

# Stablecoin and financial stability: A reputation-based framework

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<sup>1</sup>The opinions are the author's and do not necessarily reflect those of the Federal Reserve Board or its staff

# Outline

- ▶ Stablecoins 101
- ▶ What sets stablecoins apart in our money market landscape?
- ▶ Does it matter for financial stability?
  - ▶ key financial stability risks
  - ▶ deep dive into market driven response to such risks
    - ⇒ implications for stablecoin remuneration

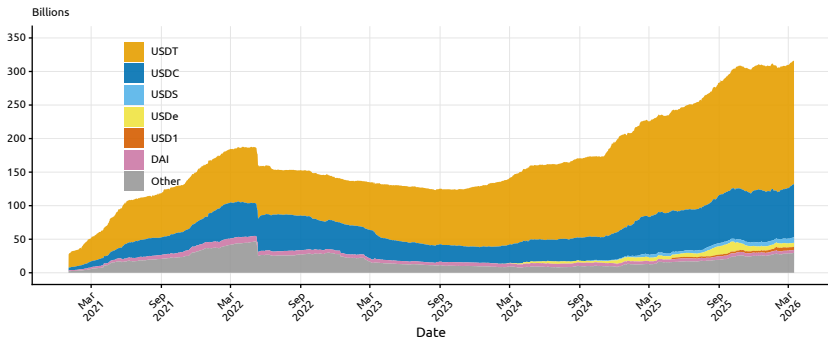
# Stablecoins 101

## Stablecoins (SC):

- ▶ are crypto-assets pegging their value to a reference asset
- ▶ issued on primary market, traded on secondary market
- ▶ differ in their stabilization mechanisms:
  - ▶ asset-backed (USD Coin, Tether...)
  - ▶ unbacked/algorithmic (Ampleforth...)

# Stablecoins market

- ▶ SC market capitalization has doubled in the past few years



Source: DeFi Llama.

## Stablecoins market (cont'd)

- ▶ Market dominated by Tether (USDT) and USD Coin (USDC)
  - which are asset-backed and make up 90% of the market
- ▶ Issuer (Tether, Circle) has an obligation towards investors:
  - *“A Tether token is redeemable for a unit of fiat”*
  - *“USDC is always redeemable 1:1 for US dollars”*
- ▶ Policy makers' attention: SC growth and nature of obligation

## Legislative landscape

Legislation is being drafted globally (e.g. MiCa, Genius)

- ▶ with elements of banking regulation & MMF reform
- ▶ to address market failures arising from liquidity transformation
- ▶ as business model of largest SC issuers is:
  - get money from investors against issuance of SC
  - invest that money to earn return
  - repay obligations if investors demand repayment

⇒ Demand obligation towards investors is **one** feature of SC

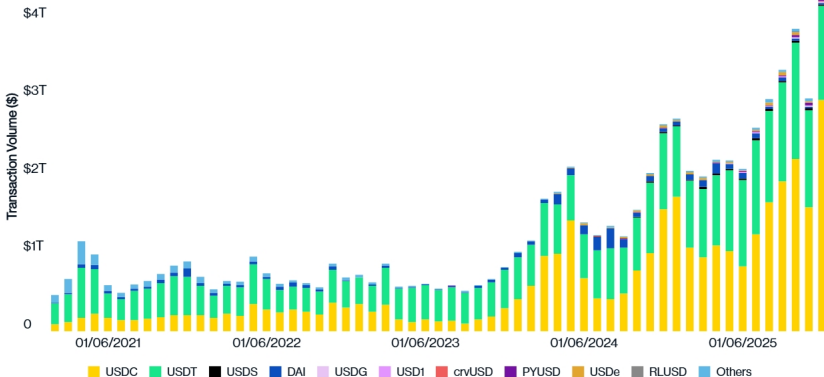
## Stablecoin use cases

Stablecoins used as:

- ▶ medium of exchange for crypto investment
- ▶ some cross border
- ▶ growing role in payments

