



# After the Crypto Crash: The Role of CBDC

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Bank for International  
Settlement

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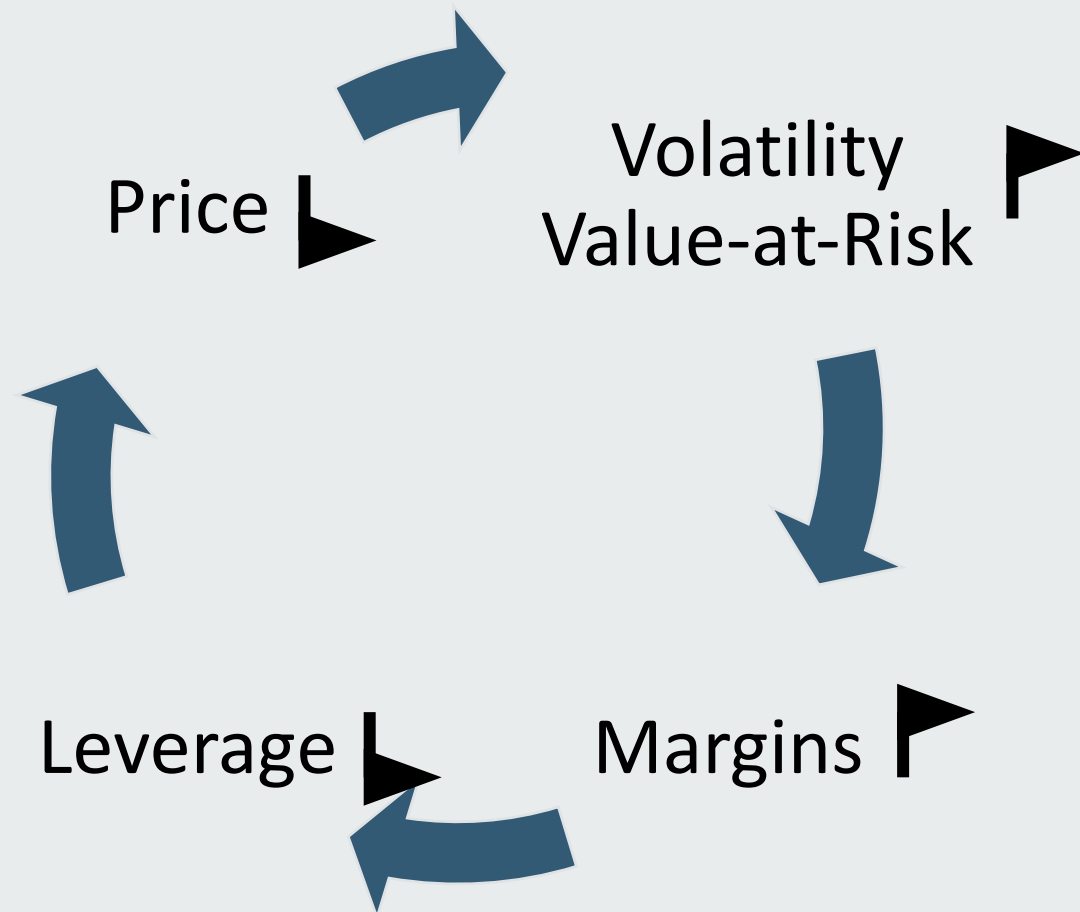
# From Crypto Crash to “Crypto Winter”



- Non-stable “Stablecoins”
  - Algorithmic (TerraUSD, ...)

# Why Such a Sharp Crash?

- Frictional Finance Perspective
  - **Margin Spiral** (Amplification)



- Bursting of a **Bubble**

# How to Value Crypto Assets? Safe Asset vs. Tech

- High vs. low price in risk-off phase
  - “Debt as **Safe Asset**” BruMerSan
    - $E[PV_{SDF}^{**}(\text{Cash flow}) + PV_{SDF}^{**}(\text{Service flow})]$ 
      - Retrading of safe asset partially completes incomplete markets (uninsurable idio risk)
        - Idio risk rises in times of crisis
        - Safe asset rises in value in risk-off phase  $\beta < 0$
        - High market liquidity  $\Leftarrow$  info-insensitive
    - **Tech/Growth stock/option**
      - Cash flow options far in the future
      - Sensitive to discount rate/risk premium  $\beta > 0$
  - Safe asset option: not yet safe asset
    - Service flow option far in the future

# Loss of Bubbly Safe Asset Status

- Safe asset evaluation
- $E \left[ \underbrace{PV_{SDF}^{**}(\text{Cash flow})}_{=0} + PV_{SDF}^{**}(\text{Service flow}) \right]$
- Equilibria:
  1. No bubble
  2. Bubble on crypto asset if  $r < g$
  3. Bubble jumps to US Treasury (when  $i^{\$}$  increases)
    - “FTPL with a Bubble”
    - Competition to have exorbitant privilege to issue safe asset (mine the bubble)

# CBDC and the Fragmentation of Money

- **CBDC** as **guarantor of uniformity** of money  
unit of account  $\Rightarrow$  monetary sovereignty
  - “Digital Euro Report” for EU Parliament  
(with Jean-Pierre Landau)
- **Stable coins**
  - Regulating backing (with CBDC? 100%)
  - Narrow banking analogy
- **Programmable money vs. wallet**
  - Money that expires vs. offset
- **“Smart CBDC”** (see Jonathan Payne webinar)
  - Back rail ledger to connect stable coins



# Poll

1. What are the **biggest risks** in the crypto sector?
  - a. Runs on stablecoins and crypto banks
  - b. Price declines and deleveraging
  - c. Both
  - d. There are no risks
2. Which crypto coins will **survive** the “**crypto winter**”?
  - a. Most of 10,000 coins on Coinmarketcap
  - b. Only Bitcoin and Ether
  - c. Only Bitcoin, because Bitcoin is not a crypto coin
  - d. Between 2 and 10,000
3. The “crypto winter” will **slow CBDC dynamics**
  - a. Yes
  - b. No

# After the Crypto Crash: The Role of CBDC

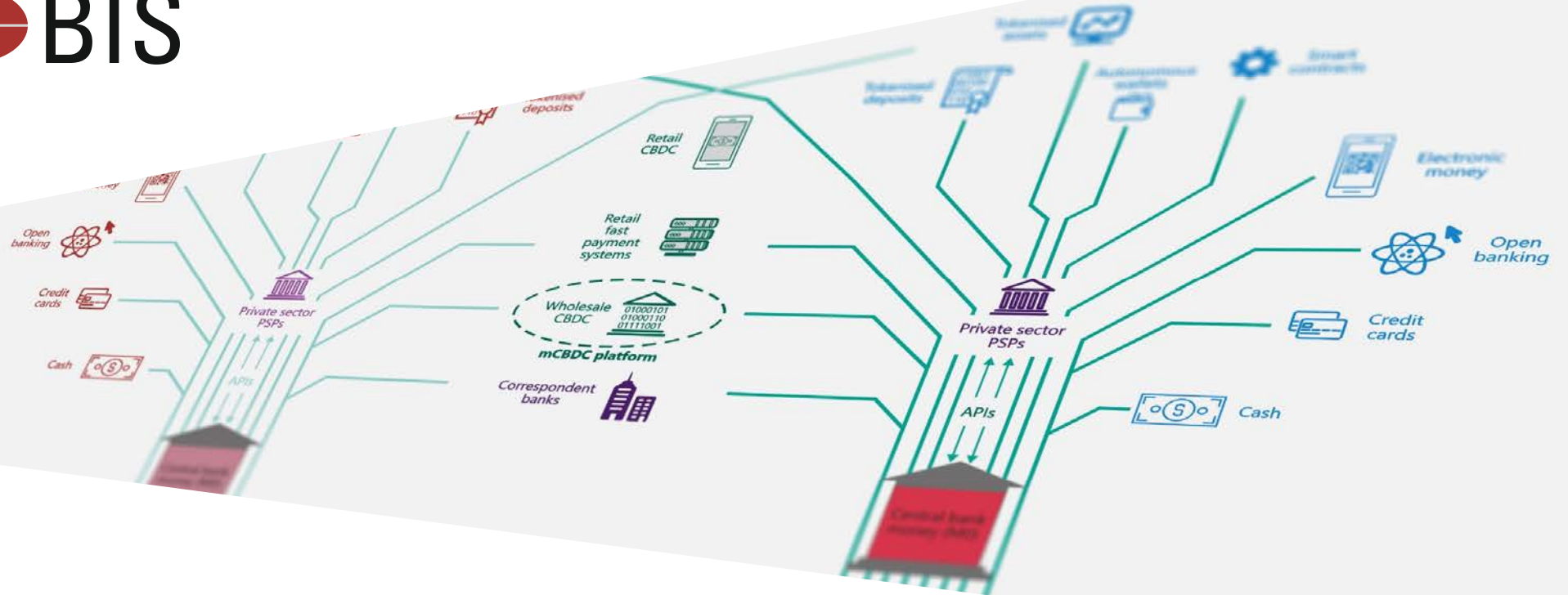
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# Webinars on Digital Money

- Jonathan Payne  
*Platforms, Smart CBDC*
- Gary Gorton  
*US Financial System*
- Jean-Pierre Landau  
*Digital Currency Areas*

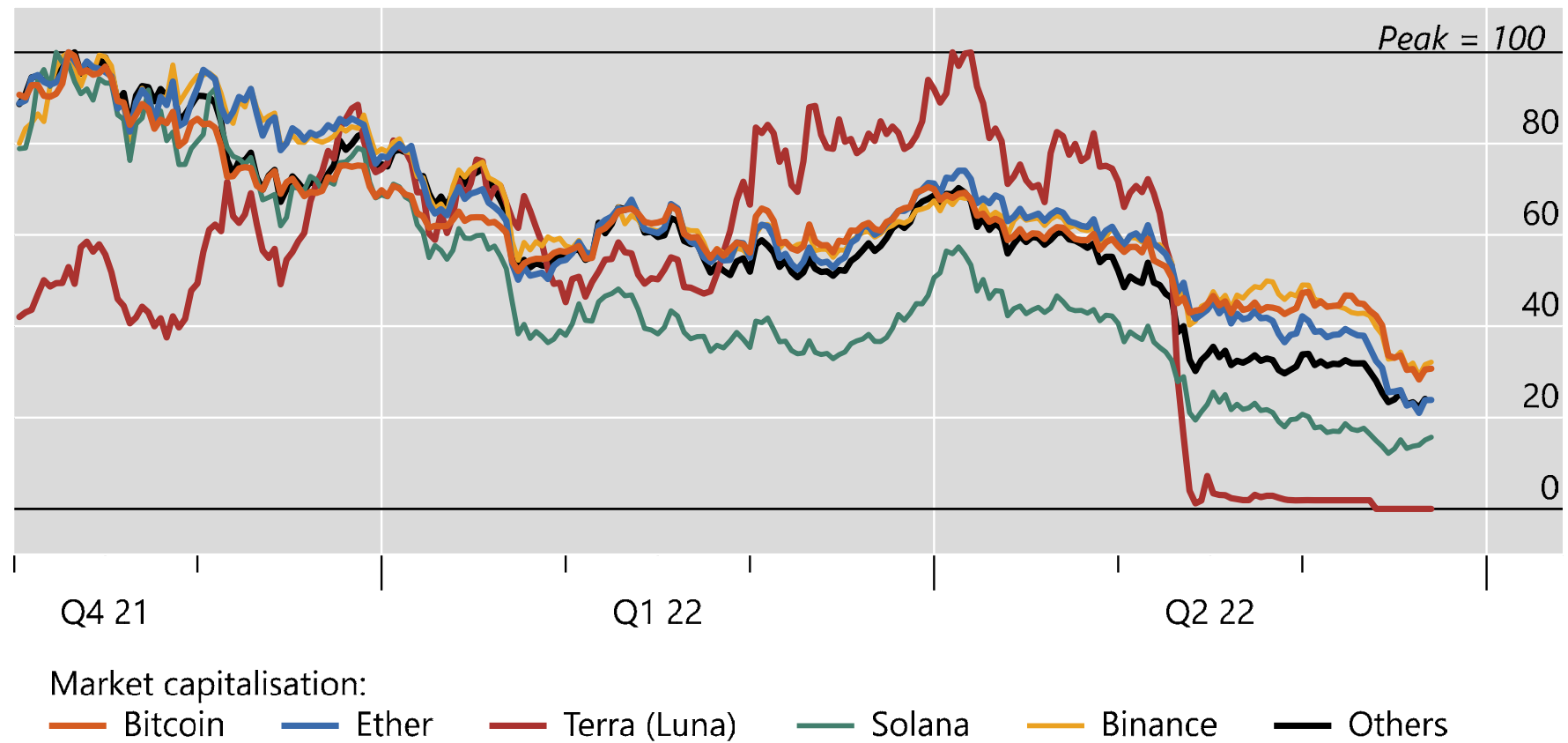


## After the crypto crash: the future role of CBDC

Hyun Song Shin  
Economic Adviser and Head of Research

Princeton BCF webinar, 30 June 2022

## Prices of crypto coins have been crashing as turmoil grips the crypto universe



Crypto turmoil grabs the headlines but the deeper structural flaws in crypto have been evident for some time



