DeFi: opportunities and challenges

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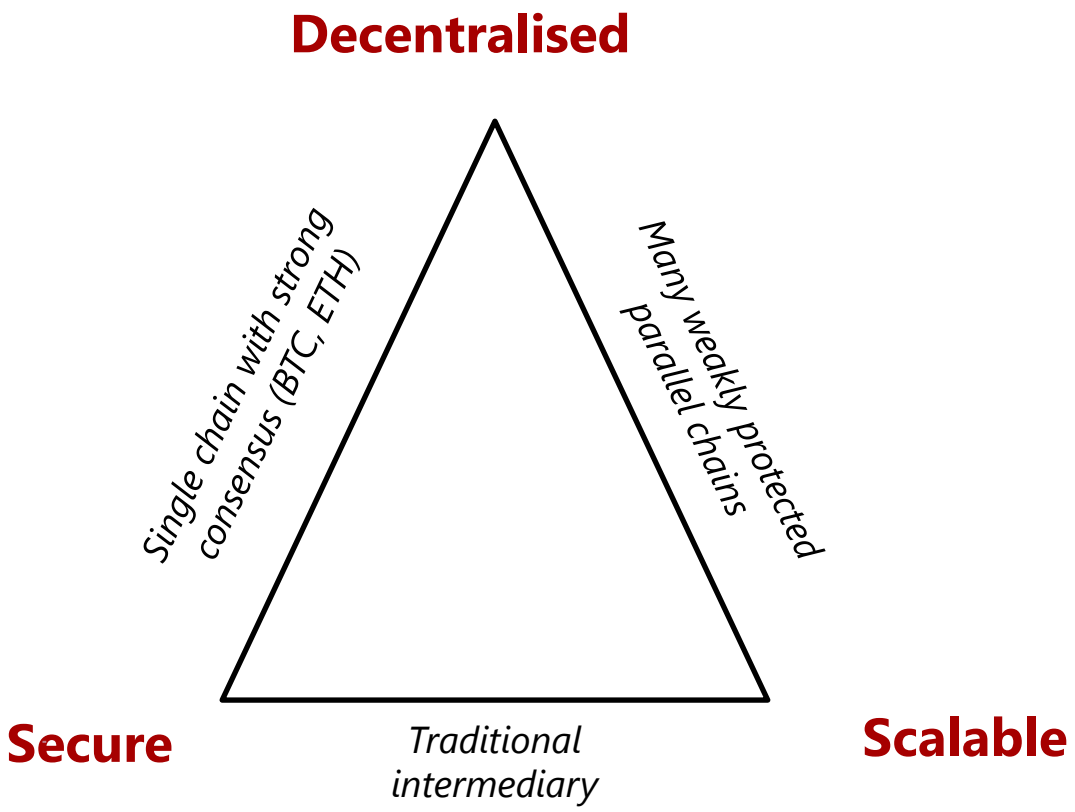
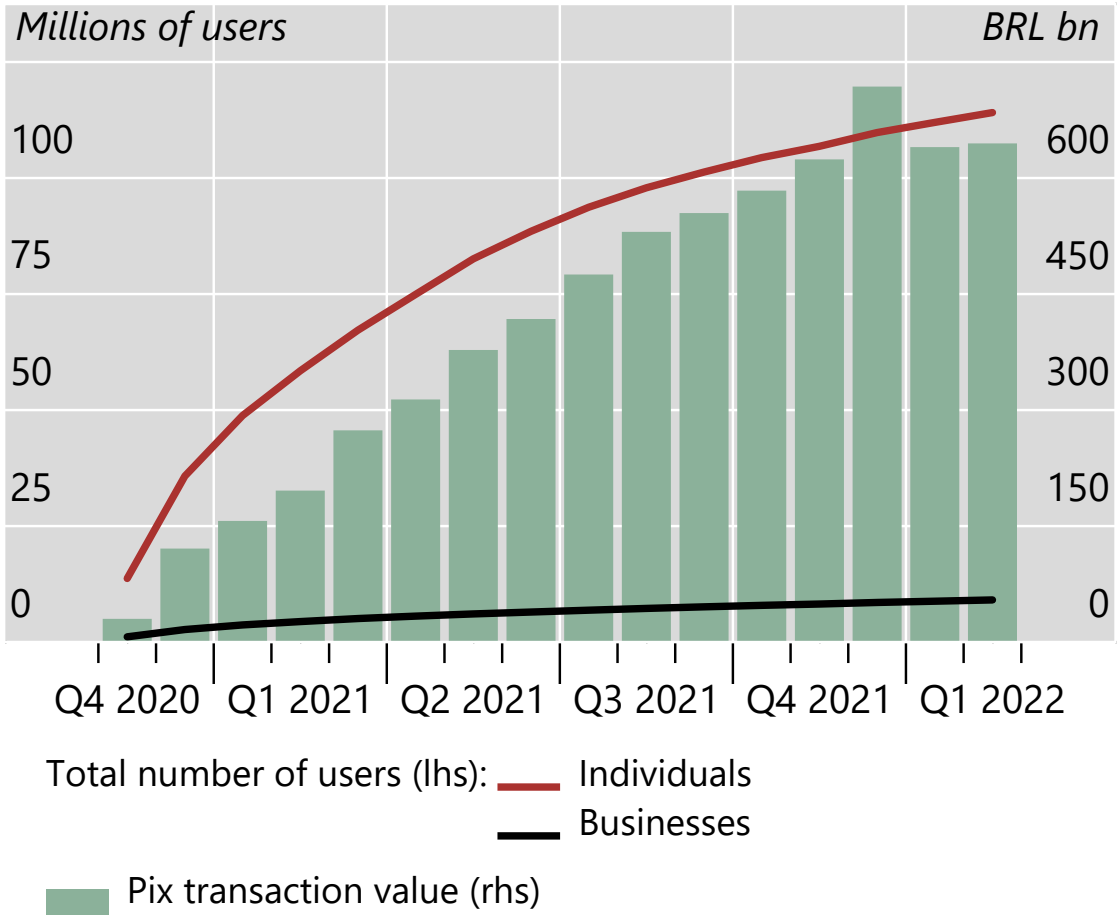
*The views expressed here are mine and not necessarily those of the Bank for International Settlements