# Stablecoin Monthly Transaction Volume

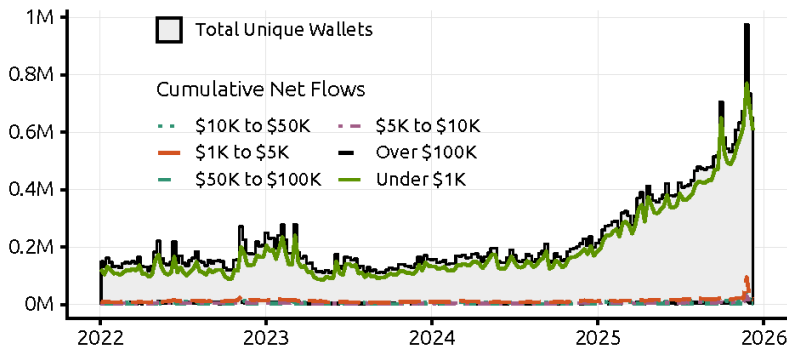
Stablecoins: On-chain Transaction Volumes, 2021 - 2025



Source: Artemis

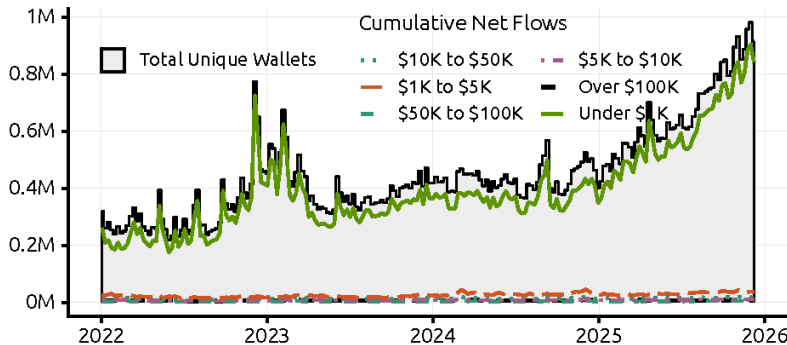
## Retail use: USDC (Carapella et al., FEDS Note 2026)

- gray area = number of unique wallets in Ethereum
- green line = number of wallets by net holdings < \$1K



## Retail use: USDT (Carapella et al., FEDS Note 2026)

- gray area = number of unique wallets in Ethereum
- green line = number of wallets by net holdings < \$1K



## Why are SC used for payments

In reality:

- ▶ technological friction: recording trades on blockchains
- ▶ central bank or commercial bank money not on blockchains

⇒ Payment use is a **second** feature of SC

Are demand obligation and payment usage SC distinctive features?

## What features of SC are unique

1. liability/promise of redemption by issuer (primary market)  
= bank deposits, MMFs
2. used for payments/circulate  
= bank deposits
3. have a **secondary market**  
≠ bank deposits, MMFs (for now)

In our deep dive:

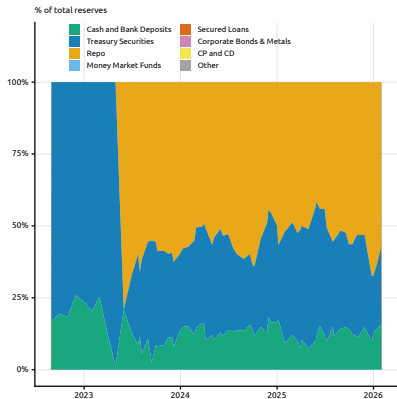
- ▶ 1. ⇒ redemption depends on investment choice/reputation
- ▶ 2. ⇒ circulating among investors
- ▶ 3. ⇒ results in improving issuers' reputation

# 1. Incentive to honor obligations is key

## SC issuers:

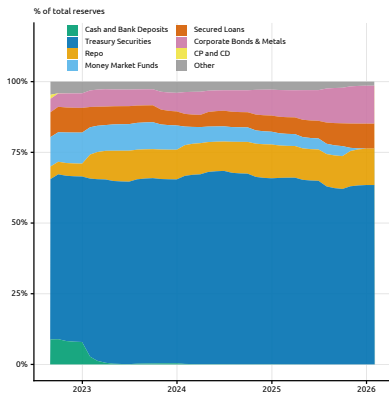
- ▶ perform liquidity transformation and not trusted
  1. Tether explicit about holding lots of *non-money-like* assets. Investors know that Tether may fail to redeem
  2. Circle reserves stuck at SVB in March 2023. Investors expect issuers might save on costs/efforts to select resilient custodians or to diversify them
- ▶ tried to tie their hands by relying on others for safekeeping
  - ▶ Circle holds reserves in BlackRock, BoNY Mellon, with regular attestations of reserves covering circulating USDC, financial statements audited annually

# 1. Incentive to honor obligations: Issuers' Reserves



Source: USDC Transparency Reports.  
Note: Percentage composition of total reserves.