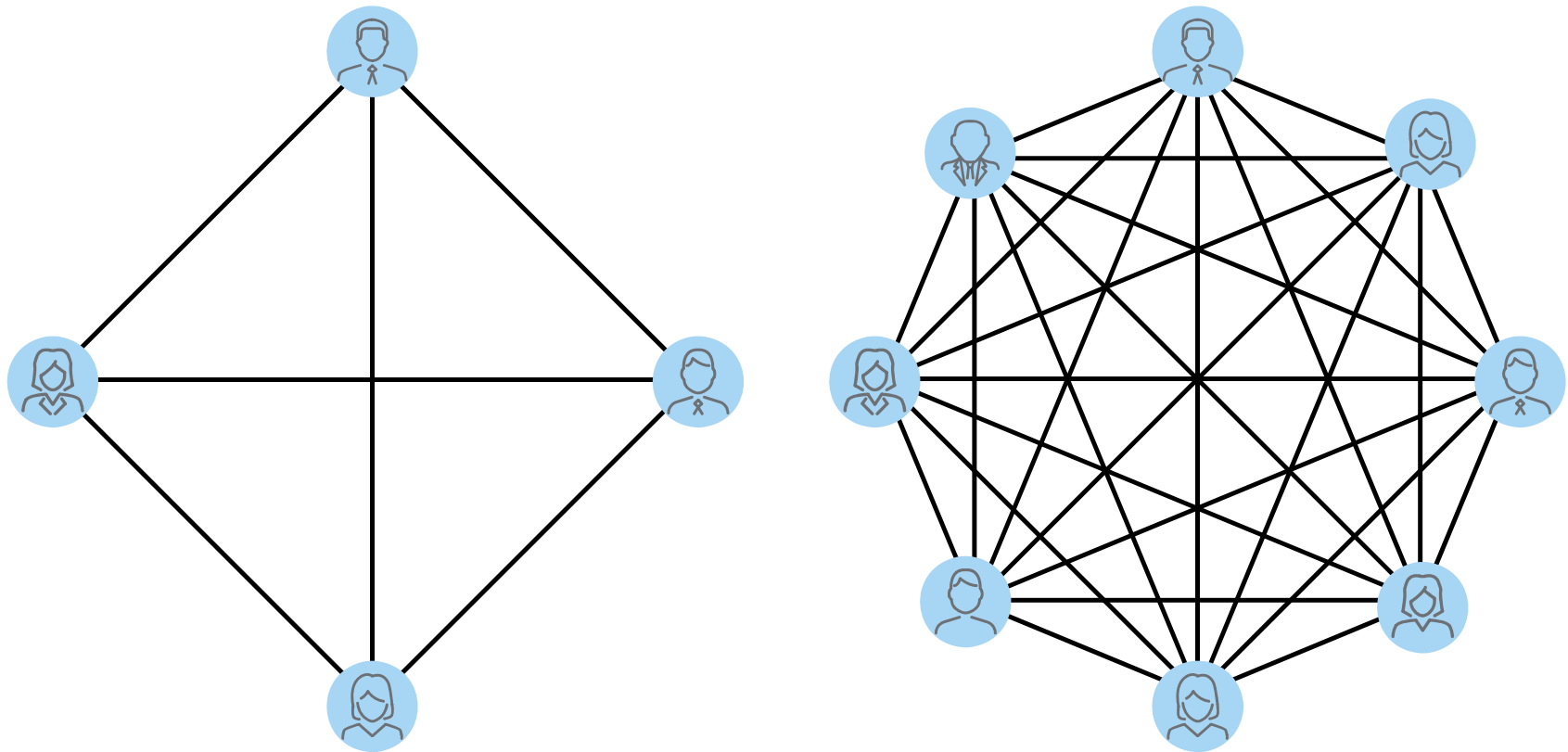
The prevalence of stablecoins indicates search for a nominal anchor and the need to piggyback on the credibility of central bank money



But the implosion of the Terra stablecoin highlights the imperfect nature of this nominal anchor

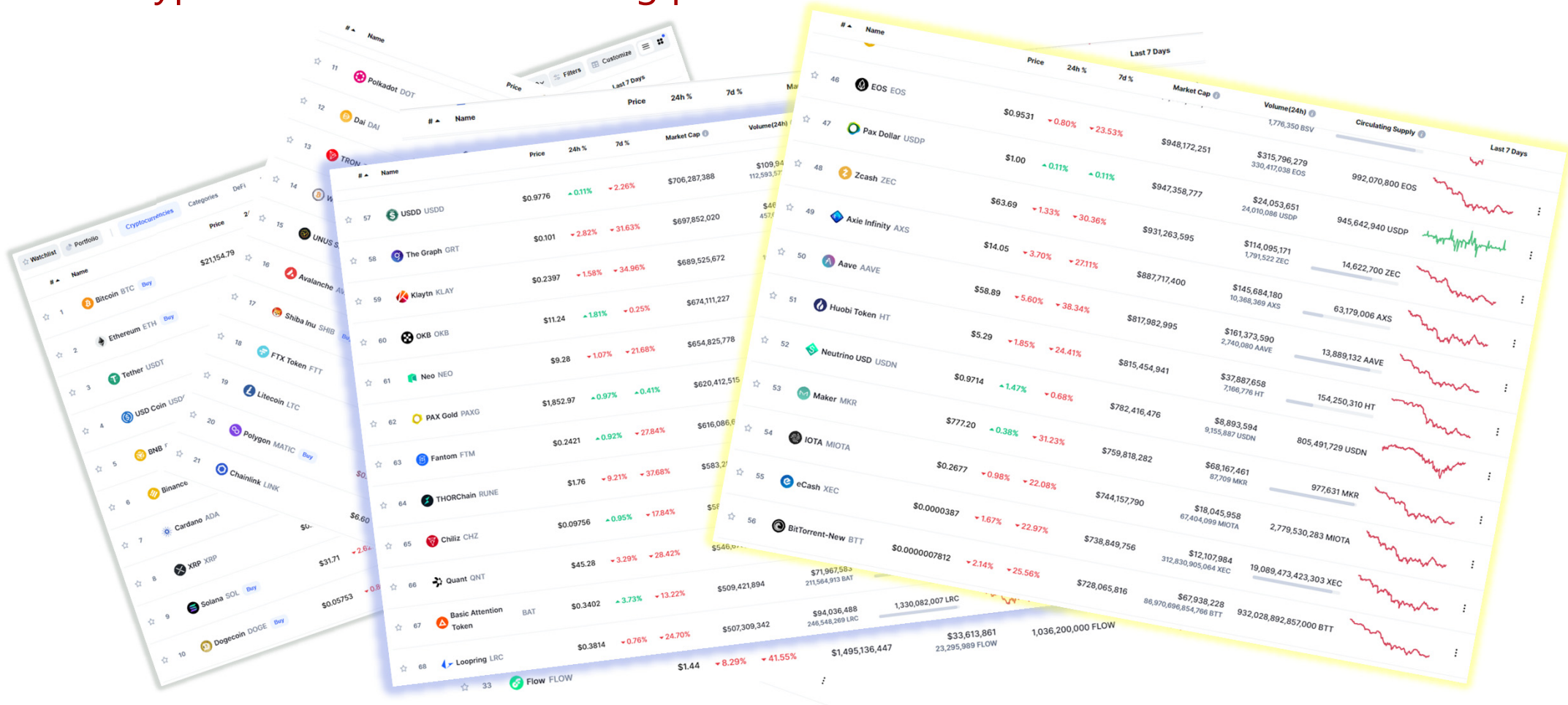


Network effects are the essence of money, arising from the virtuous circle of greater acceptance and greater use

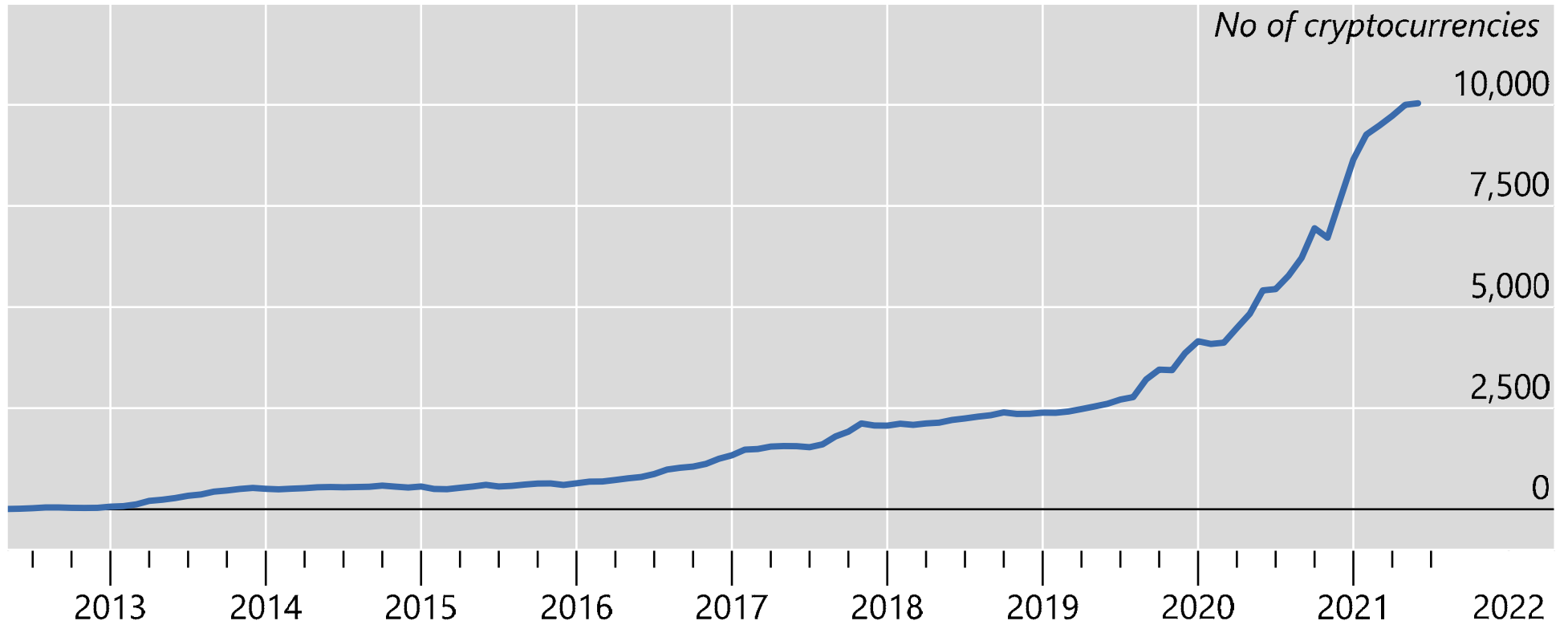




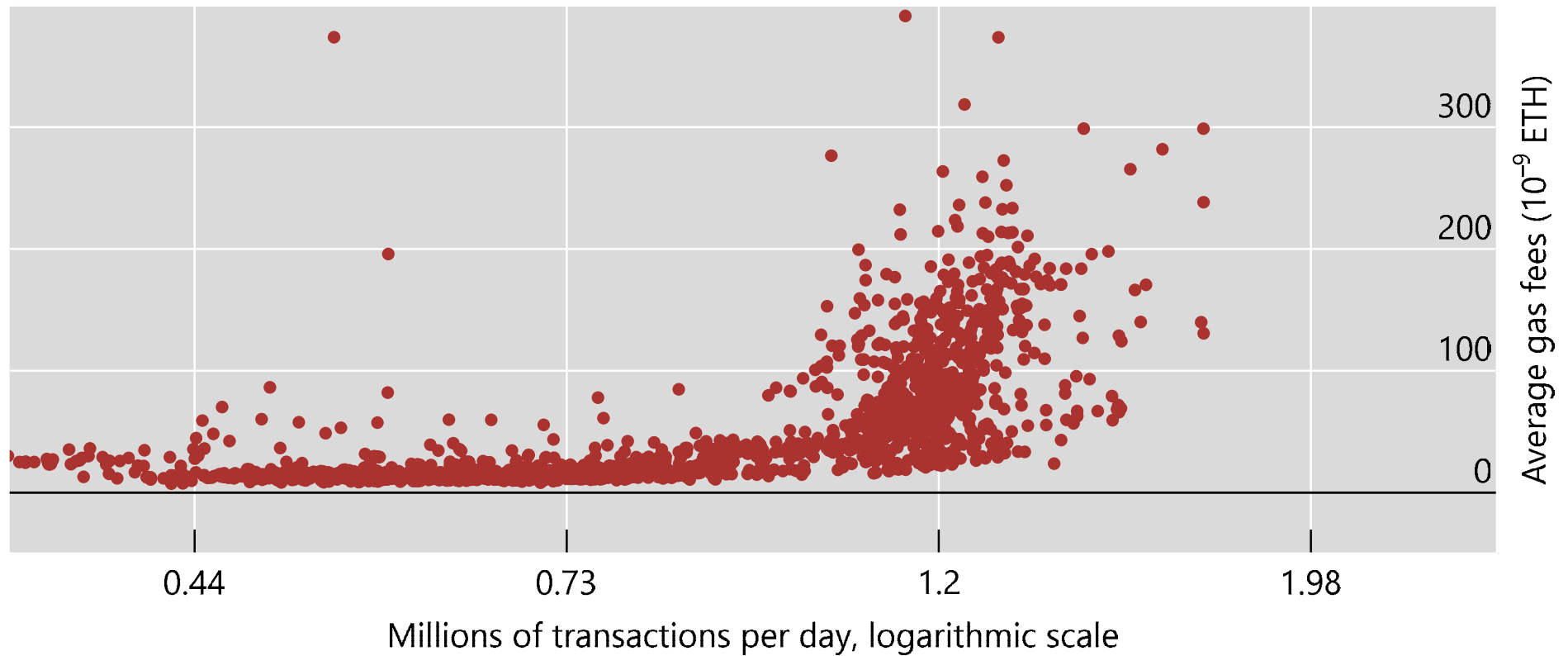
But crypto has seen a bewildering proliferation of coins...



