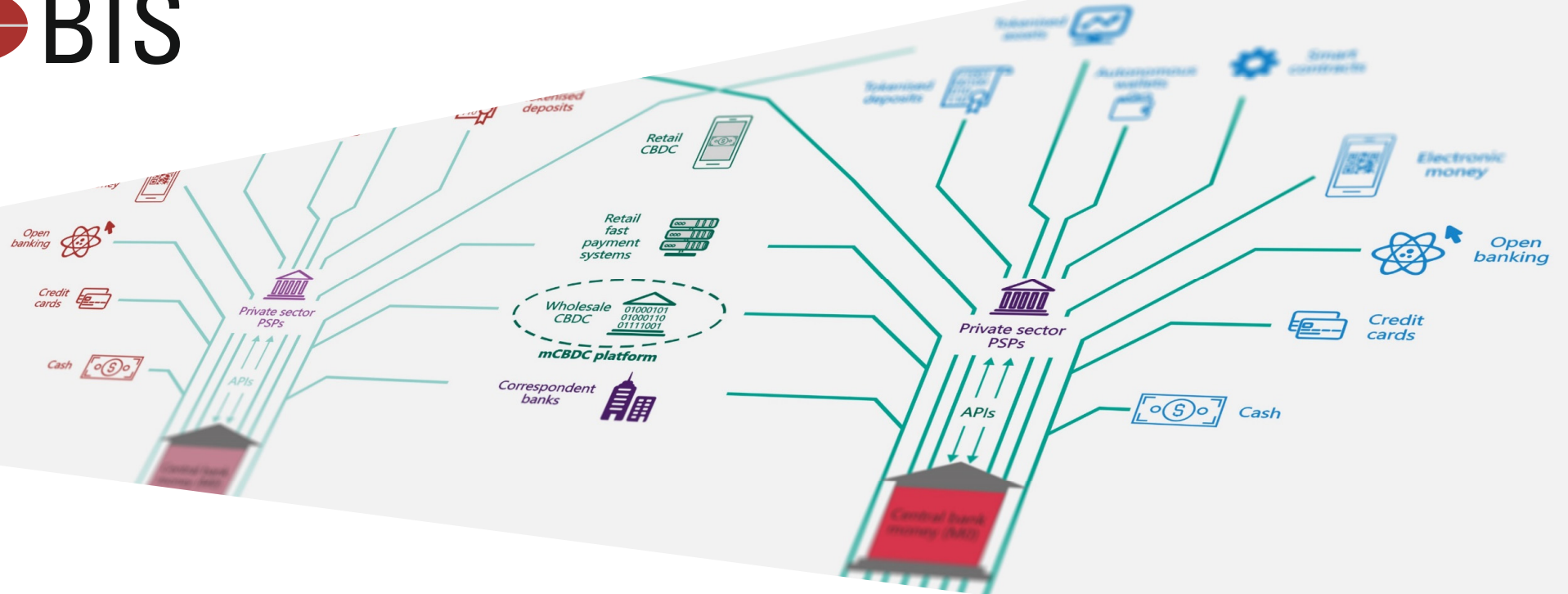




BIS



# Central bank digital currencies and the future monetary system

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\*The views expressed here are mine and not necessarily those of the Bank for International Settlements

Crypto operates under the banner of decentralization, but the ecosystem is dominated by centralized intermediaries