Buterin's trilemma



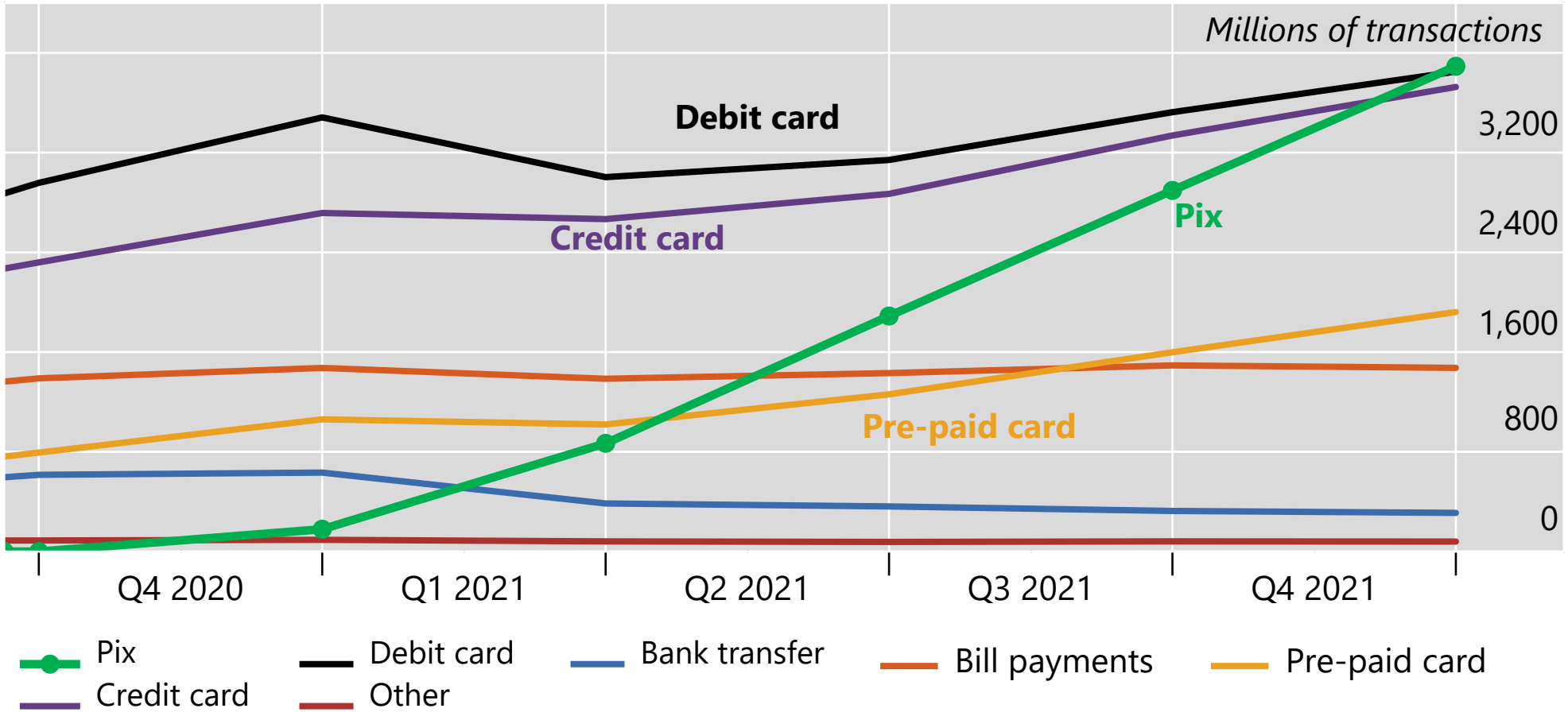
In stark contrast, good payment platforms harness network effects to scale; since its launch in Nov 2020, Brazil's Pix has signed up 67% of adult population



