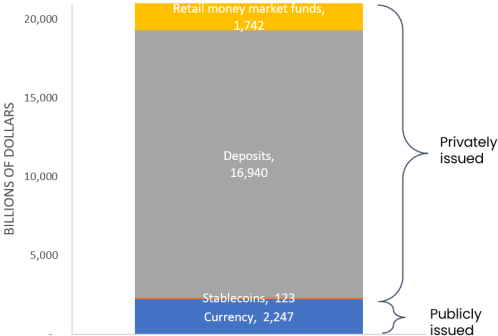
What are stablecoins and payment stablecoins?

Definitions

- ▶ **Stablecoins** are digital tokens representing fiat currency values on blockchains (distributed ledgers) and they maintain one-to-one convertibility with the underlying currency through the issuer.
- ▶ **Payment stablecoins** are a specific type of stablecoins characterized by:
 1. A full reserve backed by high quality, and liquid cash-like assets to ensure stability and immediate convertibility, and
 2. A primary function as a versatile form of payment, facilitating transactions with the stability of traditional fiat money but the efficiency of blockchain technology, eg. usage in humanitarian-aid, cross-border payments, web3 developments.

Payment stablecoins as privately-issued money

Components of M2 Money Supply, Dec 2023

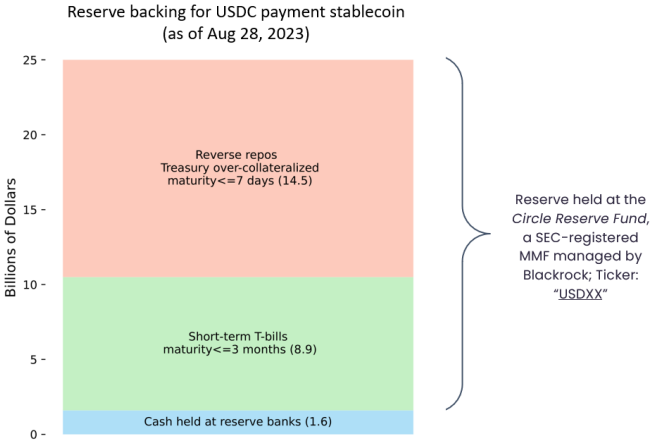


“We do see stablecoins as a form of money.”

- Chair Powell in U.S. Senate hearing, June 2023.

Source: Source: Federal Reserve H6 release; CoinmarketCap; calculation by authors

Payment stablecoins are fully backed by cash-like instruments



Sources: circle.com/transparency; blackrock.com/cash/en-us/products/329365/circle-reserve-fund

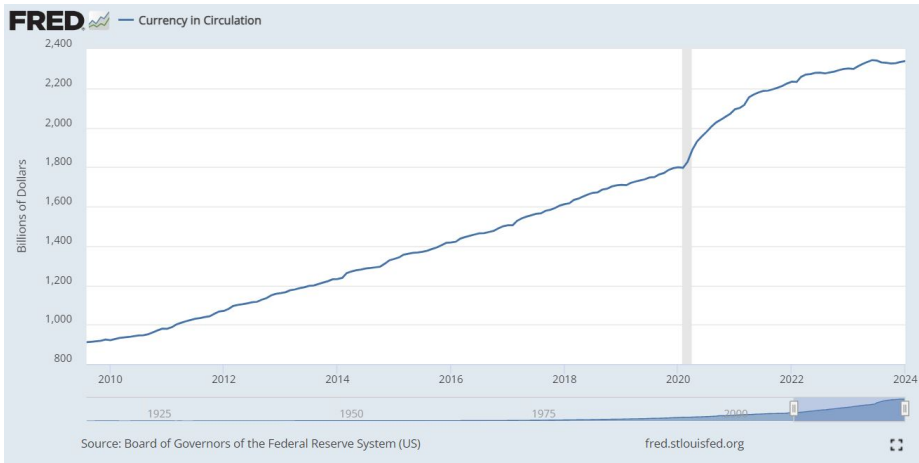
Payment stablecoins are outside money with minimum credit and liquidity transformation

- ▶ *Outside money* is money that is either of a fiat nature (unbacked) or backed by some asset that is not in zero net supply within the private sector of the economy.
- ▶ *Inside money* is an asset representing, or backed by, any form of private credit that circulates as a medium of exchange. (Lagos, 2006)

Inside money created by financial intermediaries can lead to fire-sale externalities during downturns and Fisher disinflation; Outside money provides no maturity and liquidity transformation. (Brunnermeier and Sannikov, 2016)