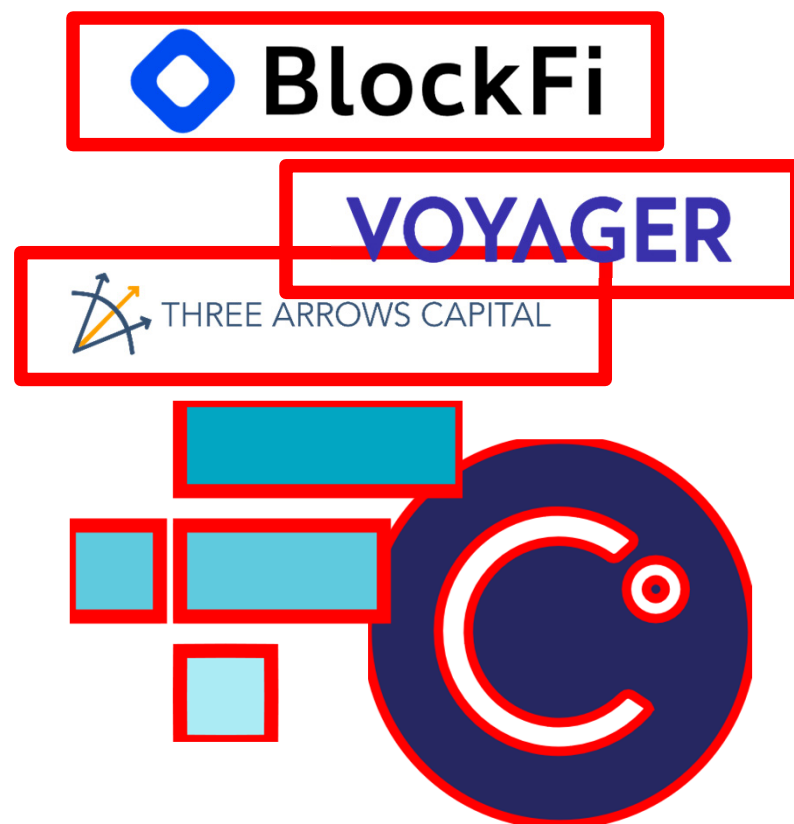
 **BlockFi**

**VOYAGER**

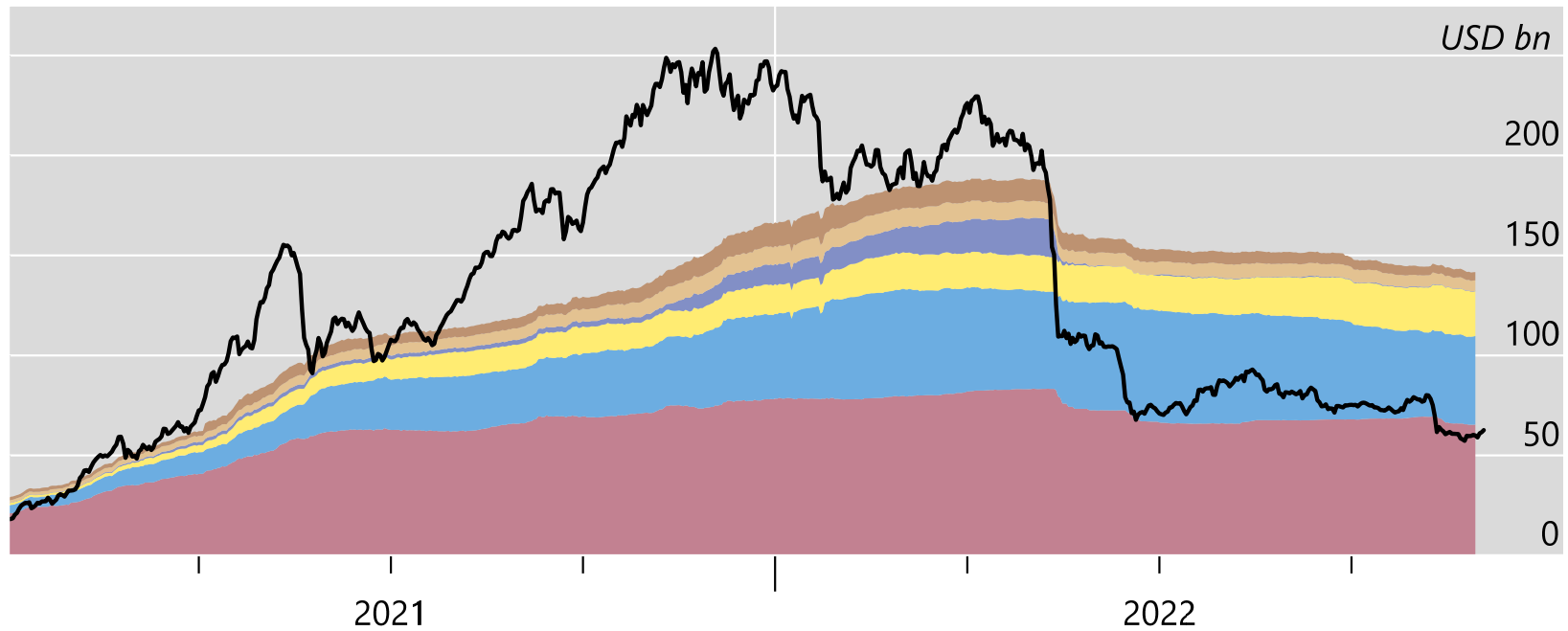
 THREE ARROWS CAPITAL



Centralized intermediaries channel funds from mainstream investors into the crypto world; recent failures reprise familiar themes (leverage, maturity mismatch) from the 2008 Great Financial Crisis



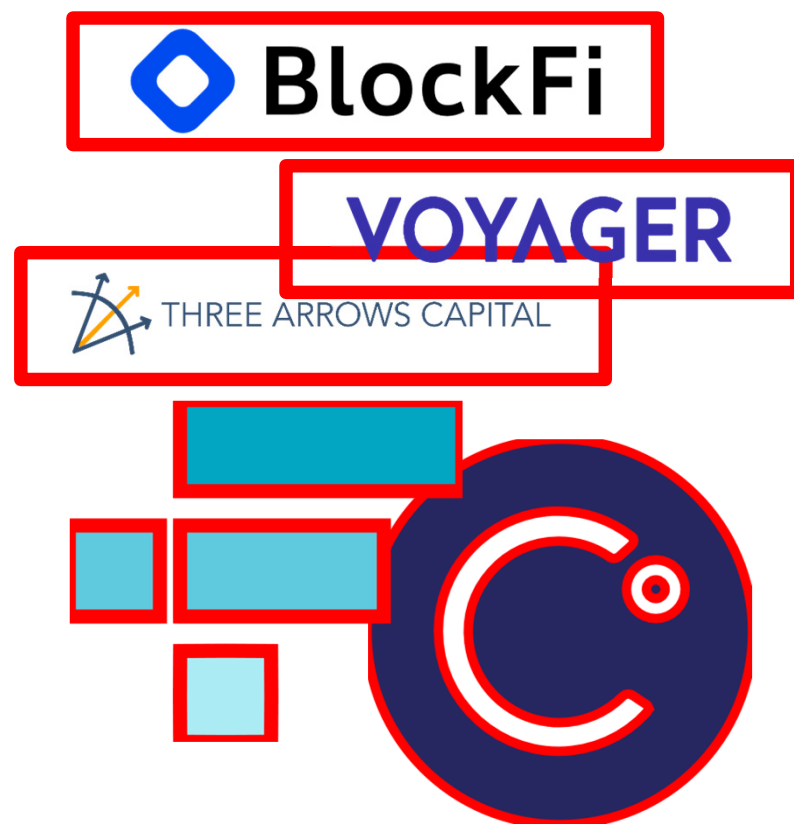
Stablecoins occupy a central place in the crypto ecosystem by providing the point of contact with the conventional monetary system; they piggyback on the unit of account role of conventional money



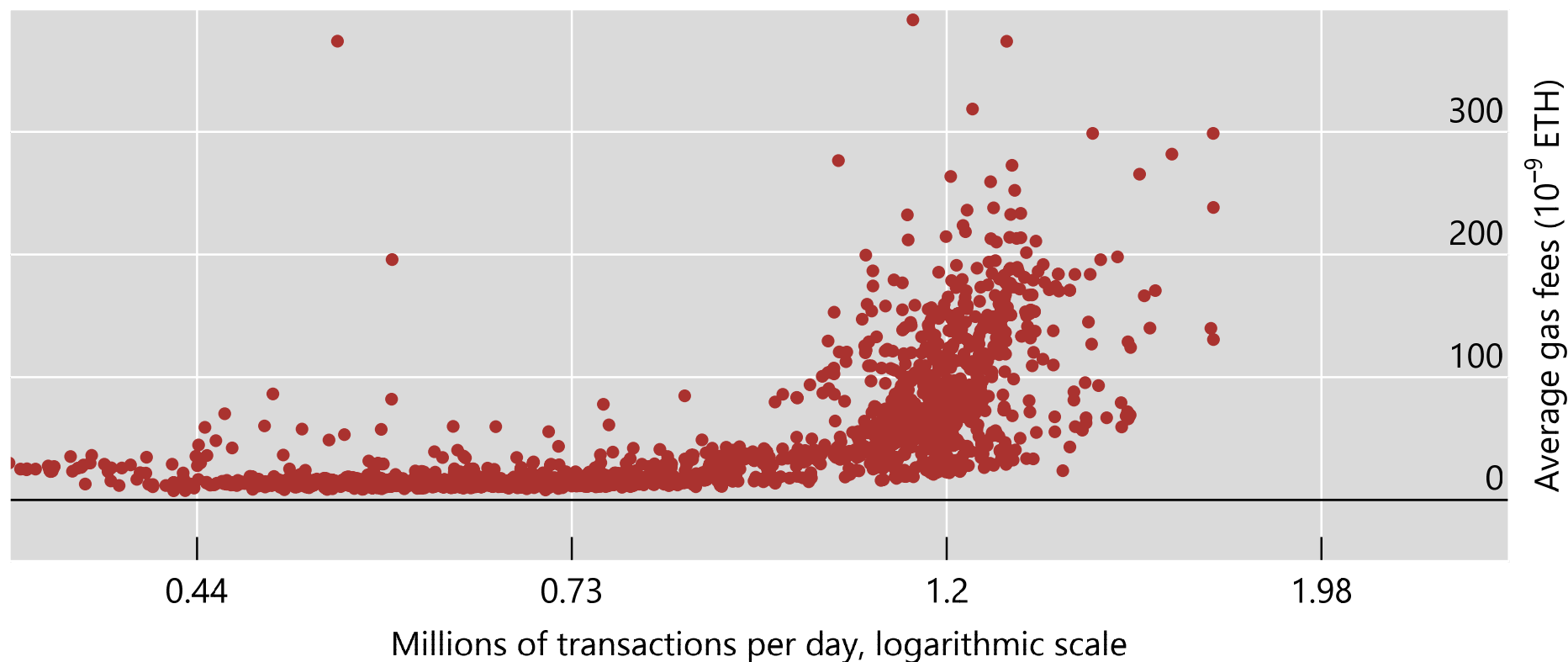
Market capitalisation: Tether USD Coin DAI  
Binance USD TerraUSD Others  
Total value locked (TVL): DeFi

Sources: Bloomberg; CoinGecko; DefiLlama.