(a) Circle Reserves



Source: USDT Transparency Reports.  
Note: Percentage composition of total reserves.

(b) Tether's Reserves

### 3. SC secondary market

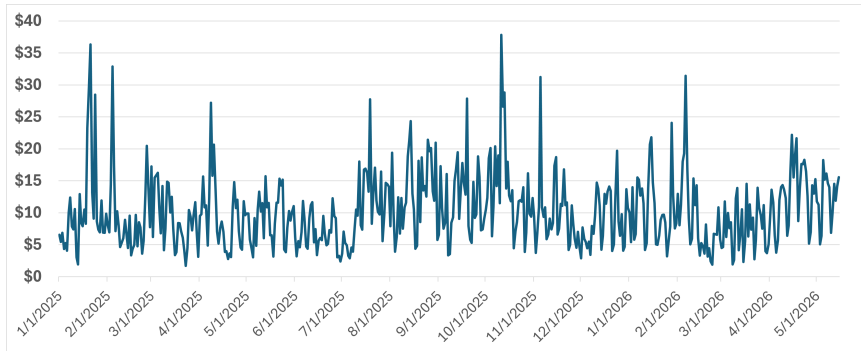


Figure: Daily USDC-USD Trading Volume in Billions of USD.

Source: Coingecko

### 3. Issuers' participation in secondary markets for their SC

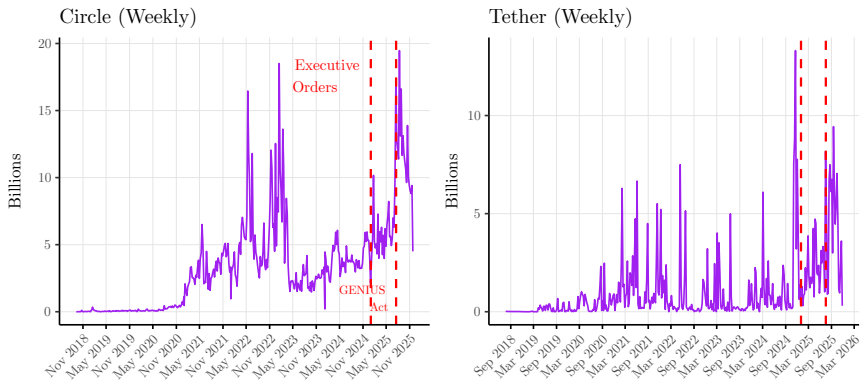


Figure: Purchases of USDC/USDT net of sales by Circle/Tether

## Key risks (Carapella et al. FEDS Note 2026)

- (i) Liquidity and maturity transformation  $\Rightarrow$  runs
- (ii) Interconnections can amplify vulnerabilities from (i)
  - ▶ within the digital asset ecosystem
    - intermediation chains, vertical integration
      - e.g. Circle revenue sharing agreement with Coinbase, Circle's Ethereum liquidity pool for BlackRock tokenized MMF, Circle's issuance of tokenized MMF, DAI-USDC peg stability module*
  - ▶ across the digital asset and traditional financial systems
    - accelerating wholesale and retail adoption

## Goal of deep dive into market response

Develop a reputation-based framework to:

- ▶ help us understand how SC issuers can be trusted to honor redemption promises
- ▶ rationalize differences between SC and other forms of money, to which SC are likened for the purpose of regulation
  1. secondary mkt with active issuers' participation
  2. voluntary rewards
- ▶ show that 1 & 2 make issuers more trustworthy
  - ⇒ there exists an optimal remuneration level for issuers

## Goal of deep dive into market response (cont'd)

How can issuers be trusted to behave well and honor redemptions?



not divert assets nor enter risky partnerships

- ▶ Legislation doing its part. What have issuers being doing?
  1. actively participating in secondary markets for their SC
  2. offering voluntary rewards
- ▶ Why do issuers' actions matter?
  - ▶ they build trust through **reputation**

# Economic mechanism: reputation = value of franchise

Repayment/Incentive constraint:

$$\underbrace{-s + v}_{\text{payoff from honoring redemptions}} \geq \underbrace{\hat{v}}_{\text{payoff from diverting assets or risky partnerships}}$$

- ▶  $s$ : stablecoins (i.e. issuer's obligations)
- ▶  $v$ : continuation value of stablecoin franchise to the issuer
- ▶  $\hat{v}$ : continuation value of possibly losing the franchise

## How can we relax the constraint?

1. Stablecoins purchased by issuer:  $b$
2. Voluntary reward:  $\tau$

$$\underbrace{-s}_{\text{redemptions}} - \underbrace{\tau}_{\text{voluntary reward}} + \underbrace{v(b, \tau)}_{\text{issuer franchise value}} \geq \hat{v}(b, \tau)$$

- ▶ value  $v(\hat{v})$  of having (losing) franchise depends on  $\tau, b$
- ▶ want higher  $v$ , lower  $\hat{v}$  to relax the constraint
  - how does 1. affect  $v, \hat{v}$ ?
  - how does 2. affect  $v, \hat{v}$ ?