- **123.1** million users
  - **114** million individuals (**67%** of Brazil's adult population)
  - **9.1** million companies (**60%** of companies with relationship in the National Financial System)
- Of the **114** million individuals, **50** million of Pix users did not use bank transfers before Pix was launched

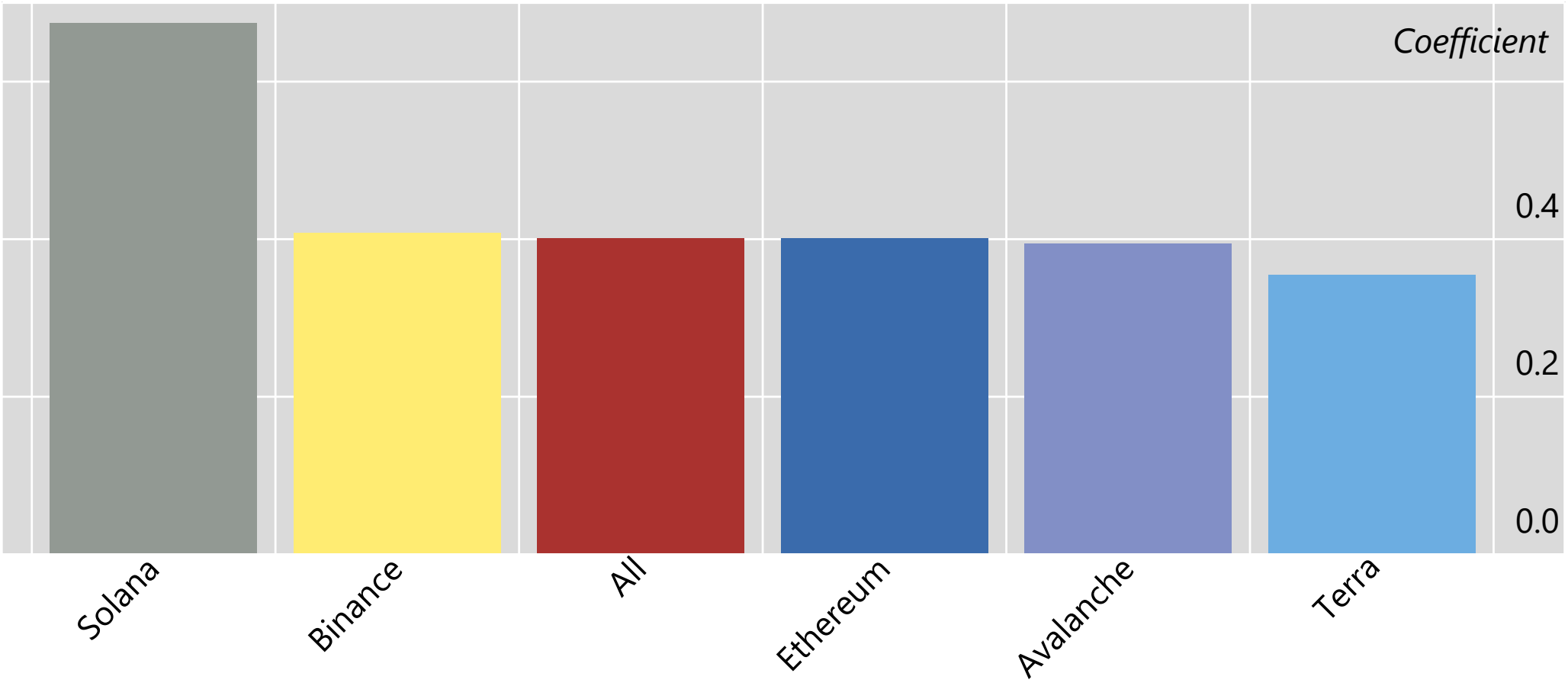
Source: A Duarte, J Frost, L Gambacorta, P Koo Wilkens and H S Shin, "Central banks, the monetary system and public payment infrastructures: lessons from Brazil's Pix", *BIS Bulletins*, no 52, March 2022.