...with over 10,000 crypto coins jostling for a place in the limelight



Fragmentation of crypto arises because of the rents that go to validators; network congestion and high fees are a feature, not a bug



## Finding the right capacity at the outset is to balance on a knife edge



 **Samson Mow** ✓  
@Excellion

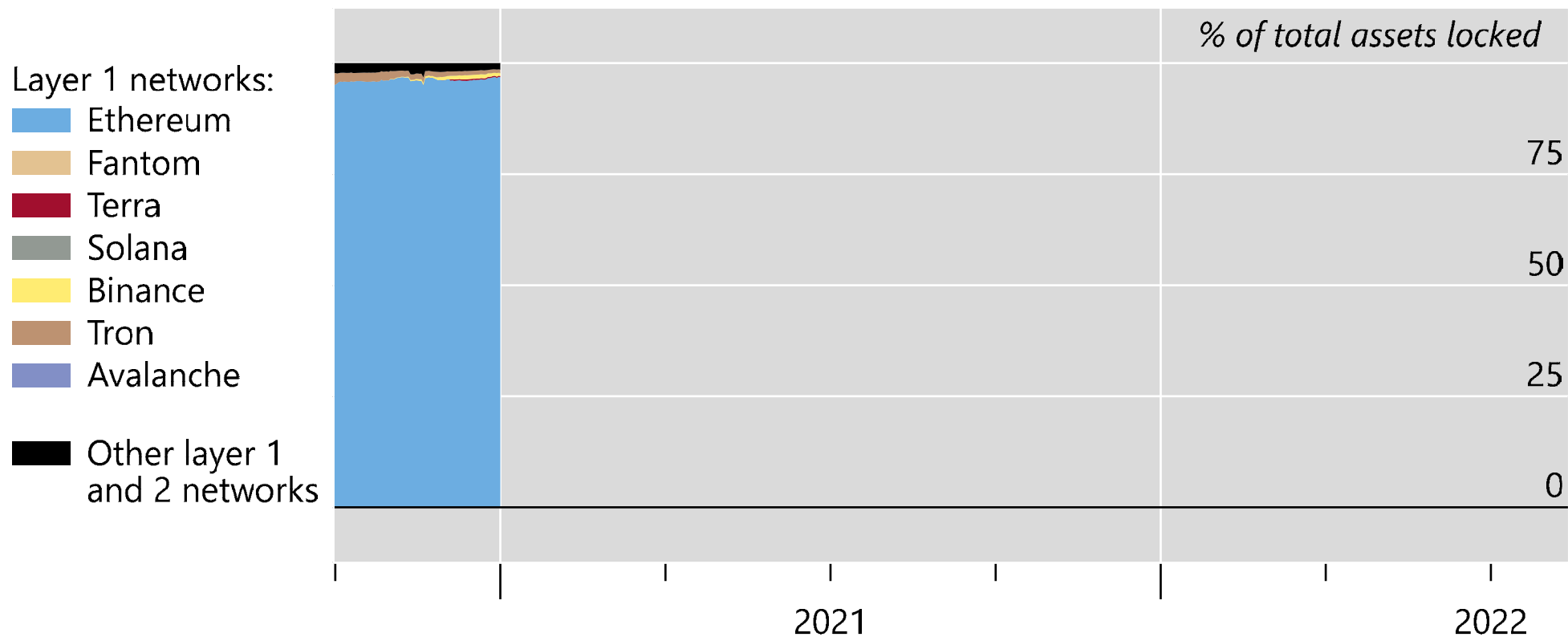


"Guys, no one's using our 8 lane highway."  
"We need 32 lanes."  
"You're a genius." #Overheard #TransactionSuperhighway  
#Bcash

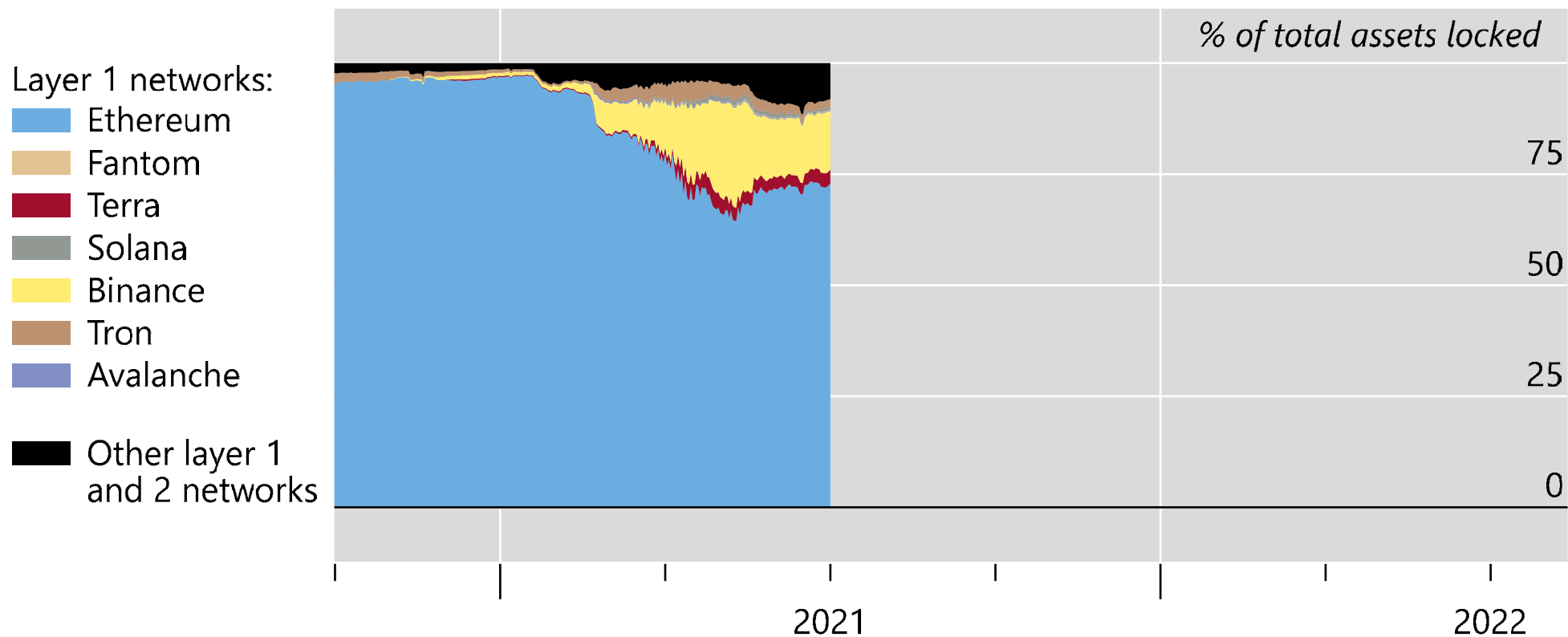
9:06 AM - May 8, 2018

♥ 1,595 💬 397 people are talking about this

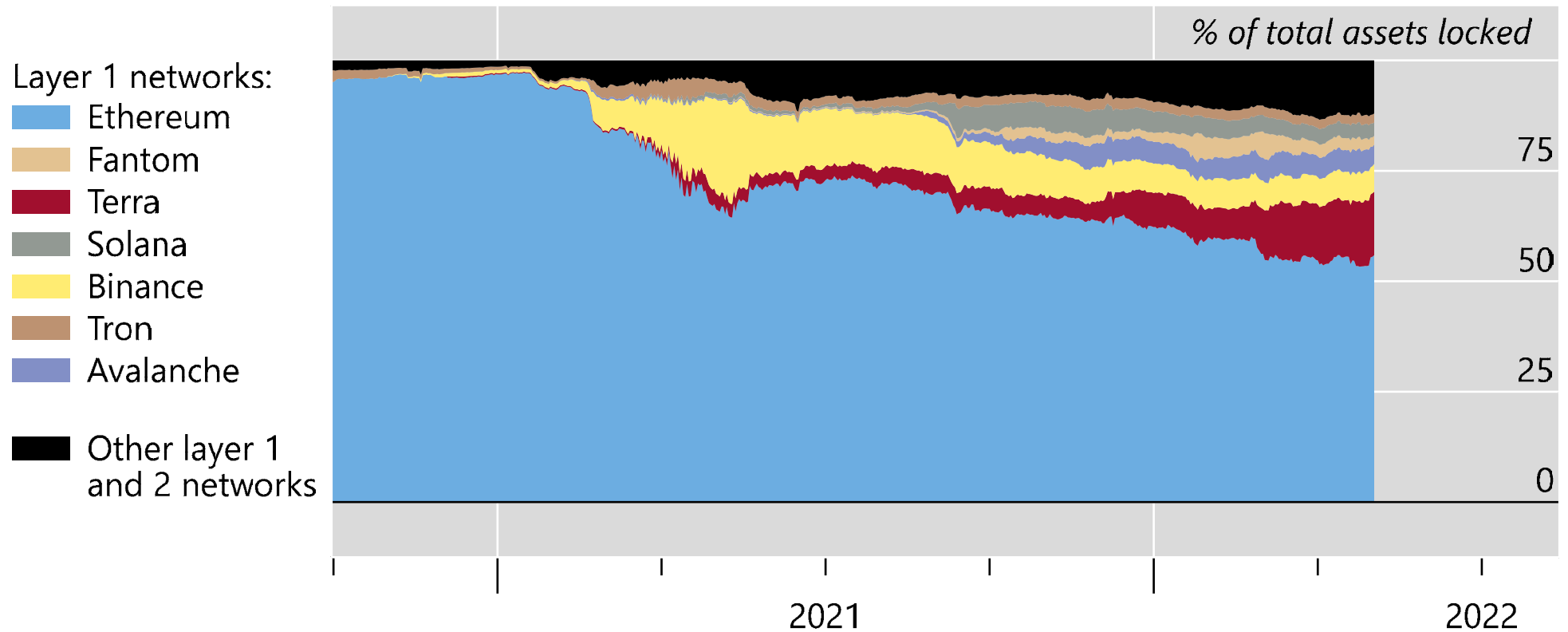
Fragmentation of crypto: initially, most decentralised finance (DeFi) collateral was posted on the Ethereum blockchain...



...but increasingly, other crypto platforms exploited congestion and high fees to gain DeFi market share

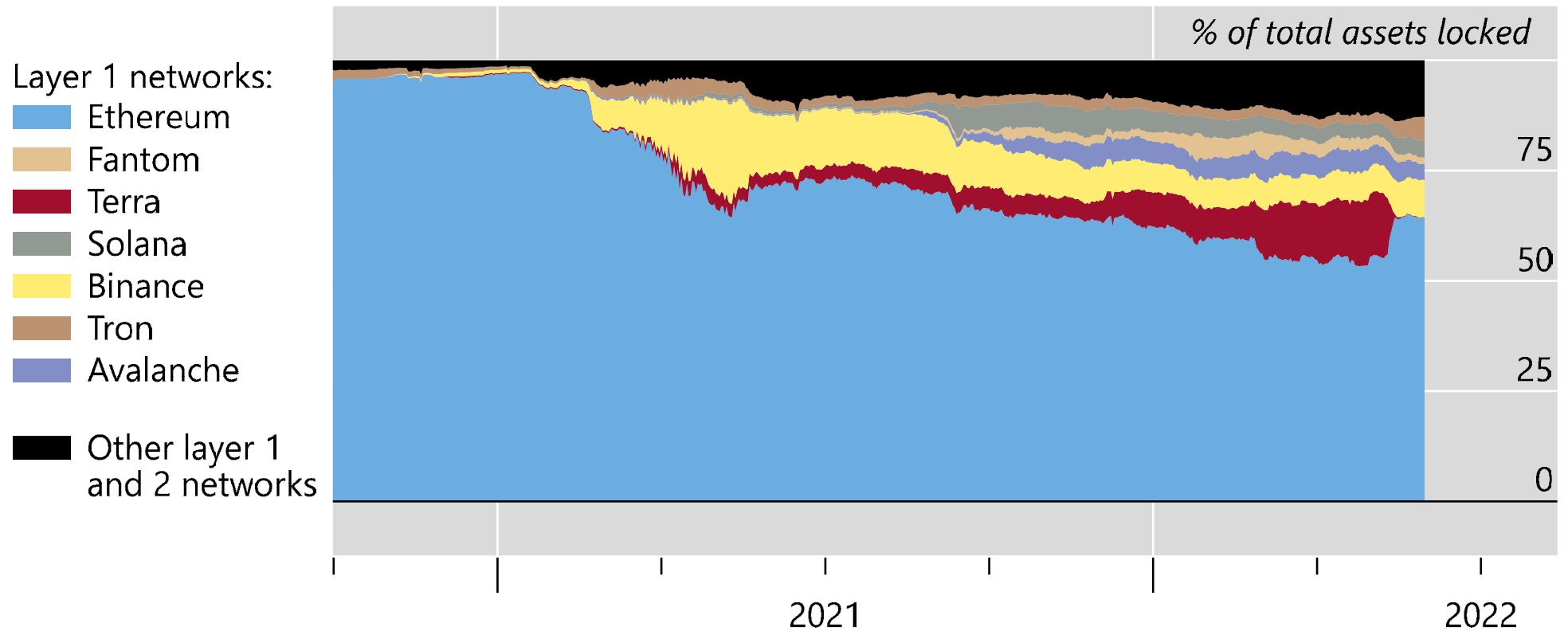


By early May 2022, the Terra blockchain was the fastest growing platform...