Even for notionally decentralized blockchains, many are “decentralized in name only” (DINO)



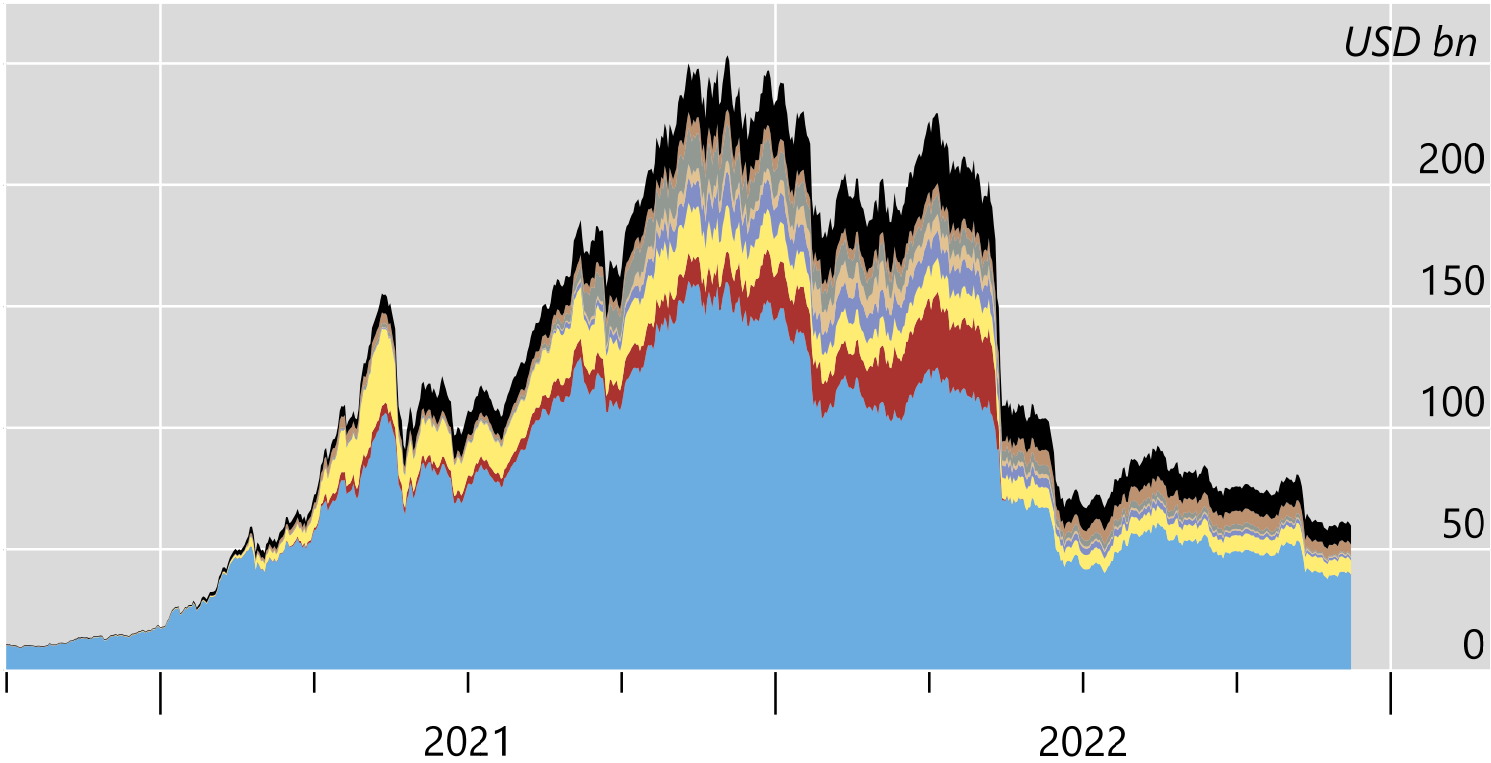
Is the answer for crypto to go back to its true decentralized roots? Maybe, but its roots don't mesh with going mainstream and selling coins to retail investors; in any case, rents to insiders is a feature, not a bug; truly decentralized crypto has to live with congestion and fragmentation as essential features



Source: Boissay, F, G Cornelli, S Doerr and J Frost (2022): "Blockchain scalability and the fragmentation of crypto", *BIS Bulletin*, no 56.

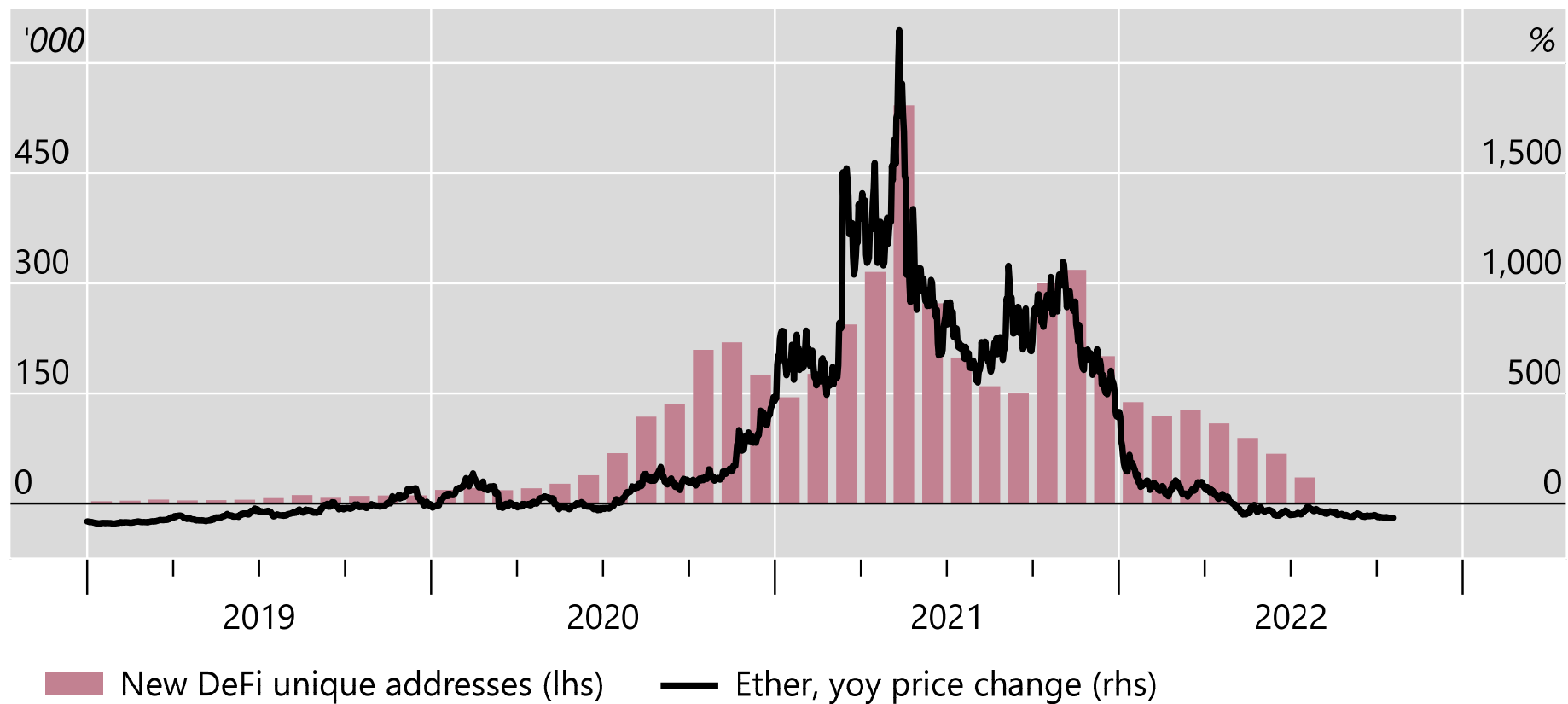
Rents to insiders is a feature, not a bug; congestion and fragmentation are the consequences of incentives that sustain decentralization; increased fragmentation of DeFi, as measured by value locked on the blockchain, is one symptom