In little over a year, Pix is poised to overtake credit and debt cards, slashing costs for users and merchants



Source: A Duarte, J Frost, L Gambacorta, P Koo Wilkens and H S Shin, "Central banks, the monetary system and public payment infrastructures: lessons from Brazil's Pix", *BIS Bulletins*, no 52, March 2022.

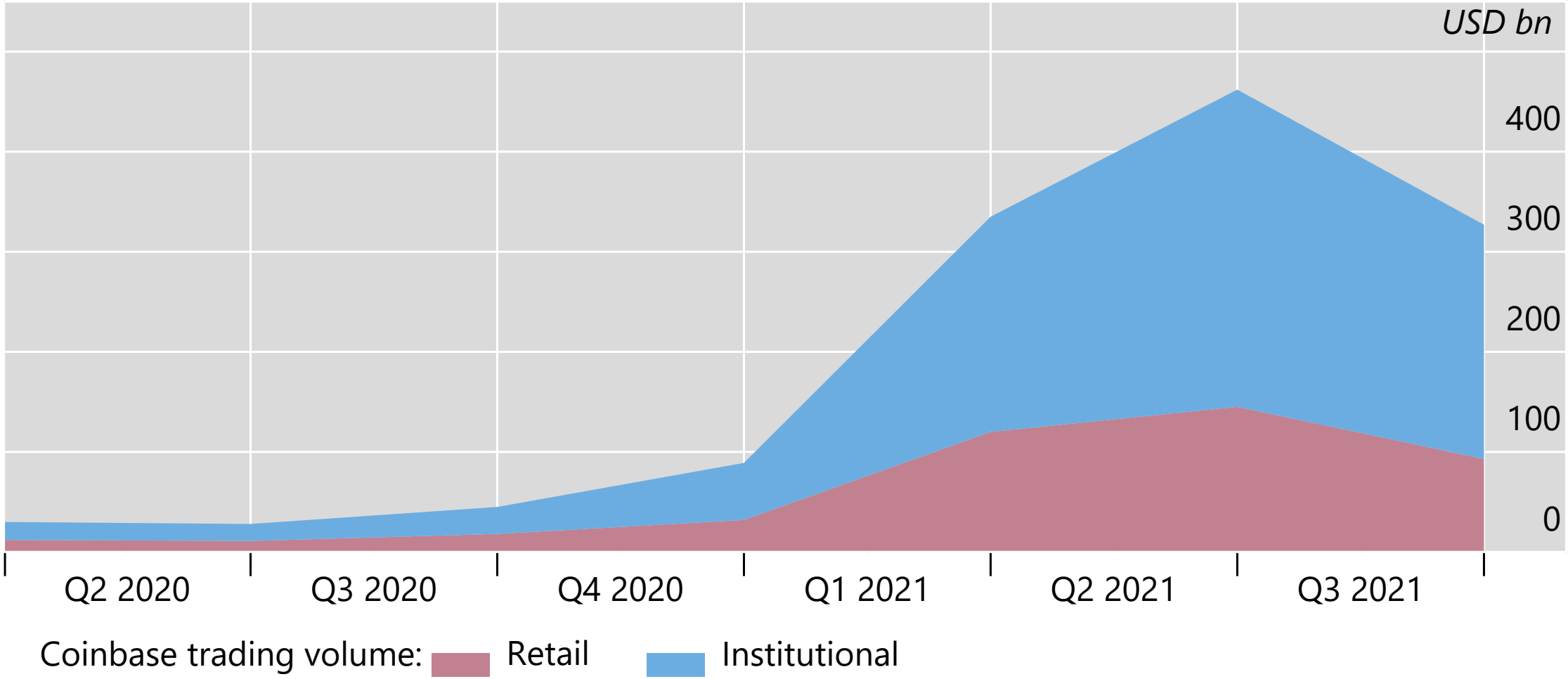
That said, crypto also benefits from network effects through speculative buying of coins; high correlation of coin prices across blockchains are a countervailing force against lack of scalability of the underlying chains