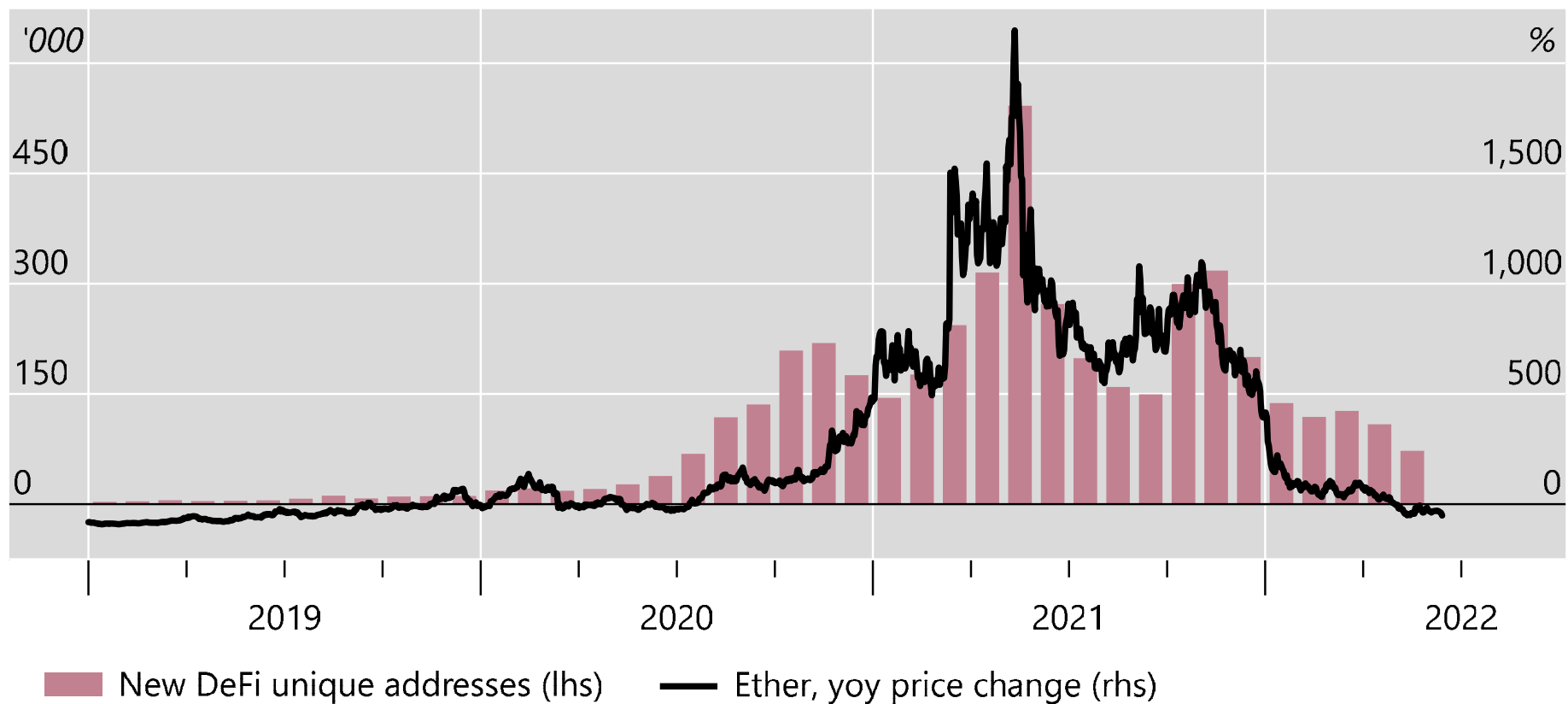





...right until its collapse in May 2022



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

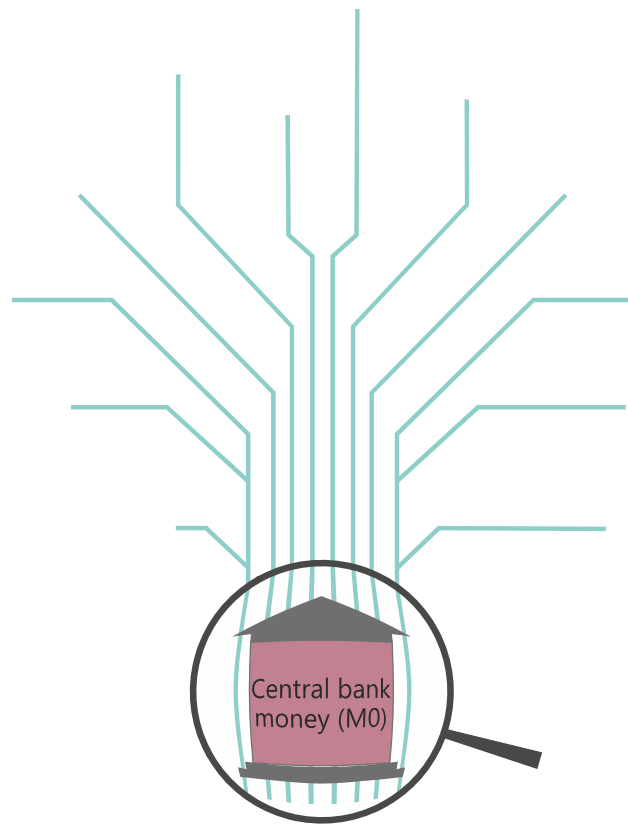


The background features a dark blue field filled with intricate, glowing light blue circuit-like patterns. These patterns consist of various lines, dots, and circular nodes, some of which are highlighted with a white glow. A large, light gray triangular shape is positioned on the left side, pointing towards the center. At the bottom right, a solid red wedge-shaped area overlaps the blue background.

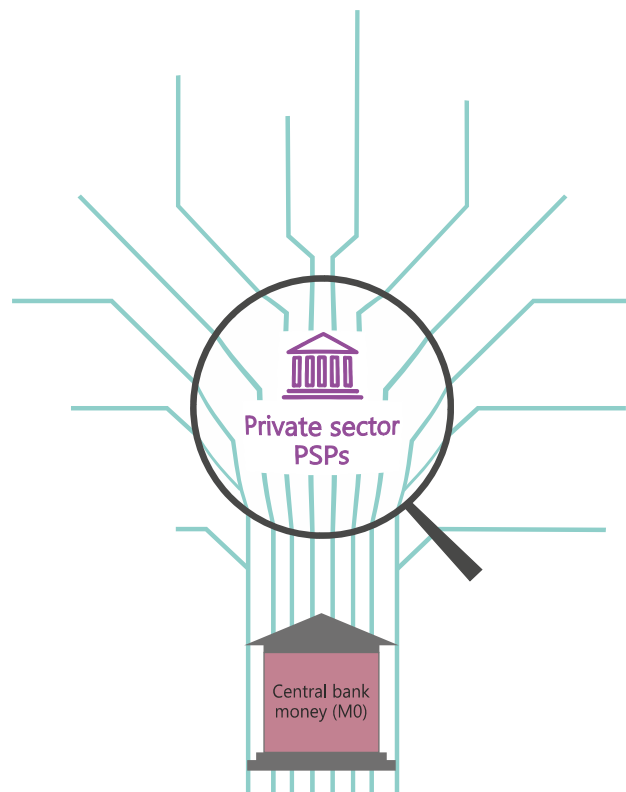
Drawing lessons from  
crypto for the future  
monetary system



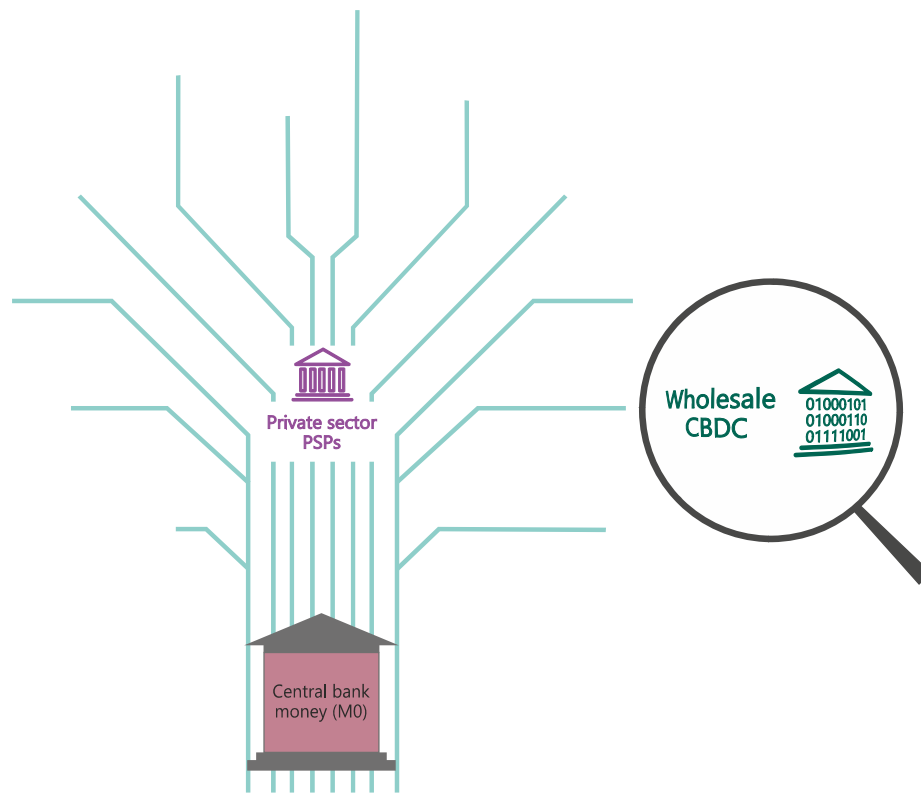
## The foundation: central bank money (M0)...