- Layer 1 networks:
- Ethereum
  - Fantom
  - Terra
  - Solana
  - Binance
  - Tron
  - Avalanche
  - Other layer 1 and 2 networks



Source: DefiLlama.

It is becoming clear that crypto only works with inflows of new users

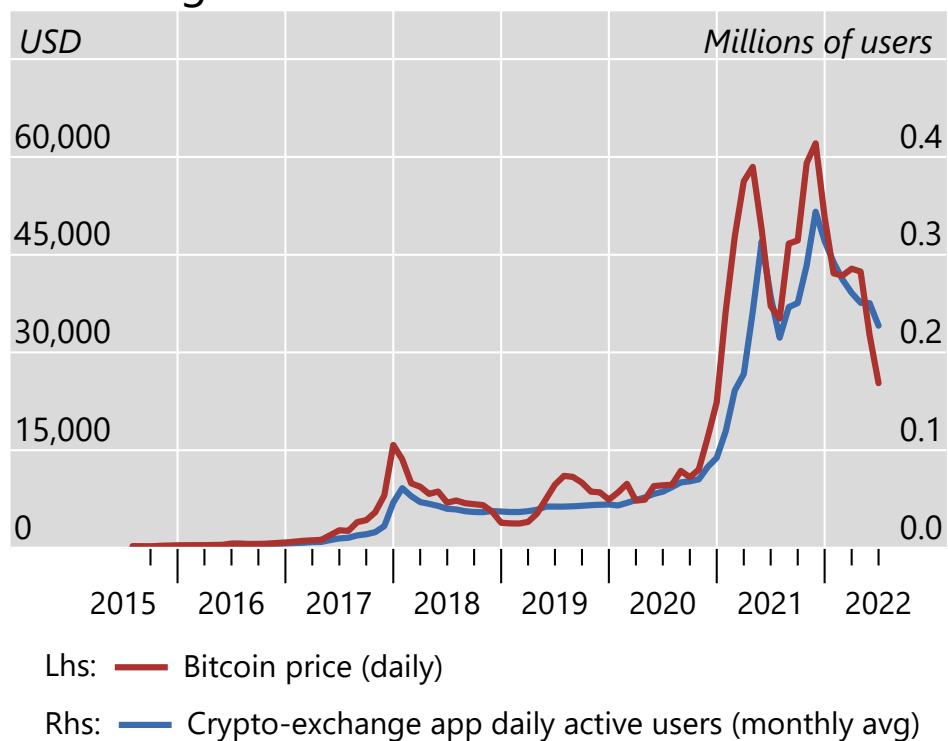




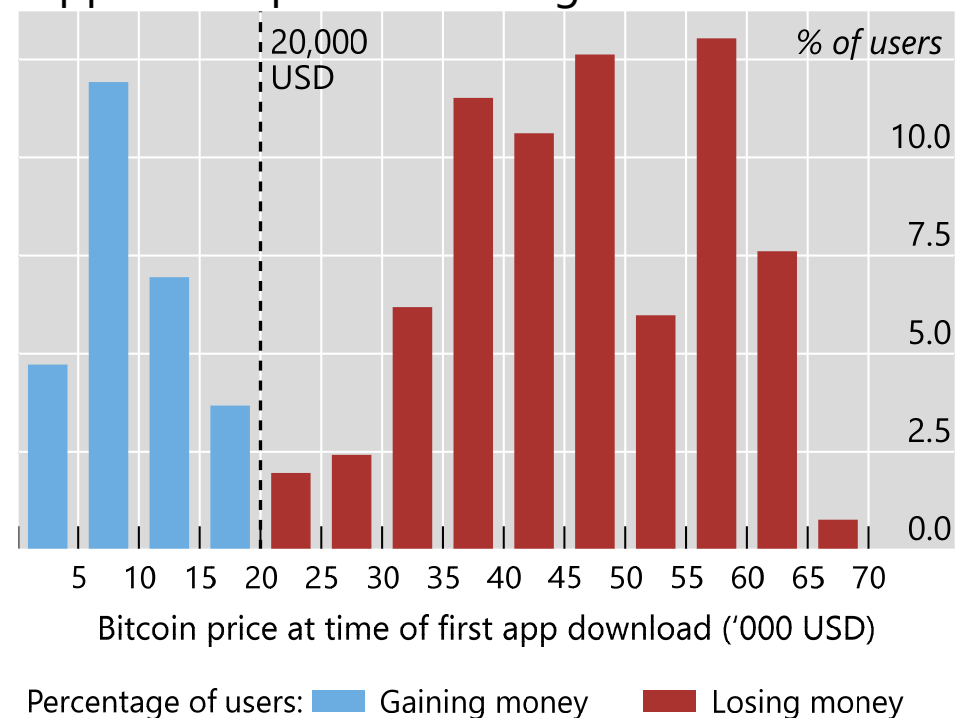
## Evidence mounts that rising coin prices attract inflows of new coin holders

### Most retail investors have lost money

Daily active users increase as Bitcoin price trends higher



Most retail investors downloaded crypto apps when prices were high



Source: Auer, R, G Cornelli, S Doerr, J Frost and L Gambacorta (2022): "Crypto trading and Bitcoin prices: evidence from a new database of retail adoption", *BIS WPs*, no 1049