Pairwise correlation

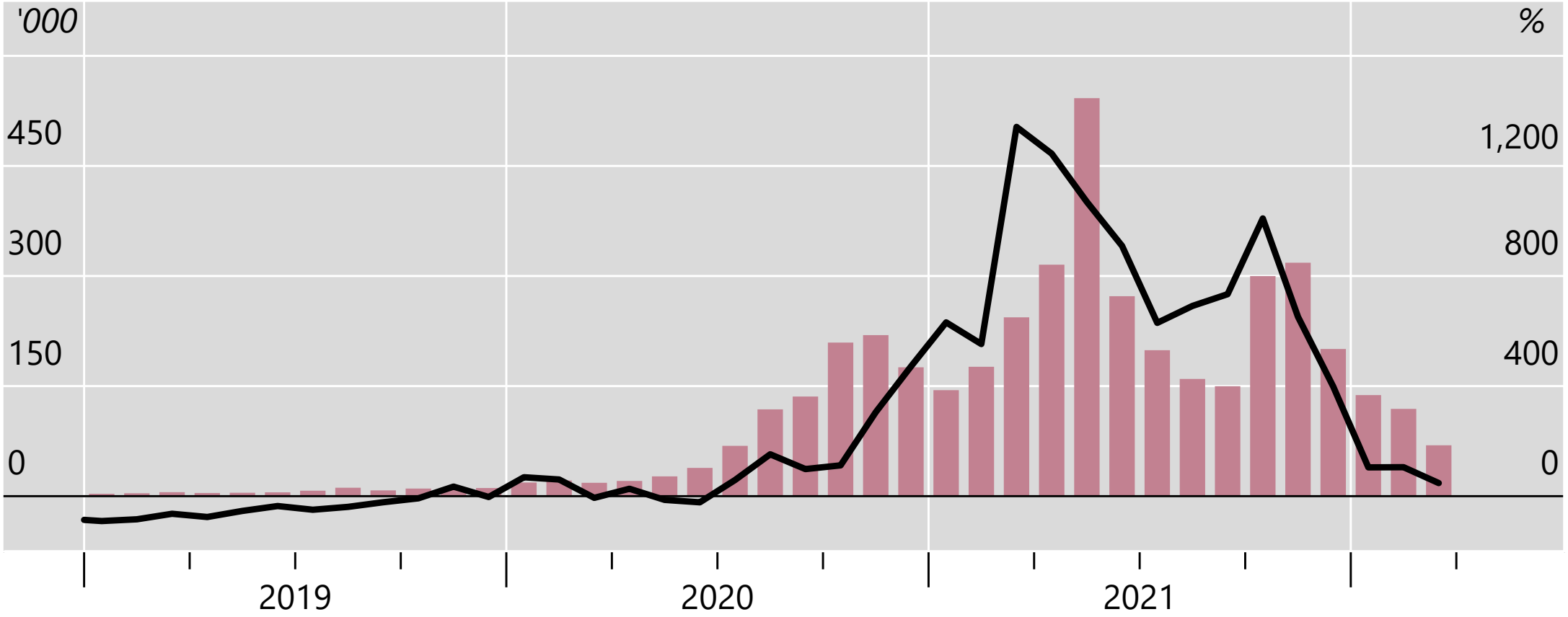
Sources: F Boissay, G Cornelli, S Doerr and J Frost, "Decentralised finance: more monies, more problems", *BIS Bulletins*, forthcoming; DeFi Llama; CoinGecko.