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

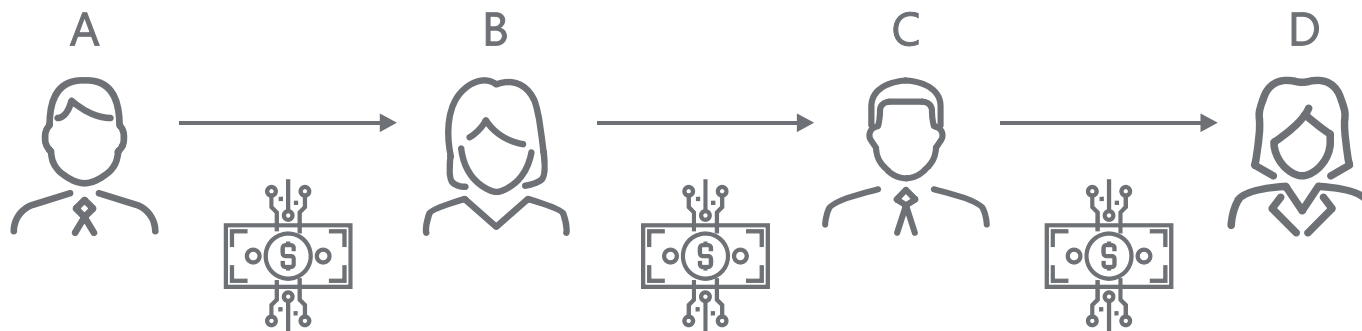


## Wholesale central bank digital currencies (wCBDCs) enable new capabilities

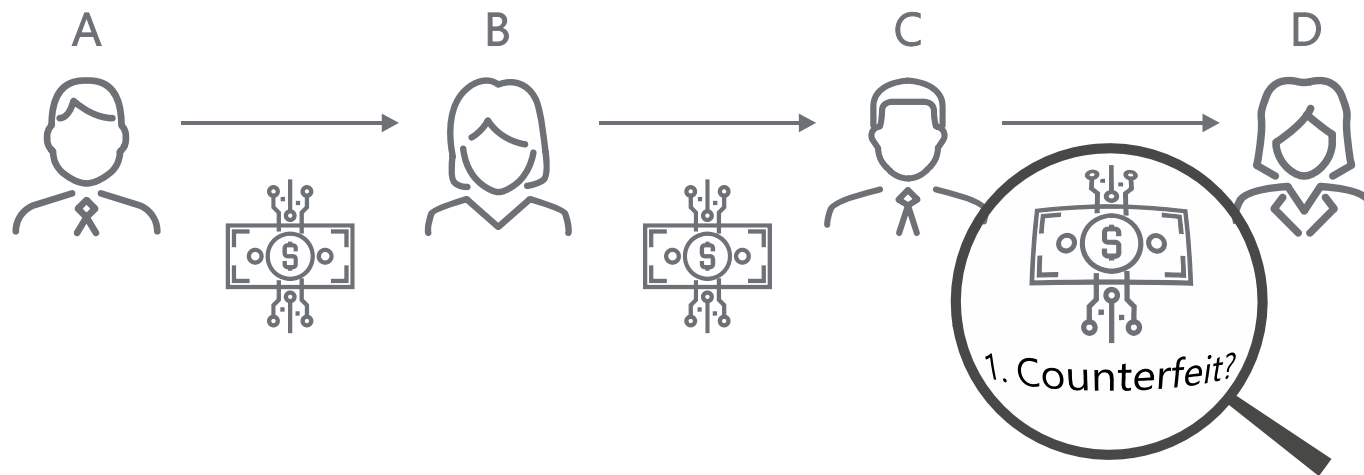




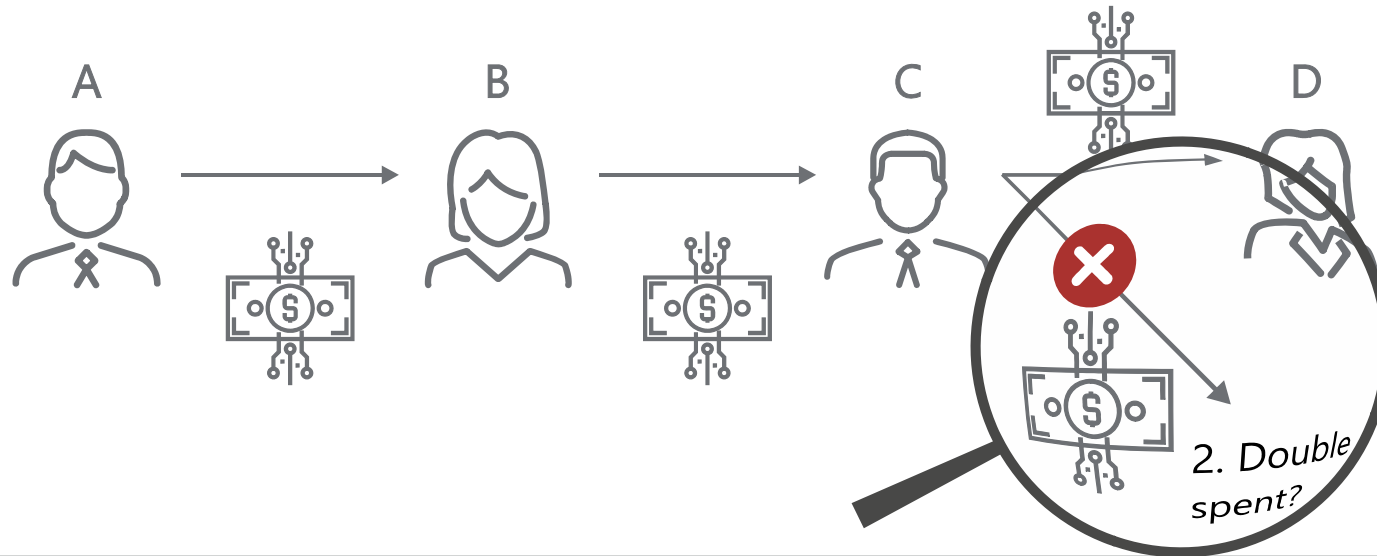
Central bank money in decentralised settings use distributed ledger technology (DLT) with real user names, rather than hiding behind private keys...



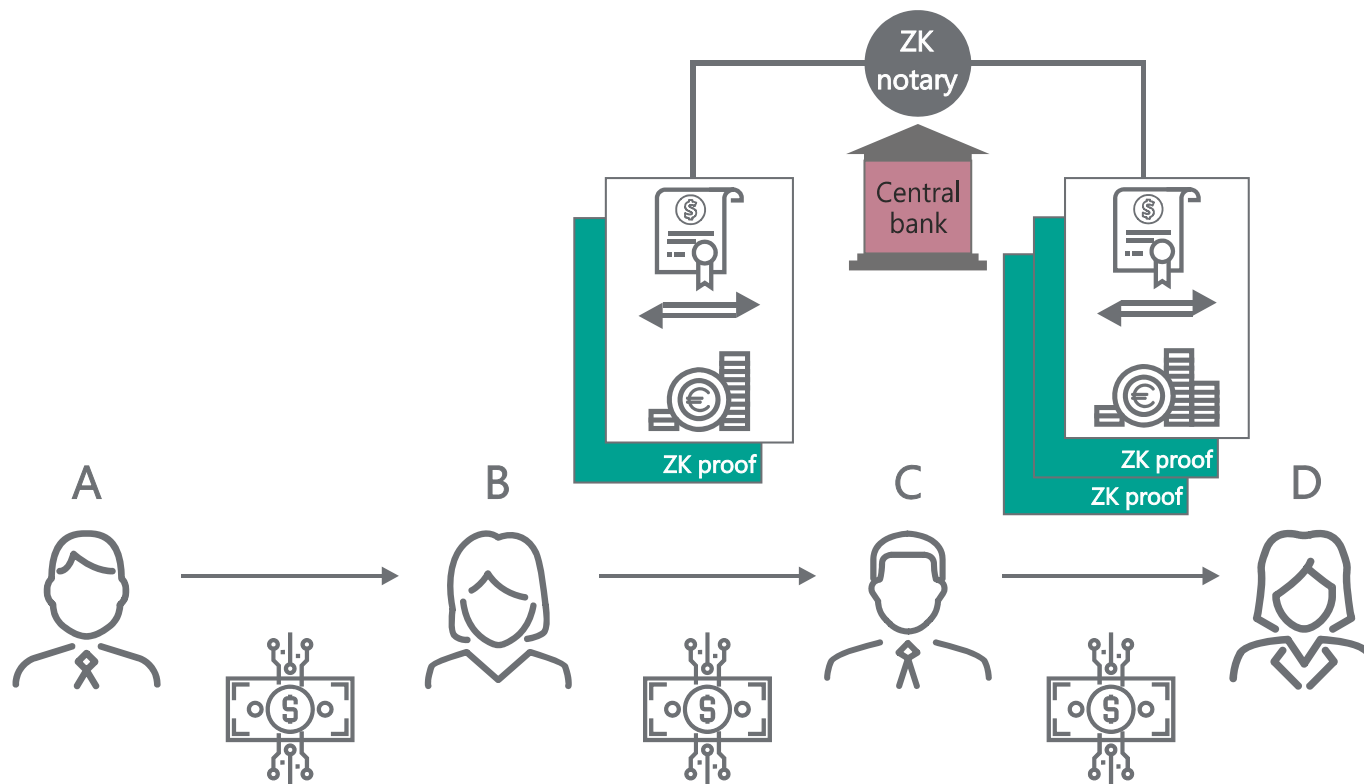
...participants prove the “provenance” of the tokens – obtained from valid past transactions, much as someone proves that the “banknote” is not counterfeit...



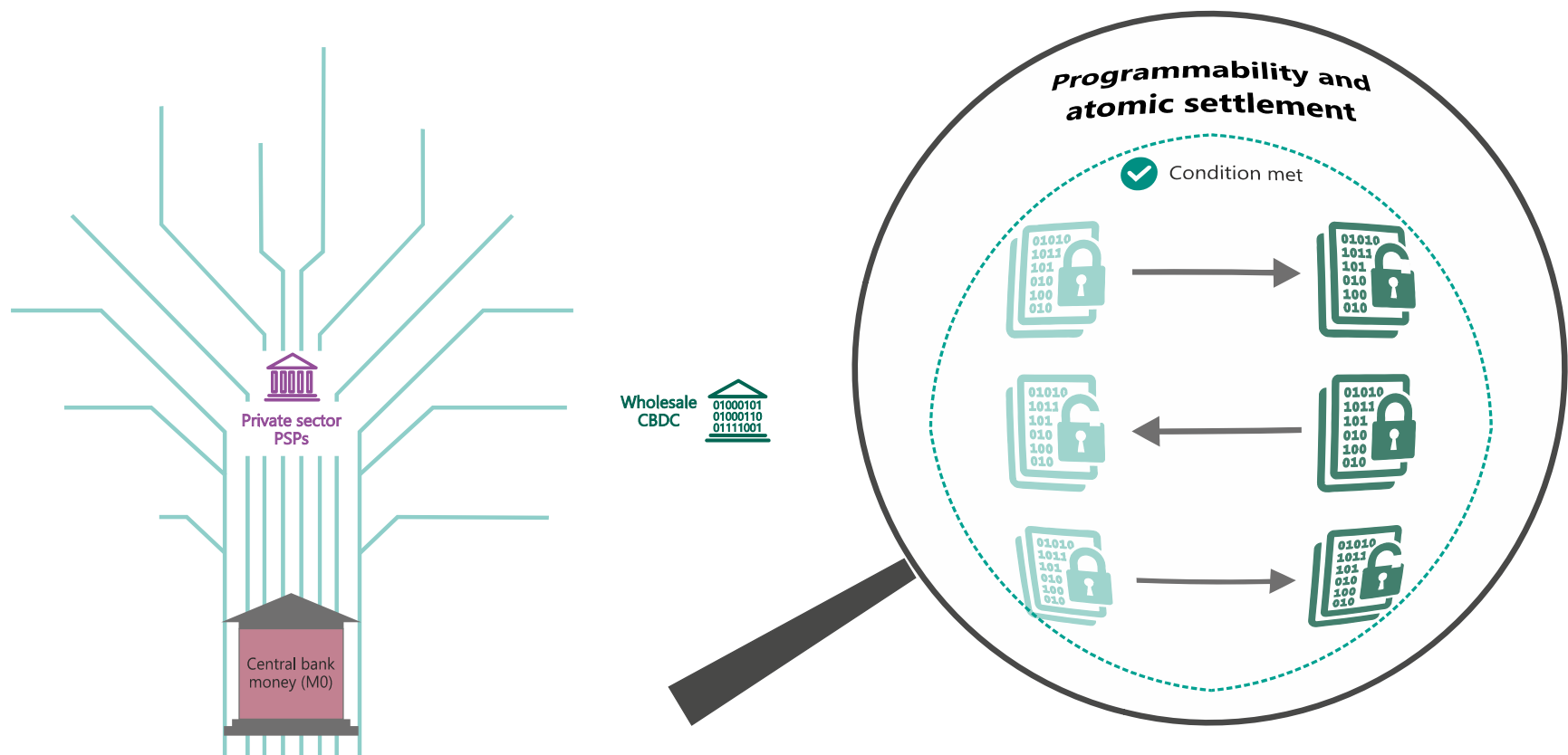
...and, unique to the digital world, a need to ensure that the same funds are not spent twice ("double-spending")



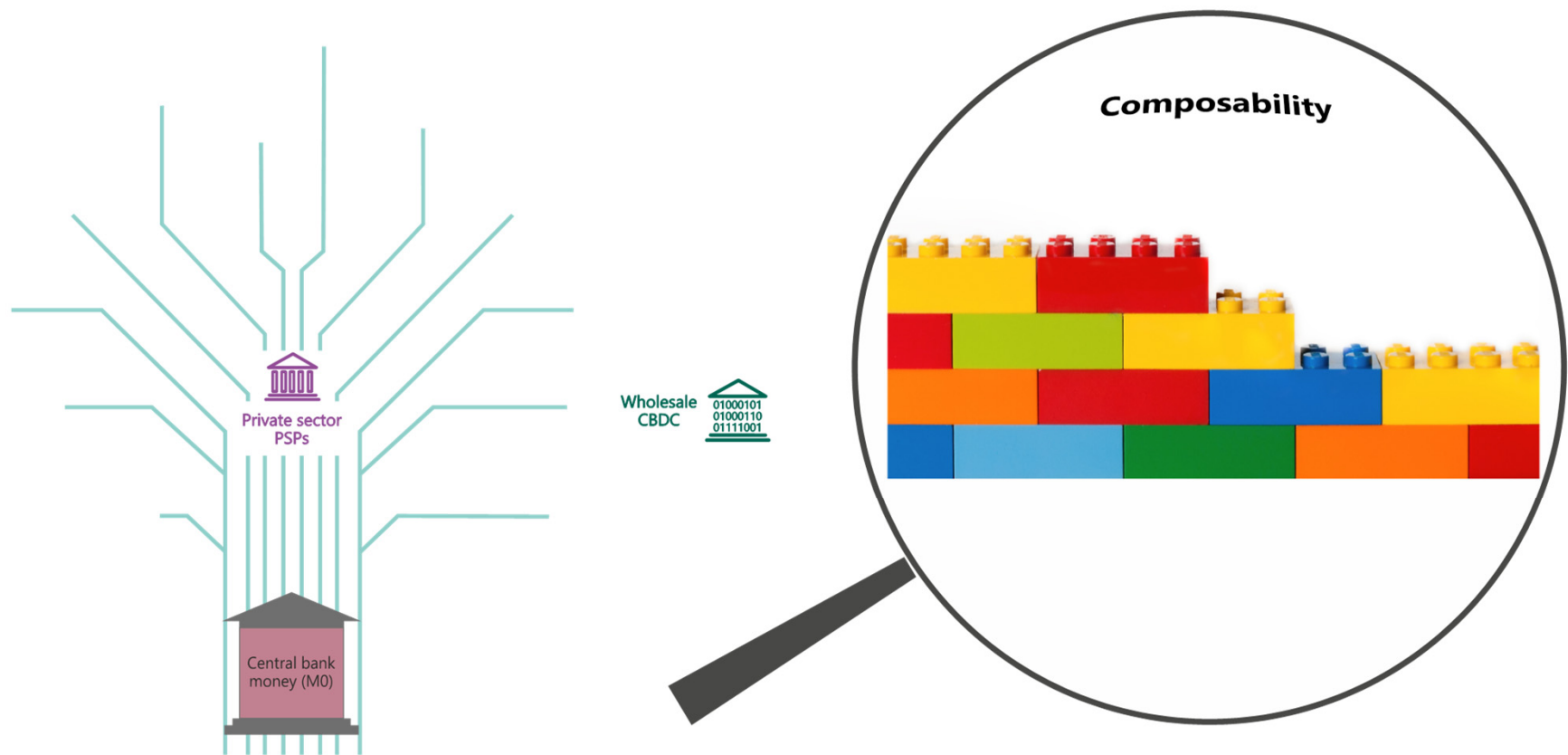
This notary role can be played by the central bank