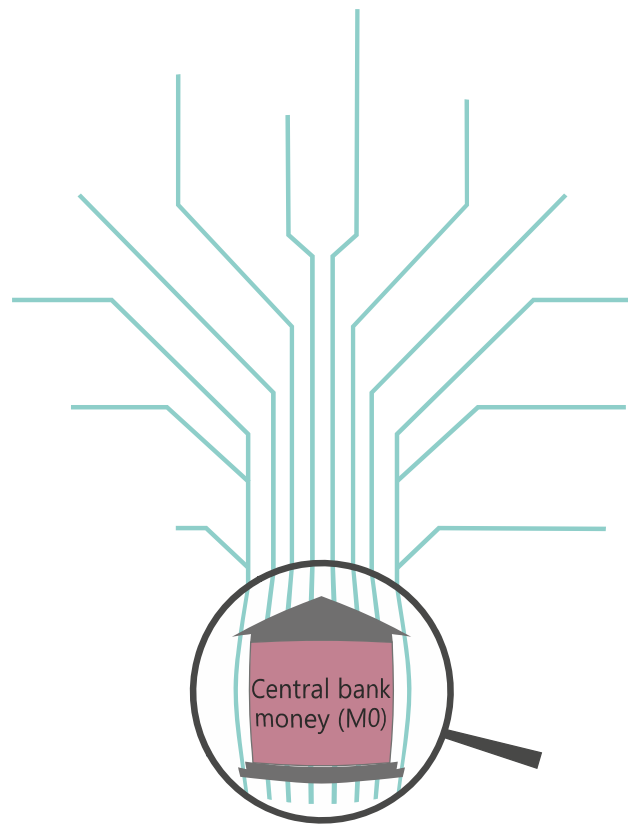
Metaphor for the future monetary system:

a tree with central bank money as its solid trunk, supporting a rich and diverse ecosystem

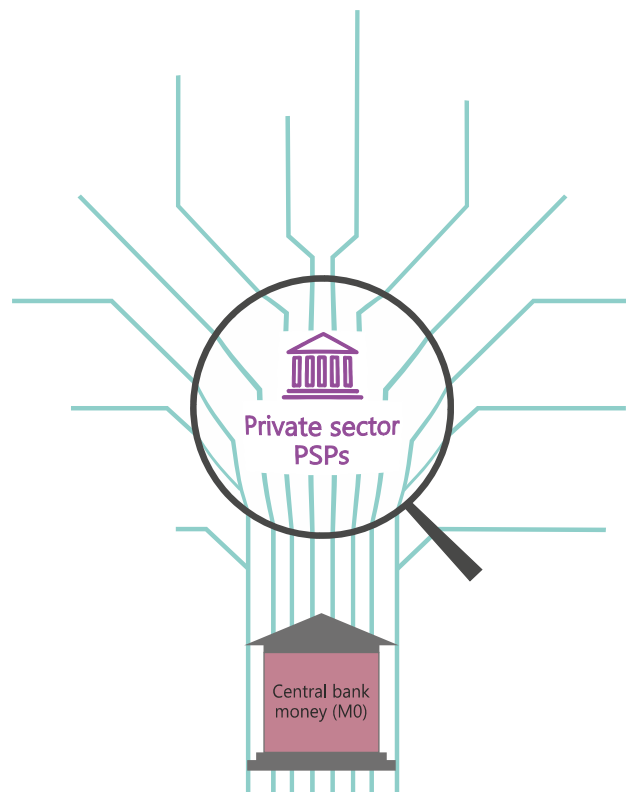
Monetary system that does not rely on selling coins



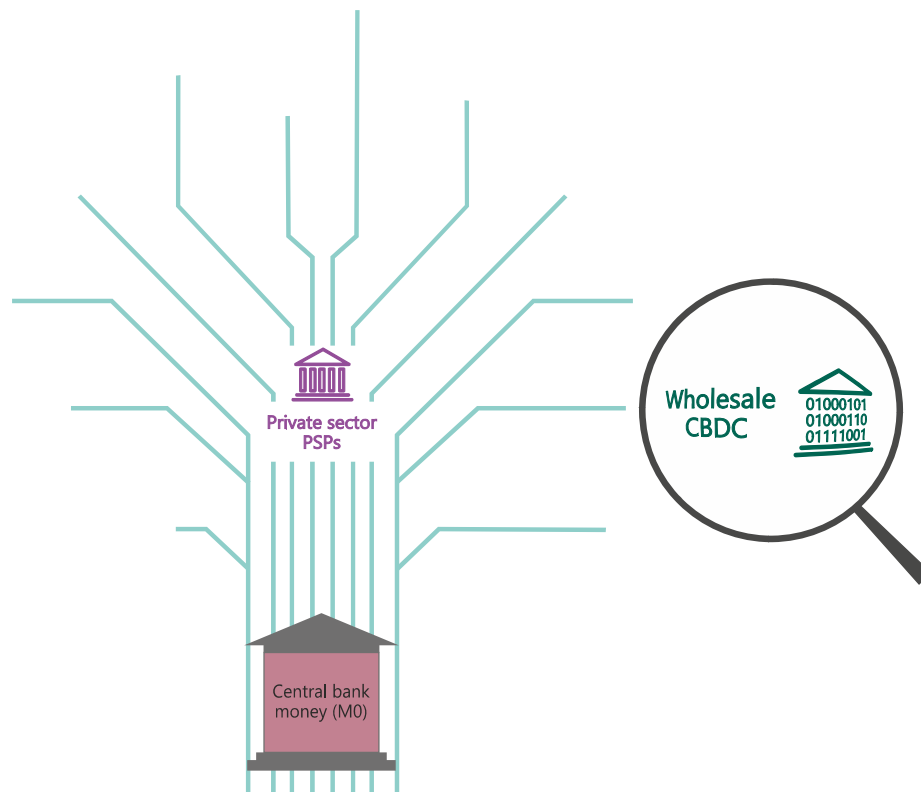
## The foundation: central bank money (M0)...



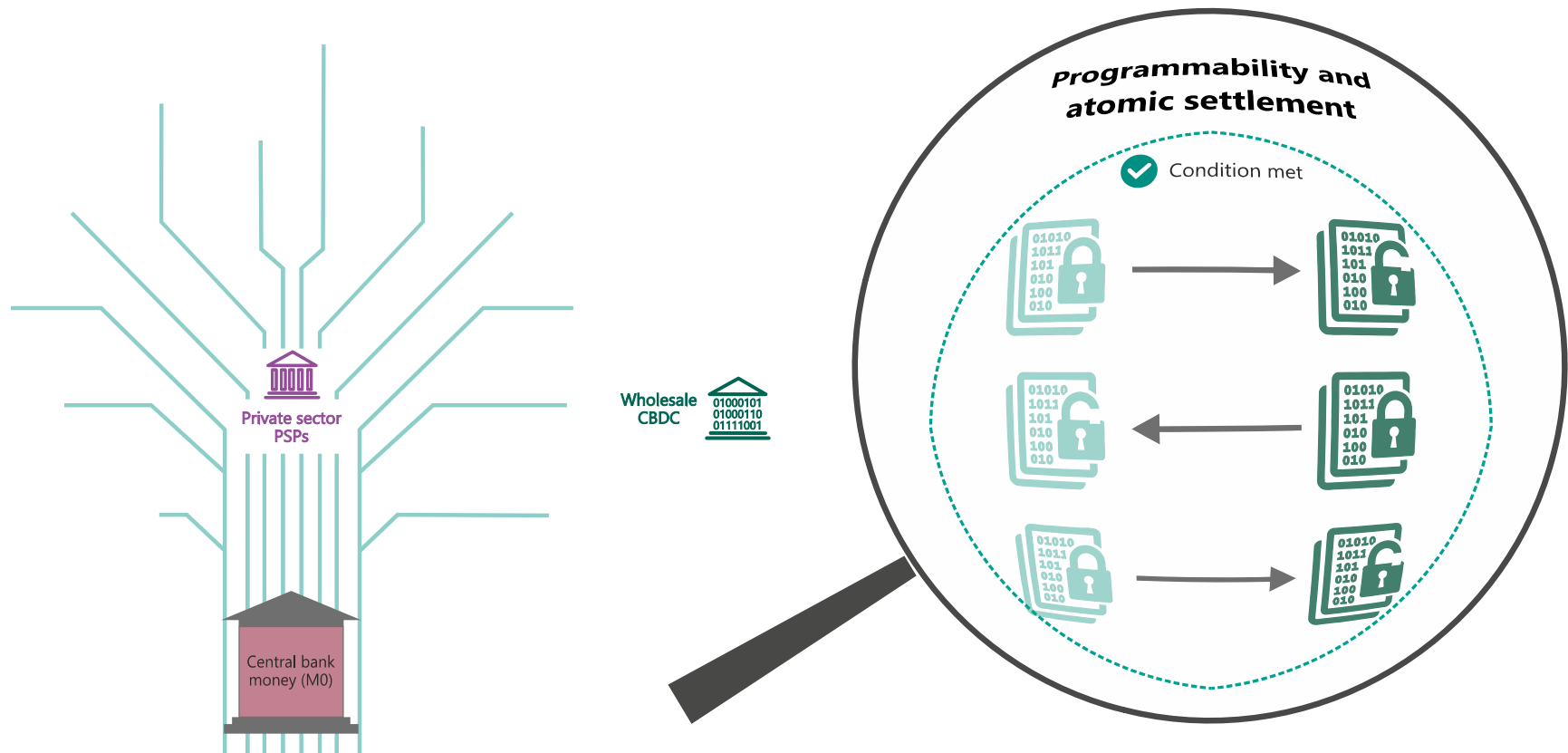
...supporting bank and non-bank payment service providers (PSPs)