Institutional investors now play a large role in crypto markets



Sources: R Auer, M Farag, U Lewrick, L Orazem and M Zoss (2022), "Banking in the shadow of Bitcoin? The institutional adoption of cryptocurrencies", *BIS papers*, forthcoming; Coinbase.

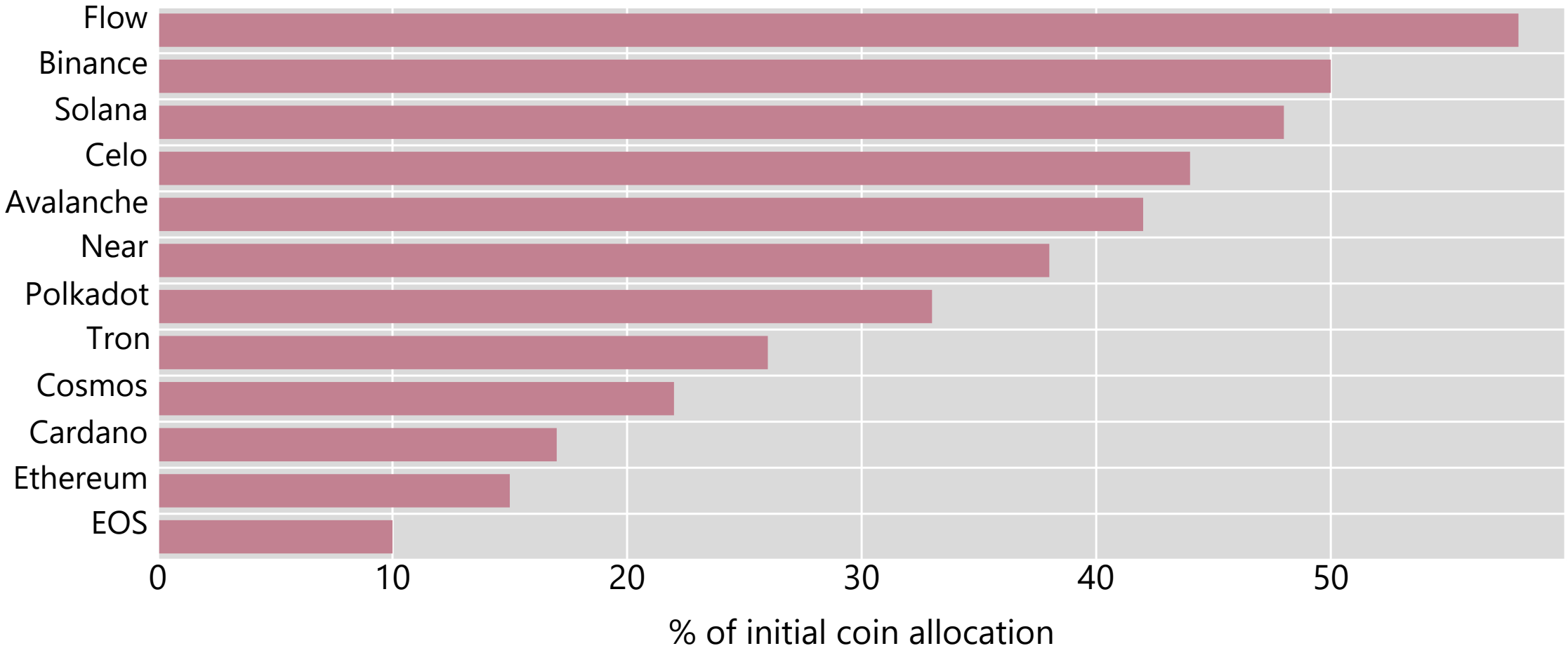
To what extent is DeFi sustained only by inflows of new holders of coins in crypto markets?