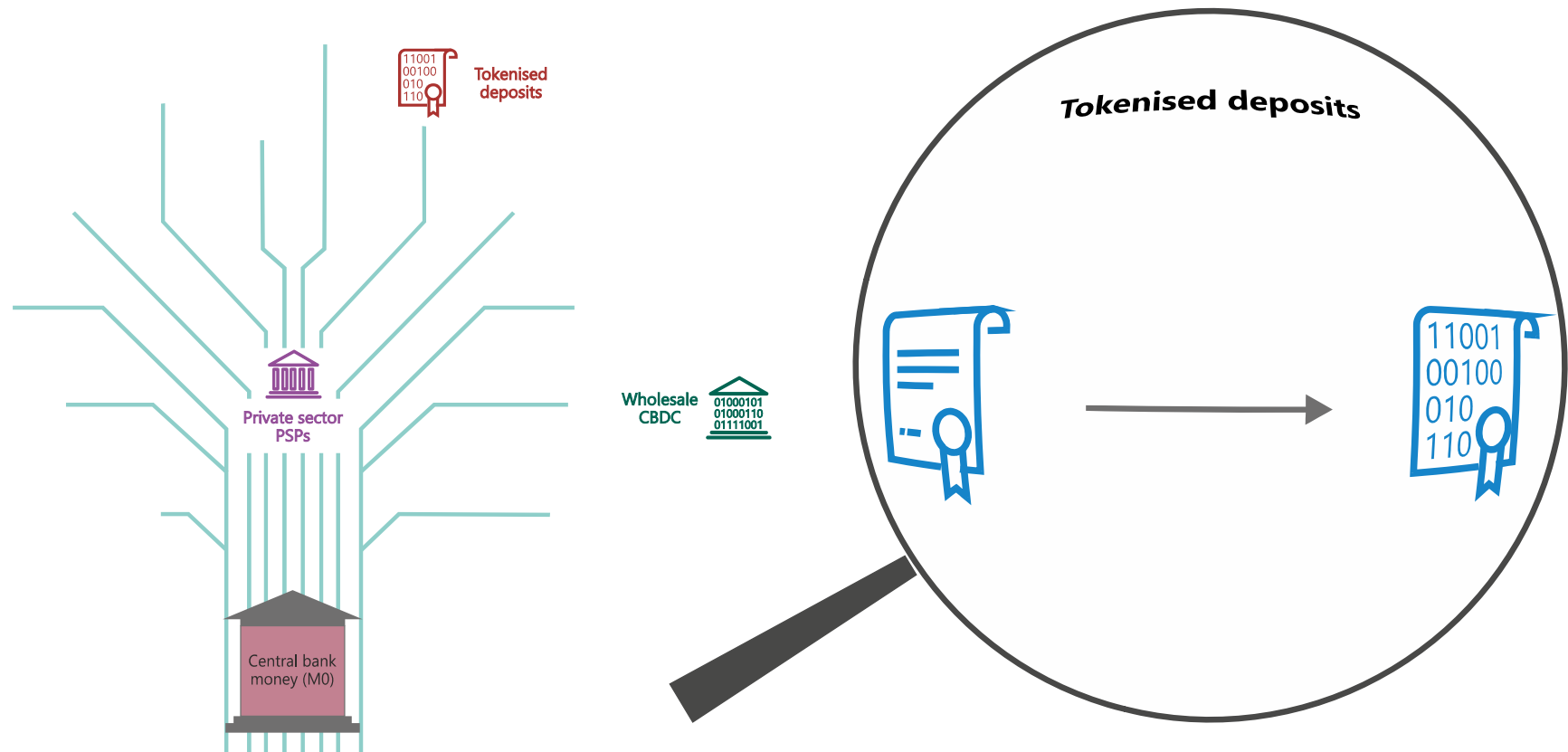
Enhanced functions include programmability – with self-executing smart contracts...



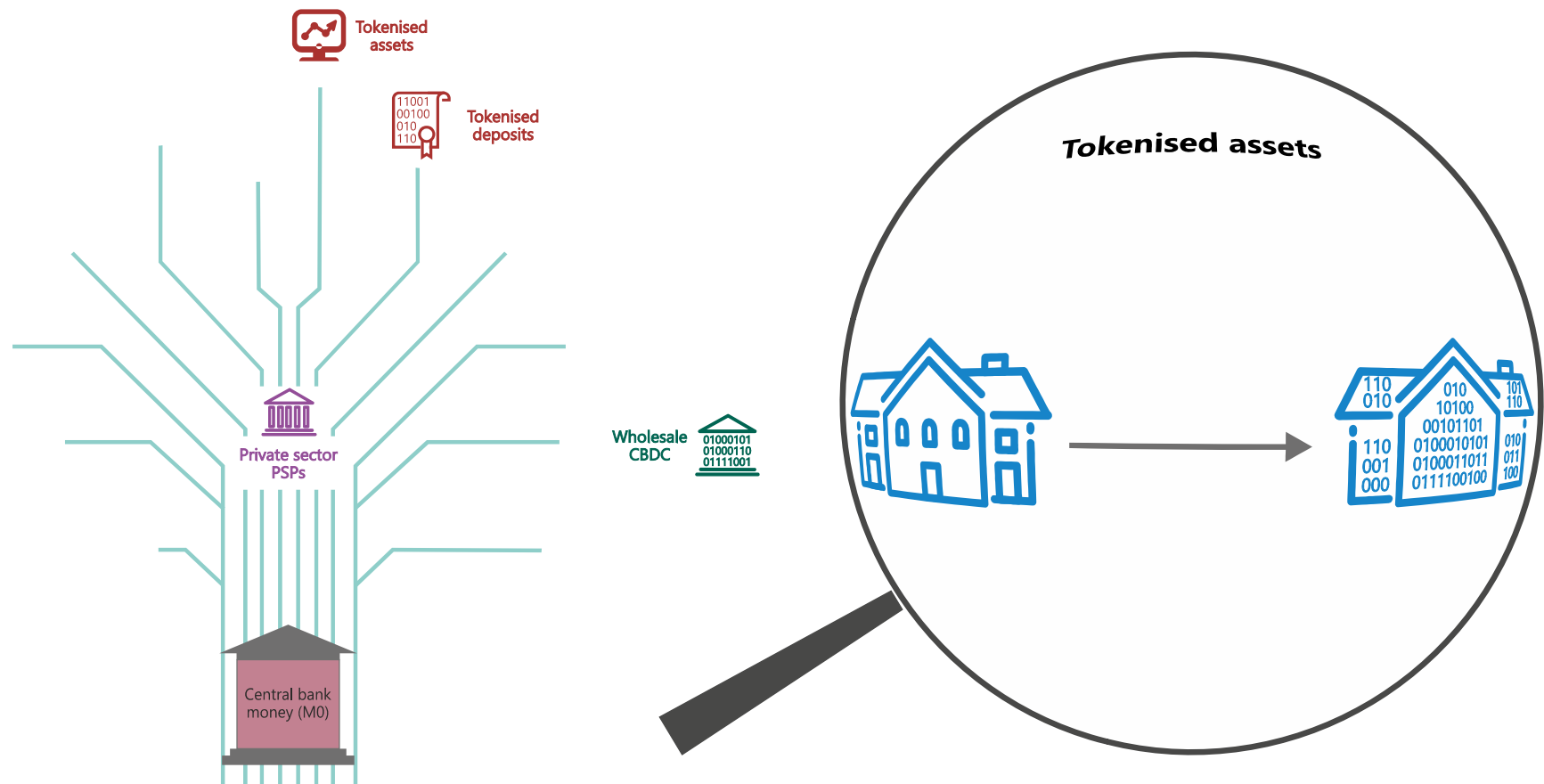
...composability – capacity to combine different functions (“money legos”)...



...and tokenisation, such as the digital representation of commercial bank deposits (tokenised deposits)...