## Franchise value under good behavior

$$v(b, \tau) = \underbrace{-qb}_{\substack{\text{cost of buying} \\ b \text{ at price } q}} + \underbrace{u(s)}_{\substack{\text{revenue from investing funds } s}}$$

- ▶ issuer buys  $b$  before issuing new  $s \Rightarrow$  shows cost was borne (who wants to fake good behavior has to bear this cost)
- ▶ increasing  $u(s)$  relaxes the constraint (same as increasing  $s$ )

## Franchise value under bad behavior

$$\hat{v}(b, \tau) = \max \left( 0, -qb + \underbrace{\rho}_{\substack{\text{probability} \\ \text{of not being caught}}} u(s) + \underbrace{(1 - \rho)}_{\substack{\text{probability} \\ \text{of being caught}}} 0 \right)$$

- ▶ buys  $b$  to mimic good behavior (=not identified if not caught)

## Franchise value under bad behavior (cont'd)

$$\hat{v}(b, \tau) = \max \left( 0, -qb + \underbrace{\rho}_{\substack{\text{probability} \\ \text{of not being caught}}} u(s) + \underbrace{(1 - \rho)}_{\substack{\text{probability} \\ \text{of being caught}}} 0 \right)$$

- ▶ cost of buying  $b$  can be so large to offset expected payoff
  - ⇒ bad behavior punished with worst possible outcome:  $\hat{v} = 0$
  - ⇒ incentive constraint relaxed

Franchise value under bad behavior (cont'd)

$$\hat{v}(b, \tau) = \max \left( 0, -qb + \underbrace{\rho}_{\substack{\text{probability} \\ \text{of not being caught}}} u(s) + \underbrace{(1 - \rho)}_{\substack{\text{probability} \\ \text{of being caught}}} 0 \right)$$

- ▶ increasing  $s$  also raises  $\hat{v}$ , but less than  $v$  due to  $\rho$   
⇒ incentive constraint further relaxed

## How would an issuer get investors to buy more $s$ ?

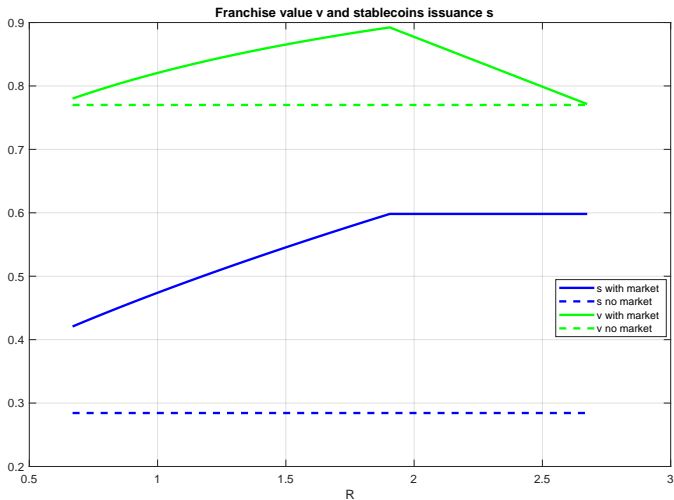
With **high return!** SC investors who bought  $s$  in primary market:

- ▶ if redeem, get \$1 per SC, so get  $s$
- ▶ if hold and sell  $b$  in secondary market, get:

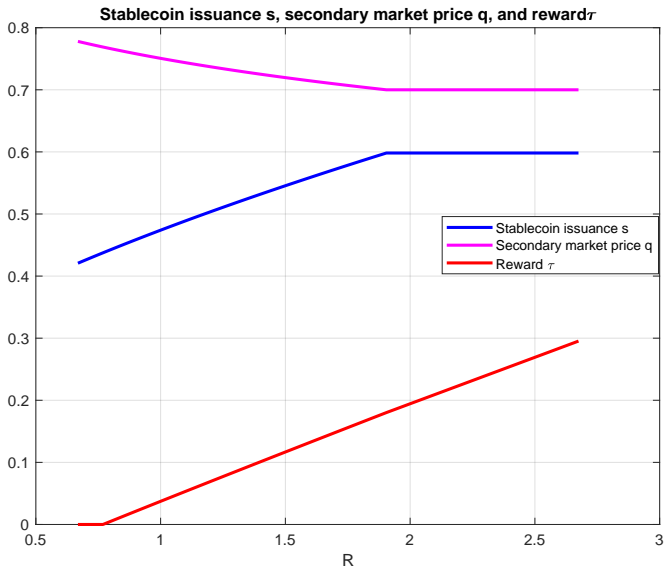
$$\underbrace{R}_{\text{return to investors on secondary market}} = \underbrace{qb}_{\text{revenue from selling } b} + \underbrace{\tau}_{\text{reward voluntarily paid by issuer}}$$

How does  $R$  affect the value of the franchise/reputation?

# Example: franchise value and stablecoin growth



## Example: market price and voluntary reward

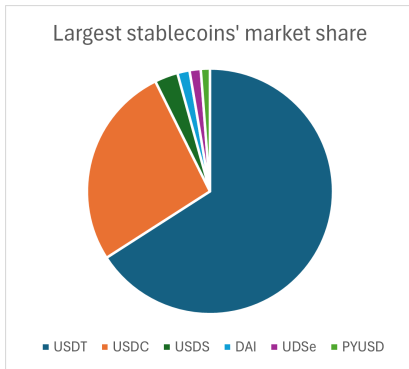


## Conclusion

### Stablecoins:

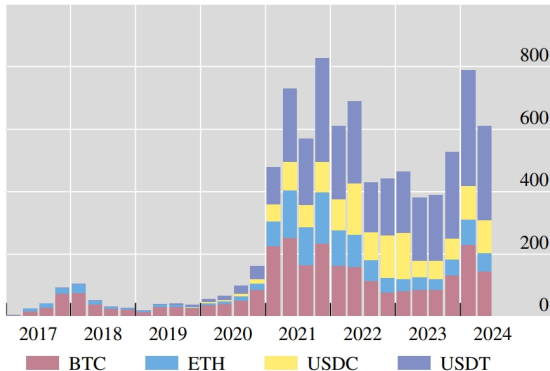
- ▶ like other money market instruments, are liabilities redeemable on demand at par
- ▶ differently from other money market instruments, have an active secondary market
- ▶ issuers' activity on secondary market and voluntary rewards can improve their trustworthiness on primary market
  - ▶ there is an optimal remuneration level from issuers' perspective
  - ▶ entirely self-enforcing: can complement regulation

# Appendix: largest stablecoins' market share



# Stablecoin in Cross-Border Flows

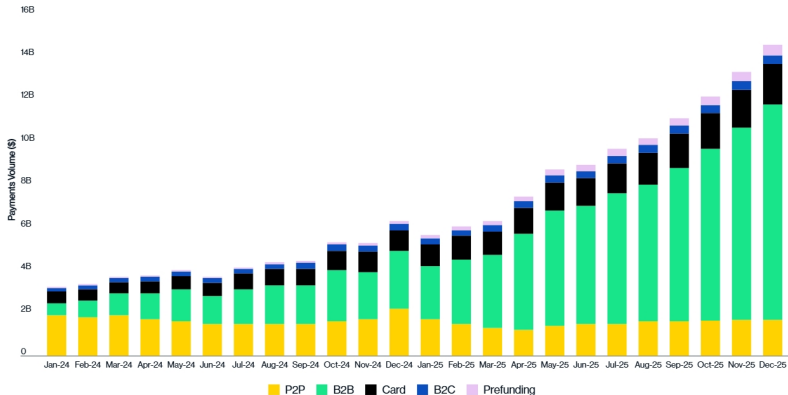
Figure 1: Cross-border crypto flows (US\$ billions)



*Note:* The graph presents quarterly aggregates of cross-border flows for four cryptoassets from Q1 2017 to Q2 2024. Source: Auer et al, BIS working paper 2025, based on data from Iknaio and Chainalysis. Calculations relative to \$100T annual trading volume.

# Stablecoins in payments

### Stablecoin Payments by Type, 2024 - 2025



Source: Artemis; data from September 2025 is extrapolated from available 2025 data