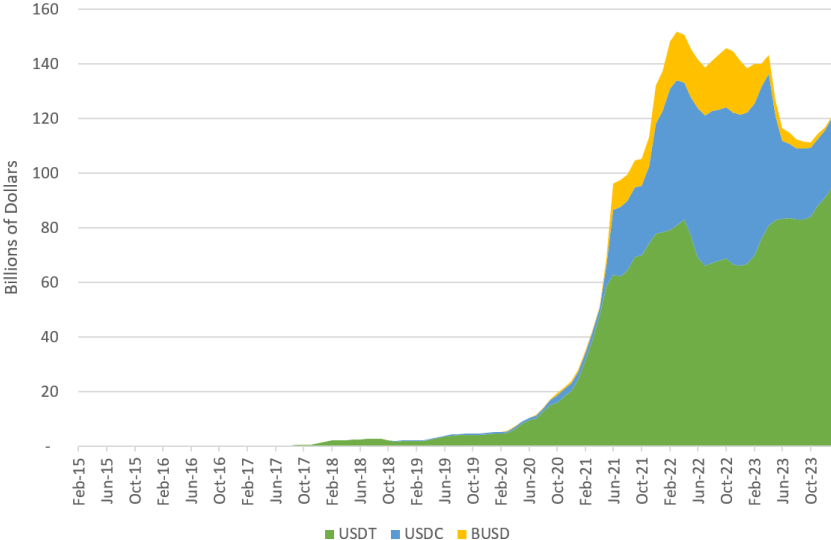
Stablecoins are physical cash substitutes

Physical cash circulation growth has slowed recently



Stablecoins are physical cash substitutes

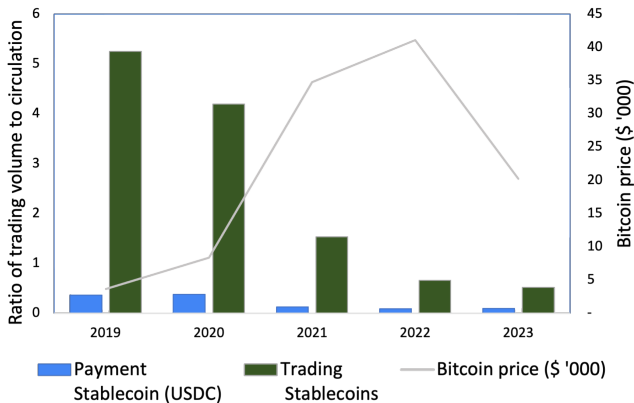
Fiat-backed stablecoin circulation has increased in recent years



How has stablecoin use evolved?

Stablecoins' use in speculative trading has declined 90%

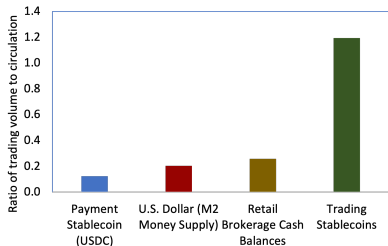
Figure 1: Daily trading turnover



Sources: Coinbase, CoinMarketCap.

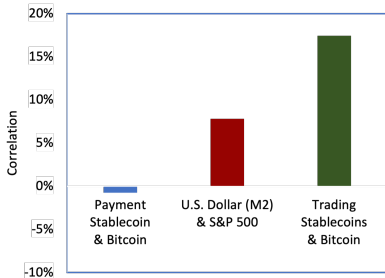
Payment stablecoins are used less in crypto trading than fiat dollars are used in traditional asset trading

Figure 2: Daily trading turnover for different forms of money



Sources: BIS Triennial Survey, CoinMarketCap, Federal Reserve, SCHW 10-K, SIFMA. See appendix for methodology details.

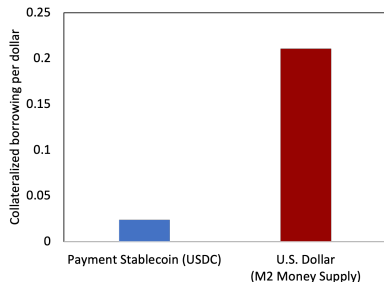
Figure 3: Correlation between circulation change and asset returns



Sources: Coinbase, CoinMarketCap, Federal Reserve, S&P Dow Jones Indices. See appendix for methodology details.

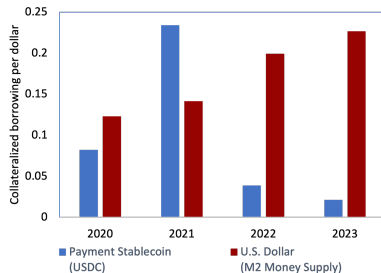
Leverage based on payment stablecoins is less than that of the fiat dollar and trending even lower

Figure 4: Collateralized borrowing per dollar equivalent



Sources: CoinMarketCap, Dune Analytics, Federal Reserve, Office of Financial Research.

Figure 5: Collateralized borrowing per dollar equivalent by year

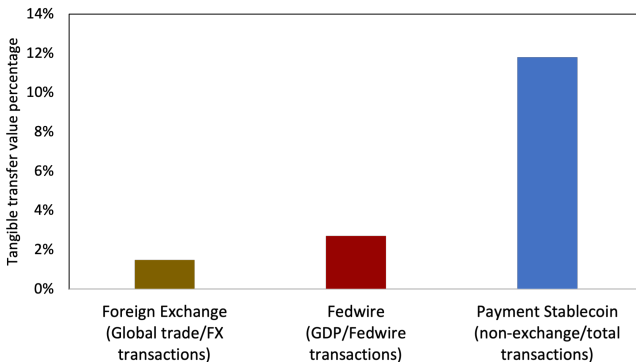


Sources: CoinMarketCap, Dune Analytics, Federal Reserve, Office of Financial Research.