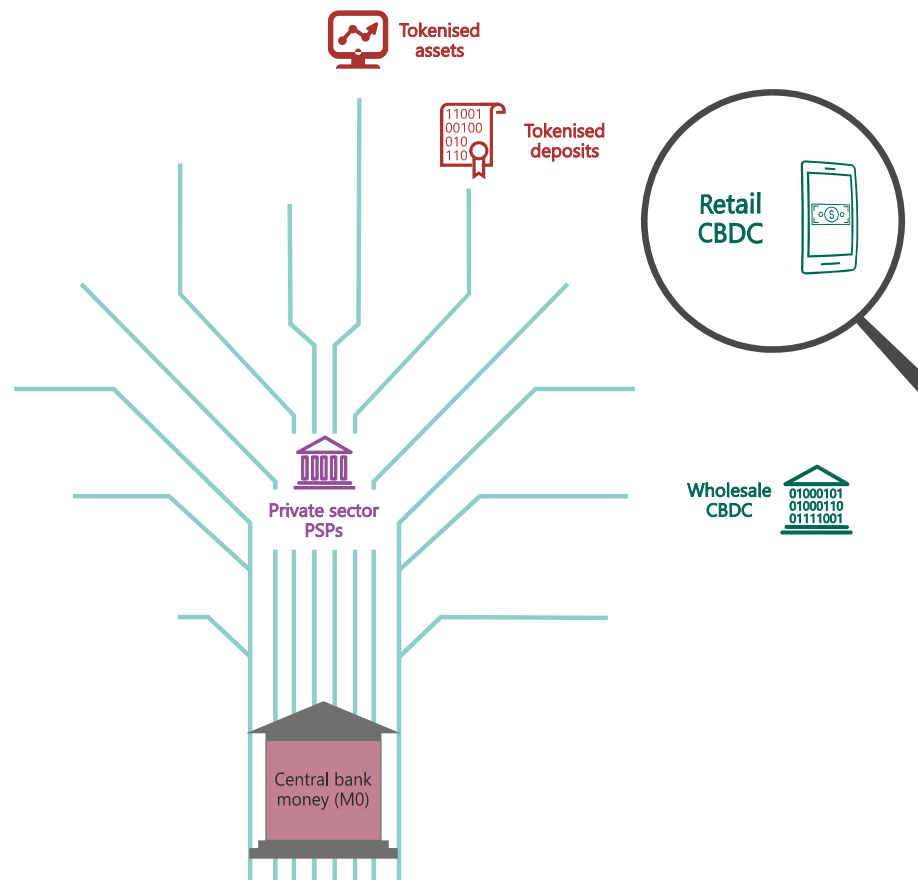


...or even real assets, allowing for fractional ownership and instant settlement

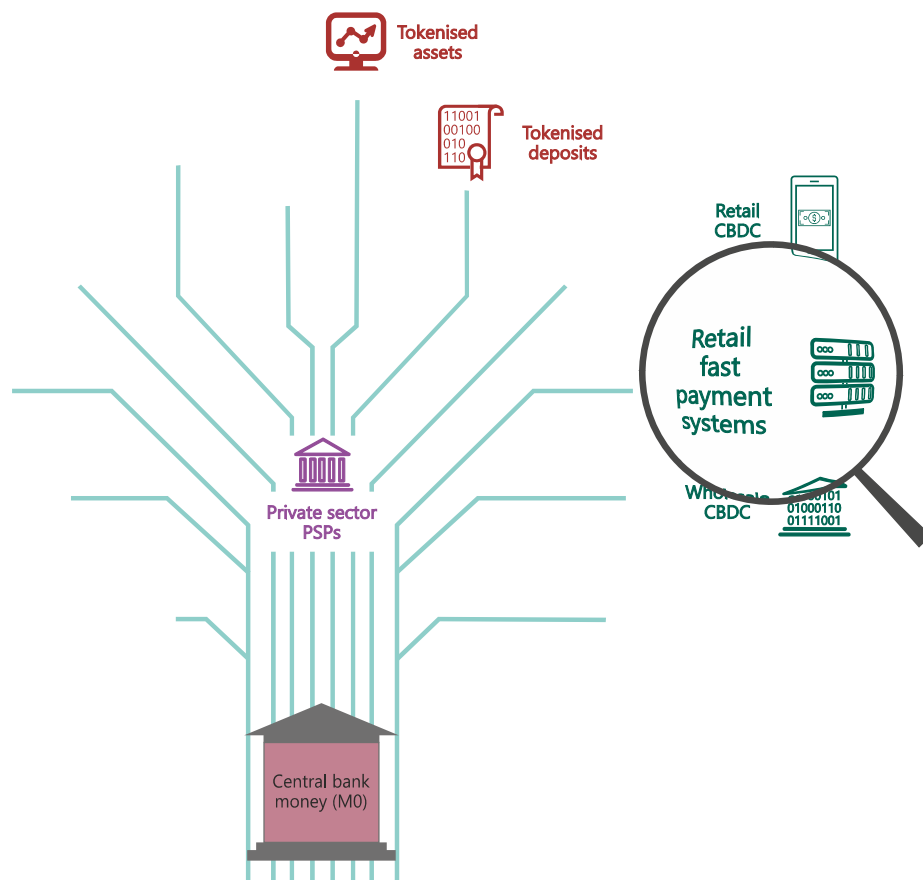




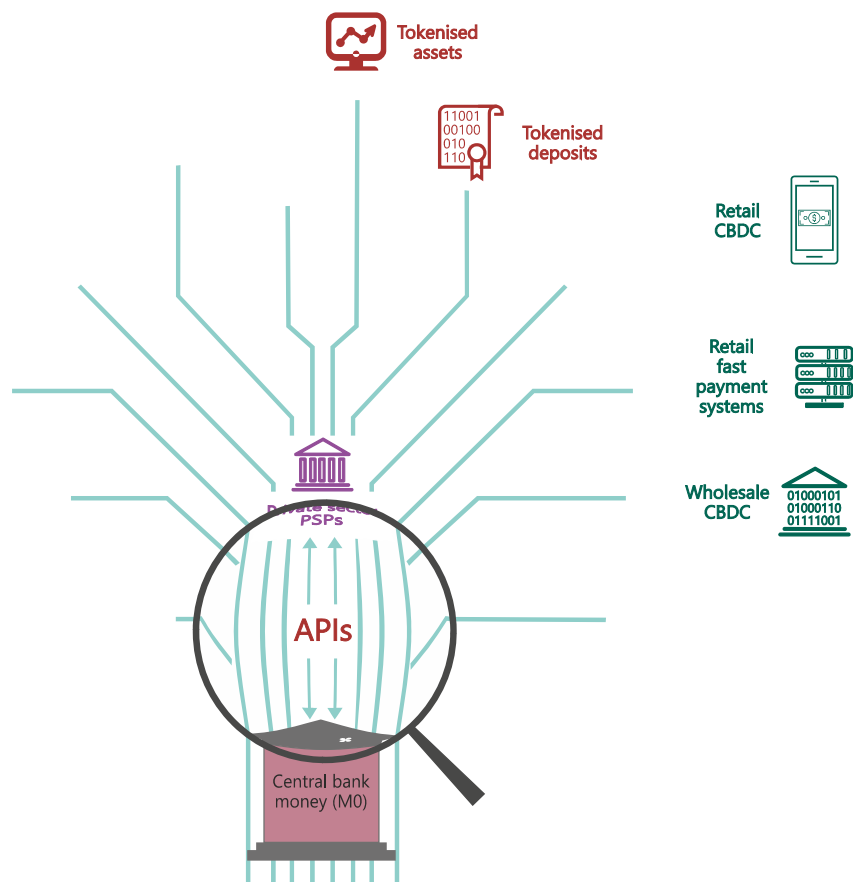
# Retail CBDCs extend digital central bank money to households and businesses



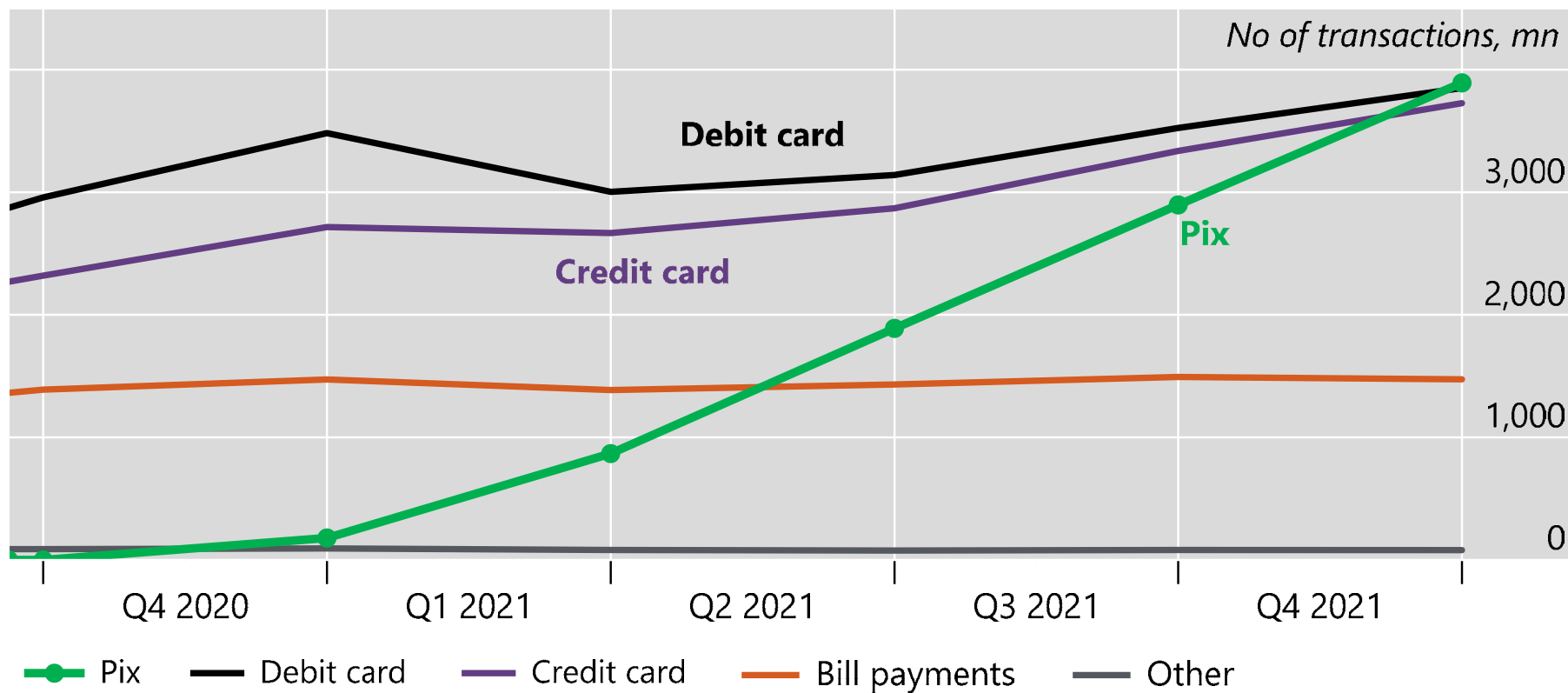
They are a close cousin of retail fast payment systems (FPS)



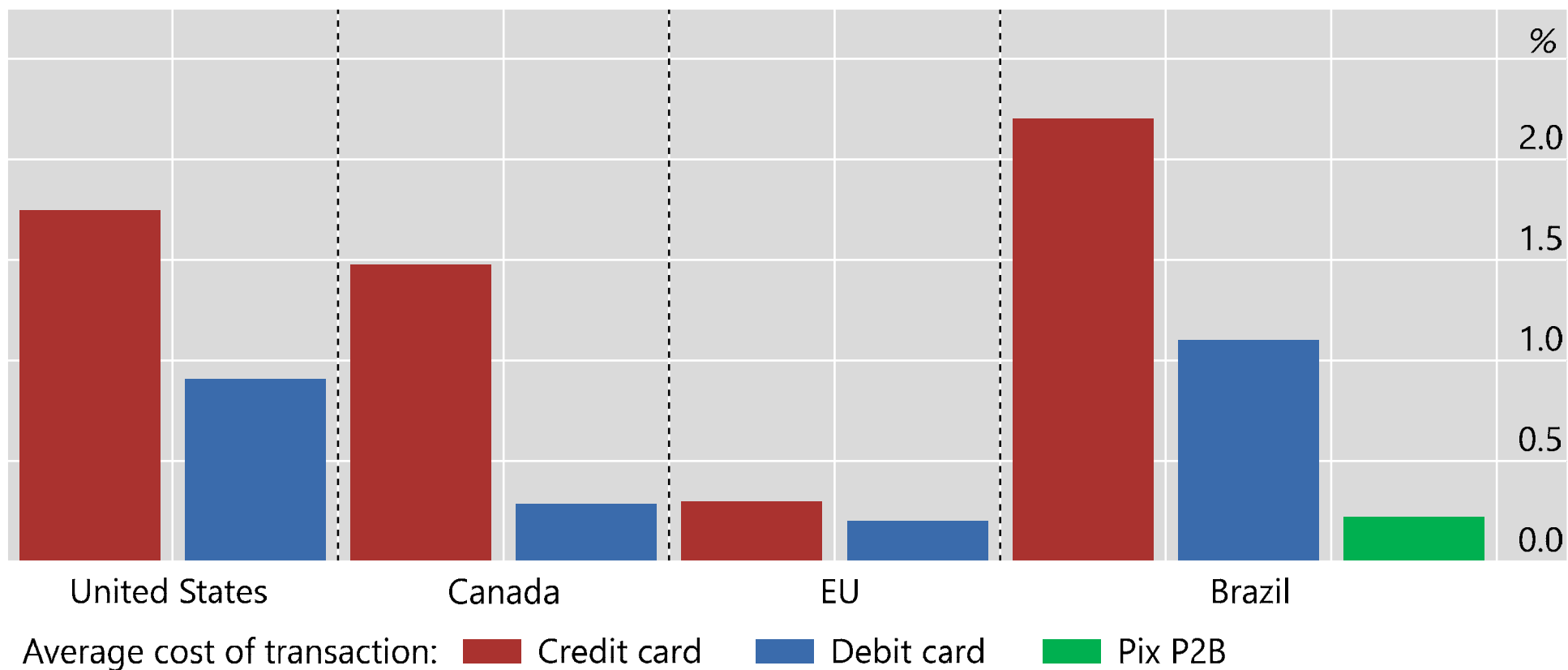
For both, application programming interfaces (APIs) enable interoperability



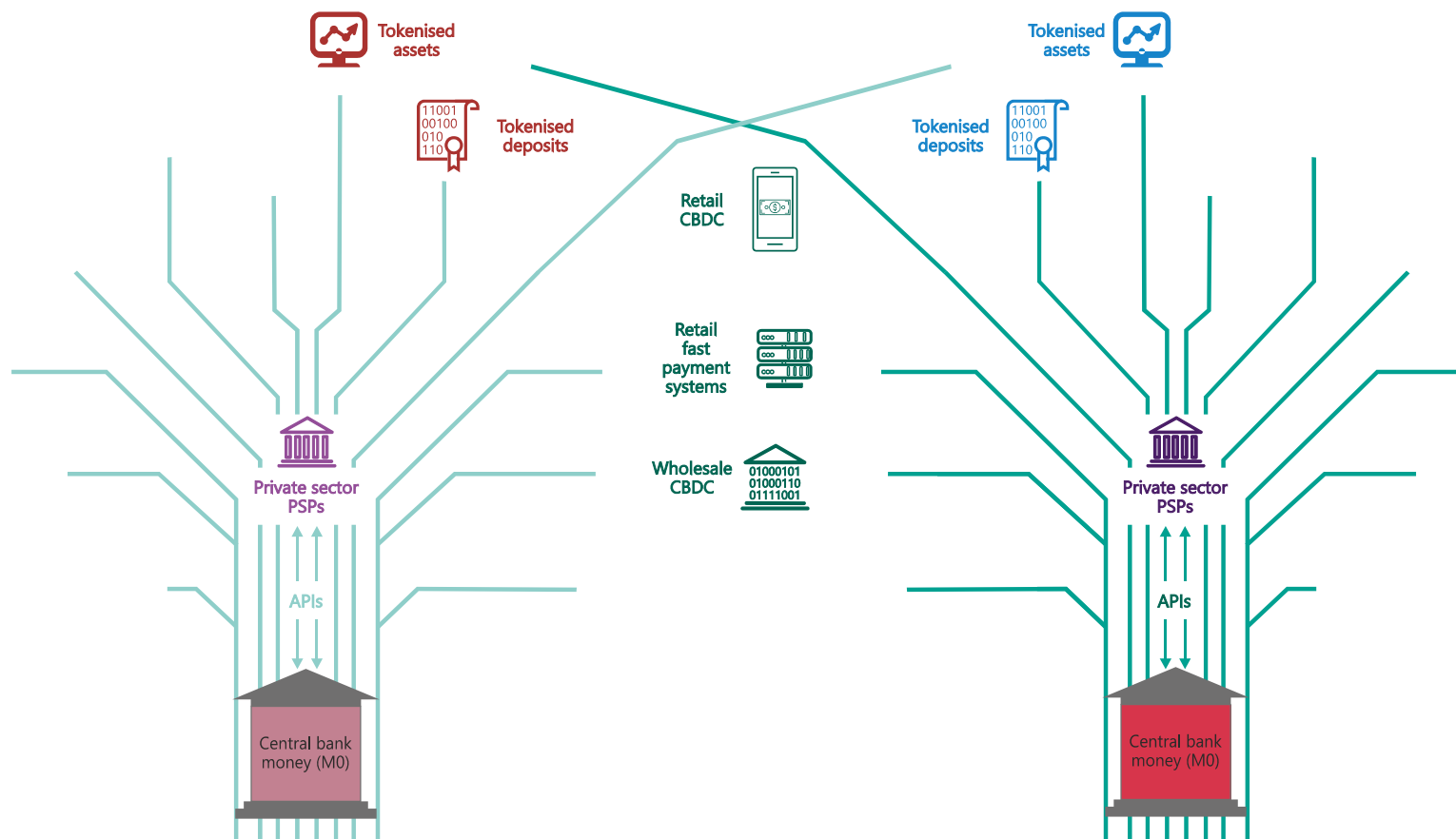
## Retail FPS harness network effects and enhance financial inclusion: Pix in Brazil