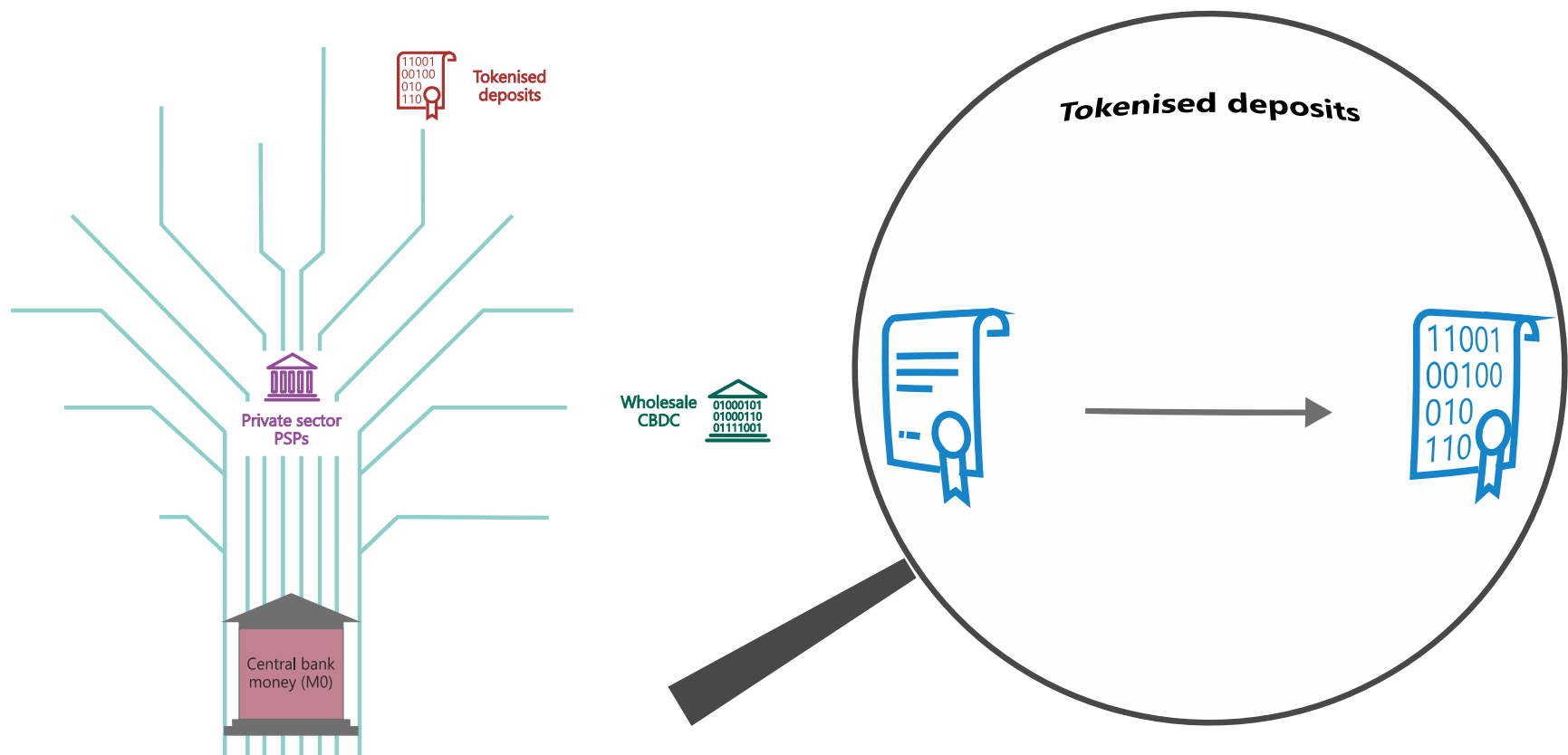
## Wholesale central bank digital currencies (wCBDCs) enable new capabilities



## Enhanced functions include programmability



...and tokenization, including digital representation of commercial bank deposits (tokenized deposits)...

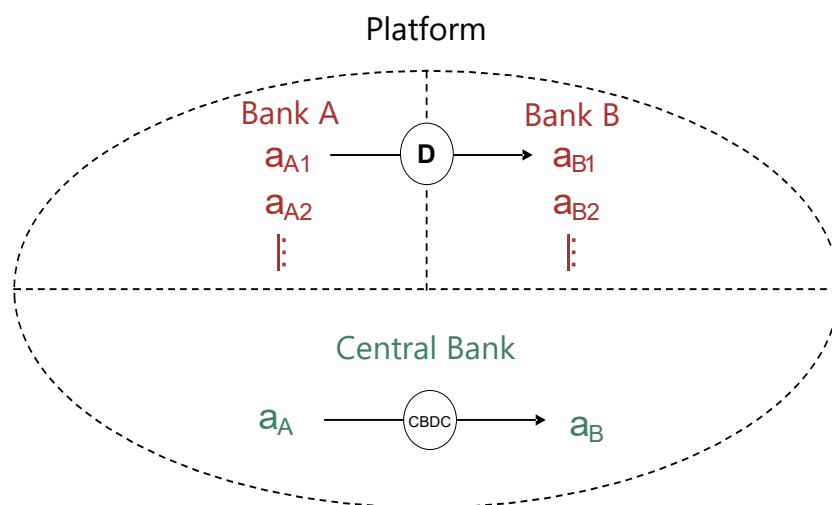


## Three themes

- Tokenization
  - Digital representation of claims (building on legal, historical precedents)
  - Expanding the universe of contractual outcomes by incorporating contingent actions
- Decentralization versus centralization
  - Expanding the universe of contractual outcomes through common knowledge of the state of the world among diverse set of interested parties
  - Applications to supply chains, real estate conveyancing process
  - Governance
- Permissioned platforms
  - Connecting with real world claims based on identity of natural and legal persons, not private keys
  - KYC/AML/CFT