Collateralized borrowings in payment stablecoin are of DeFi lending platforms.
Collateralized borrowings of U.S. dollar are of the repo market.

Payment stablecoins outshine fiat settlement rails for real-world value transfers

Figure 6: Tangible transfer value as a fraction of total transaction values



Sources: BIS Triennial Survey, Bureau of Economic Analysis, Federal Reserve, UNCTAD, blockchain data.

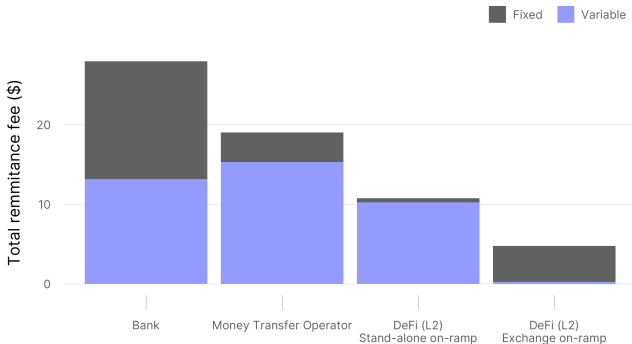
*Tangible transfer value for payment stablecoin (USDC) is defined as direct wallet transfers that do not involve exchanges, virtual asset service providers, and decentralized finance smart contracts.

What are emerging uses beyond payments?

Tokenization enables programmability

- ▶ On-chain data verifiability and contract enforceability shift intermediation risks from levered to unlevered balance sheets
 - ▶ *Example:* Automated market makers in foreign exchange eliminate settlement risks, lower remittance costs, and facilitate weekend price discovery (Adams, Lader, Liao, Puth, and Wan 2023).

Cost comparison for on-chain and off-chain remittance



How to preserve stability?

Singleness of money depends on primary market issuer in facilitating redemption at par

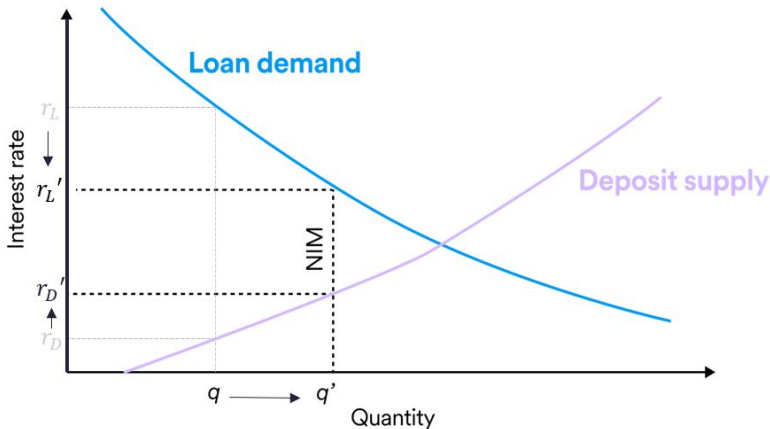
Daily volume weighted average price of USDC in USD

		Daily volume weighted average price of USDC in USD					
Market	Average daily volume (\$millions)	Min	1%	Mean	50%	99%	Max
Primary	\$645.5	\$1	\$1	\$1	\$1	\$1	\$1
Secondary	\$32.5	\$0.9452	\$0.9991	\$0.9999	\$1.0000	\$1.0007	\$1.0109
Combined	\$678.0	\$0.9841	\$0.9999	\$1.0000	\$1.0000	\$1.0000	\$1.0004
Combined (weekdays only)		\$0.9988	\$1.0000	\$1.0000	\$1.0000	\$1.0000	\$1.0002

Source: Liao (2023, CEPR). Secondary market data from Kaiko. Data from March 1, 2021 to April 11, 2023.

- ▶ Primary market represent 95% of volume of exchange between USDC and USD; secondary market can be illiquid especially on weekends
- ▶ Direct access to central bank settlement account can help to preserve singleness of money by removing credit exposures

Competition from digital currency can increase deposit and lending when banks have market power



Chiu, Davoodalhosseini, Jiang, and Zhu (2023, JPE); Whited, Wu, and Xiao (2022)

Conclusion

- ▶ Stablecoins have evolved beyond usage for speculation
- ▶ Payment stablecoins have emerged as a medium of exchange and store of value with less speculative and leveraged activities than fiat money on traditional settlement rails
- ▶ Technology is driving adoption for general payment use in the digital economy and programmability of contracts
- ▶ Regulatory clarity is needed more than ever to ensure safe adoption of payment stablecoins as cash tokens