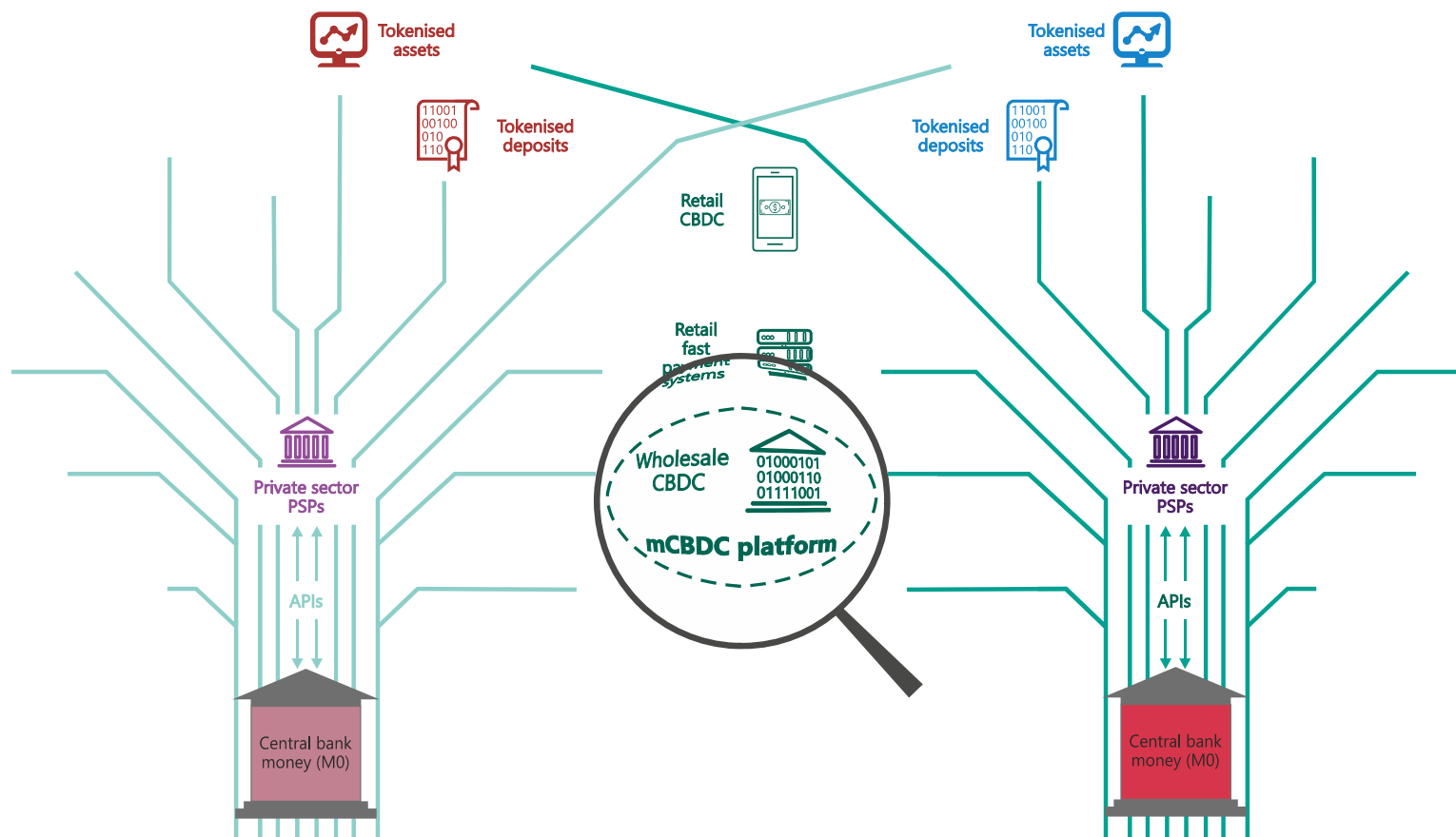
## They can lower costs for merchants and other users



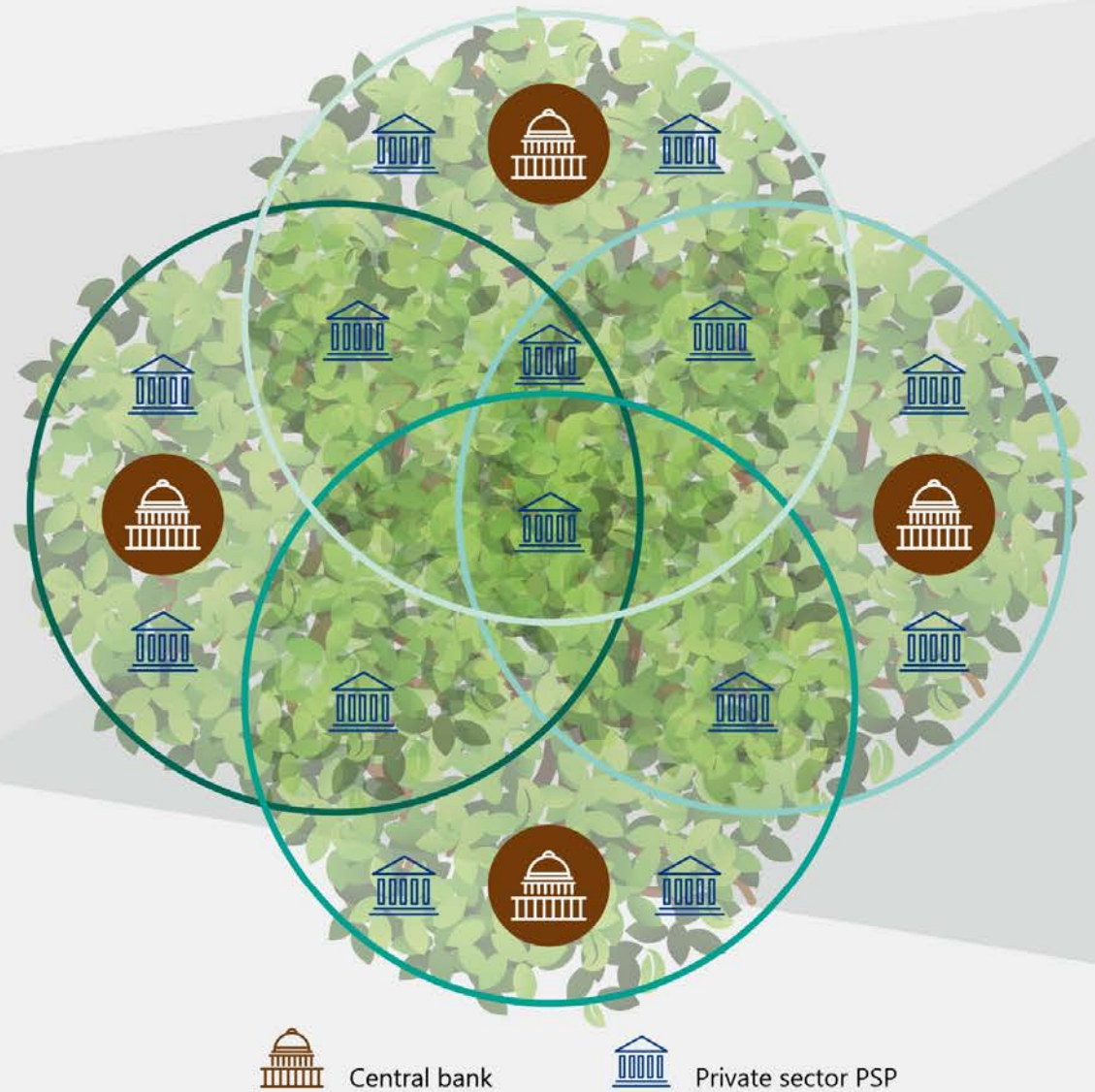
## CBDCs can also link across borders, much like the canopy of a forest



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

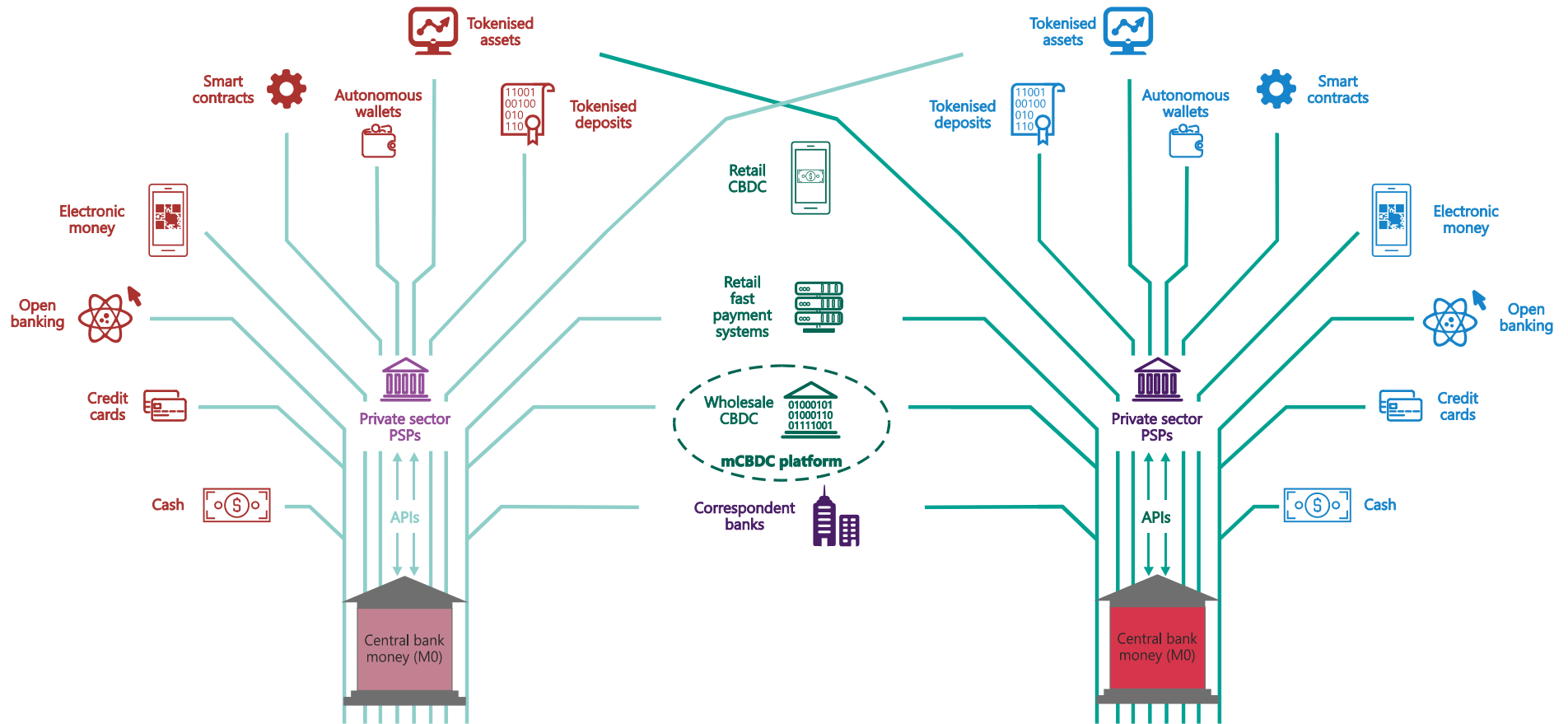


Canopy from above: a seamlessly integrated global system





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



## Conclusion