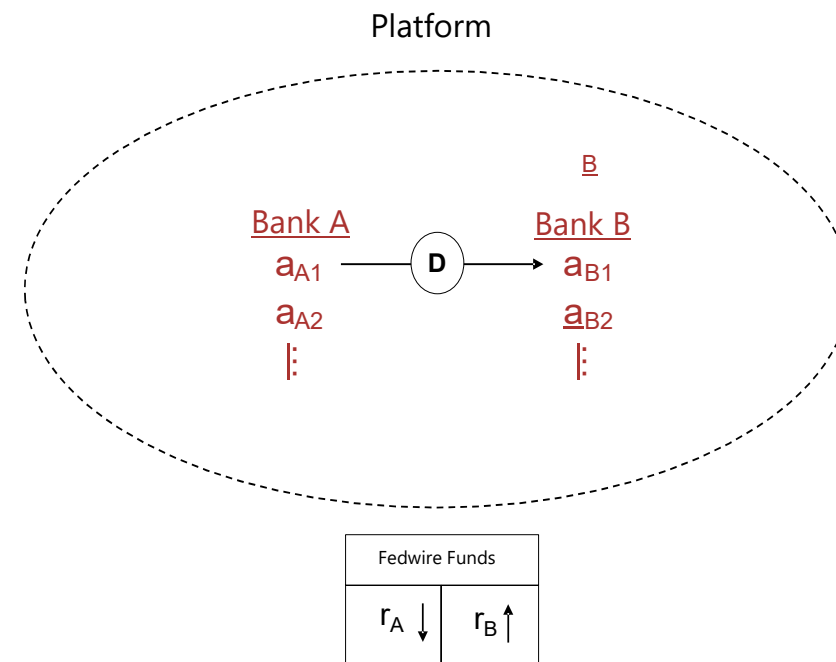
## Two models of (non-stablecoin) tokenized deposits



Example 1:

Common platform used by banks A and B, with settlement taking place using CBDCs.

[www.citibank.com/tts/insights/articles/article191.html](http://www.citibank.com/tts/insights/articles/article191.html)

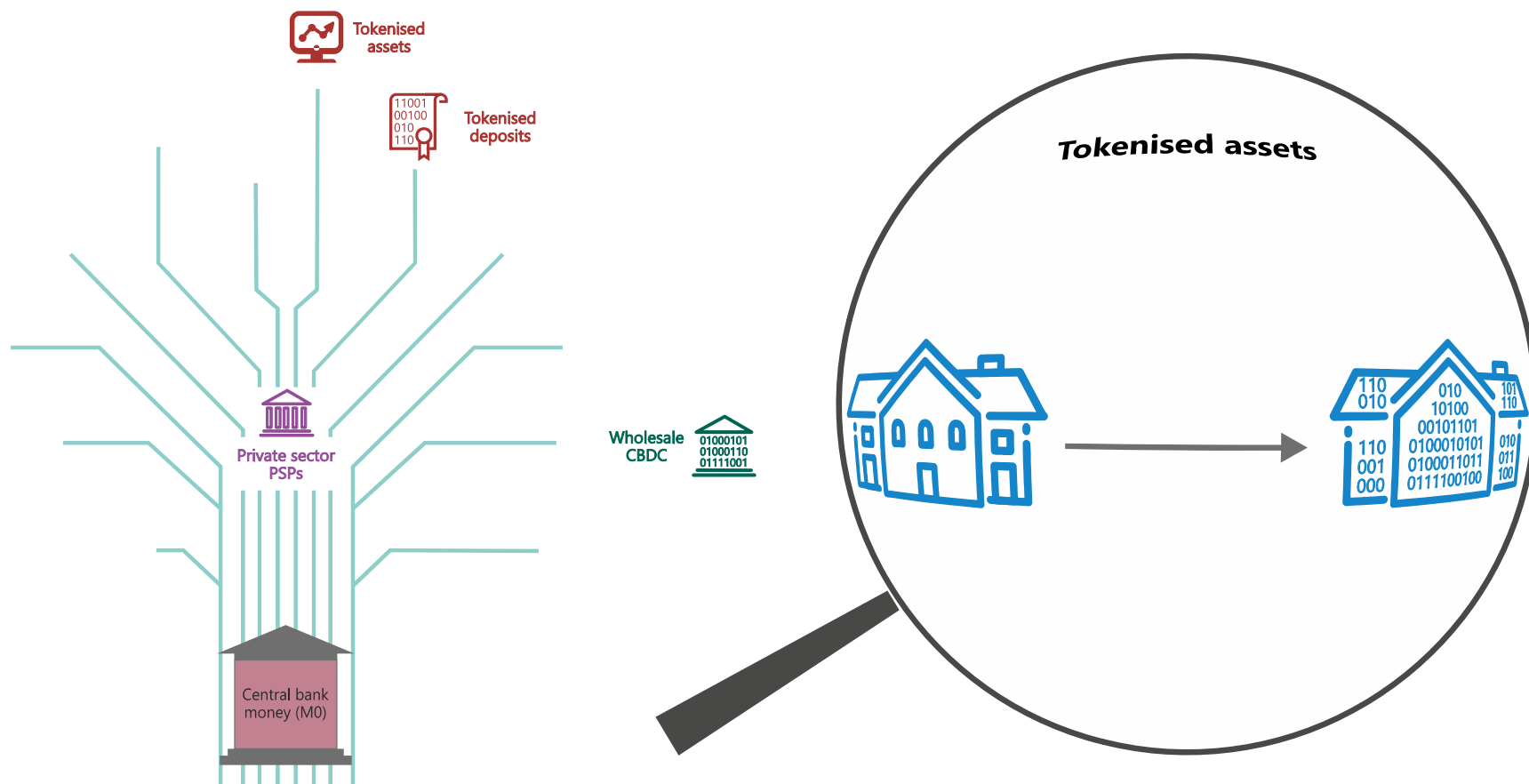


Example 2:

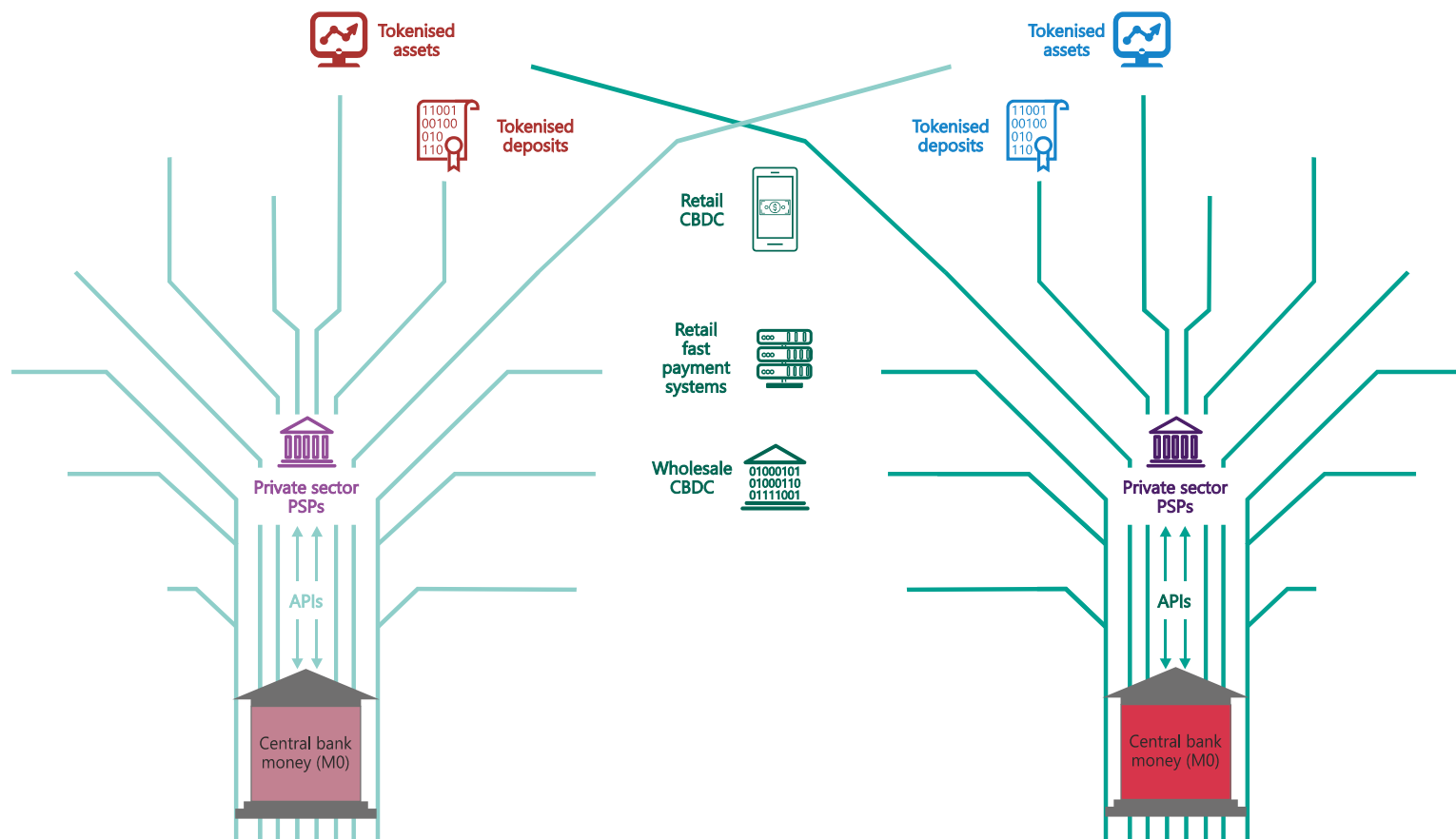
Common platform used by banks A and B, with settlement taking place via conventional RTGS

[https://www.usdfconsortium.com/files/ugd/0a0cc5\\_4c71b4ac01974b8b8d2af1d6a970b83c.pdf](https://www.usdfconsortium.com/files/ugd/0a0cc5_4c71b4ac01974b8b8d2af1d6a970b83c.pdf)

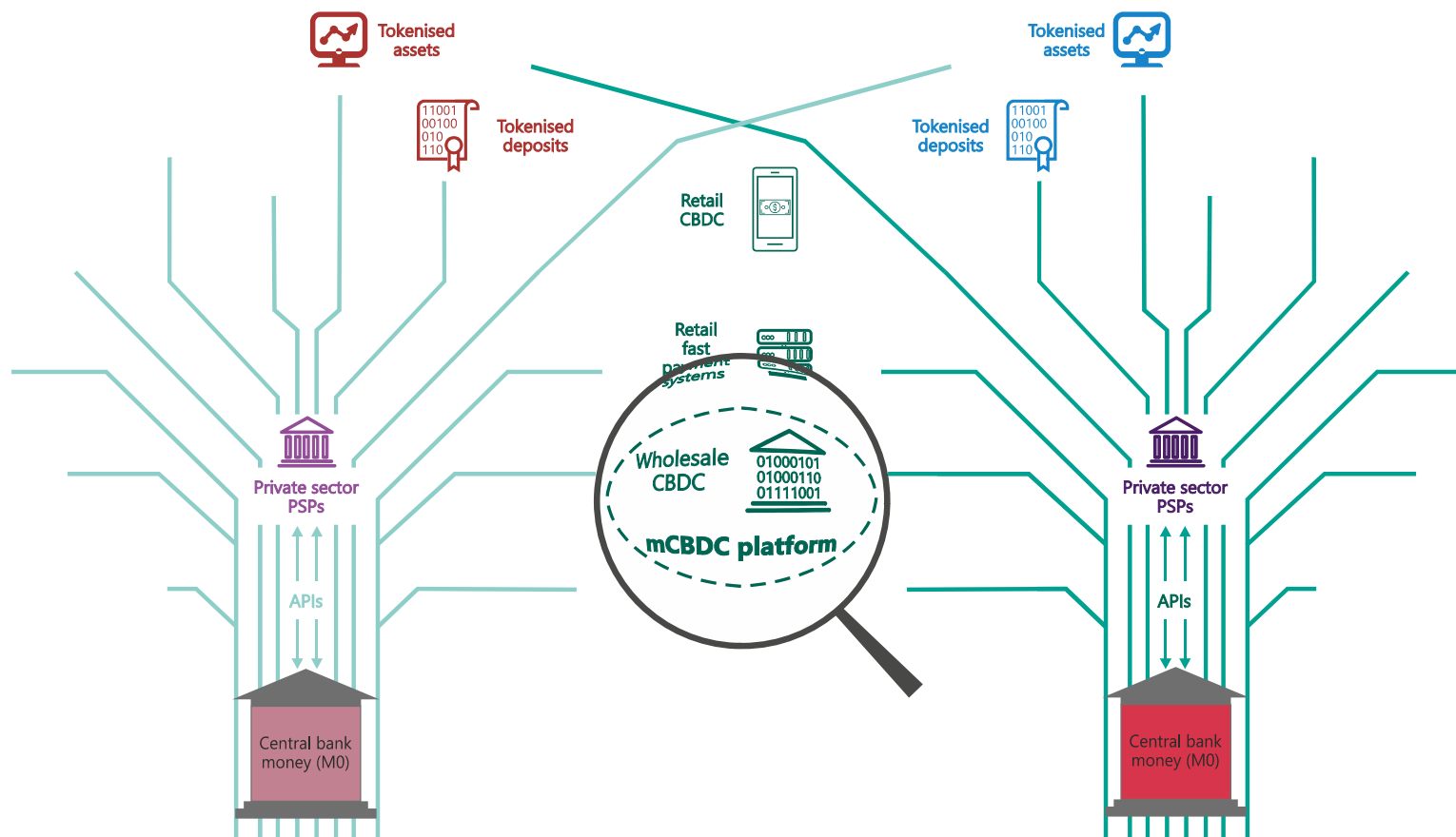
## Tokenization of real assets, including real estate, will be a key use case



# CBDCs can also link across borders, much like the canopy of a forest



## Multi-CBDC (mCBDC) platforms show particular promise



# A diverse global monetary (eco)system, rooted in central bank money