Lhs: New DeFi unique addresses Rhs: ETH, yoy price change

Sources: @richardchen39, Dune Analytics; CoinGecko; Defi Llama; authors' calculations..

How decentralised is DeFi? Insiders with high coin allocation exert control and collect rents

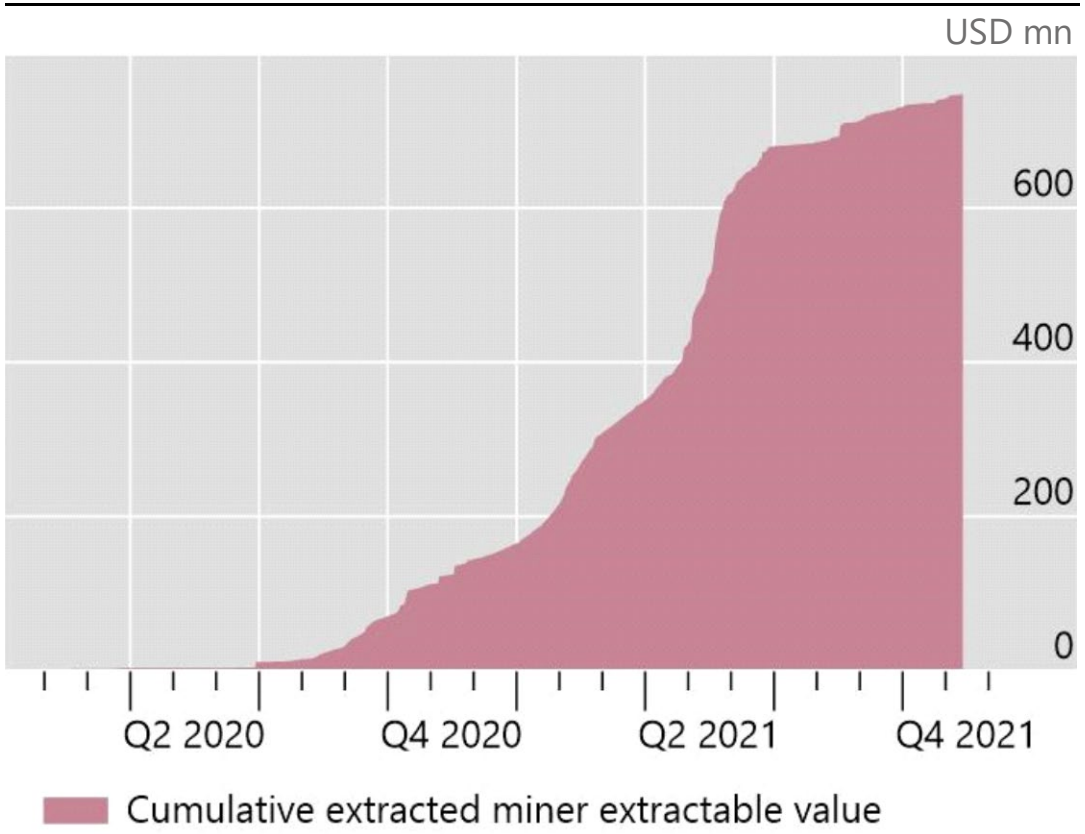


Source: Messari Report, Power and Wealth in Cryptoeconomies, May 2021.

Validators in the chain can extract “miner extractable value” (MEV)

- MEV is a measure of the profit a miner/validator can make through their ability to include, exclude or re-order transactions within the blocks they add to the blockchain

- **Example:** a validator spots an arbitrage opportunity on a DeFi exchange and submits a transaction to capture this opportunity; instead of processing the transaction, the validator front-runs the trade by including his own trade in the block



Source: MEV-Explore v0.

Conclusions

- DeFi offers a range of new financial applications, as part of a broader vision called “Web3”

- But DeFi is not delivering this in practice:
  - DeFi must incentivise validators through high fees; power in the hands of few
  - Blockchain applications do not scale, as they cannot harness the network effects
  - DeFi and automated smart contracts do not fully replace for trust

- To fully benefit from technological advances, we urgently need regulation of cryptoassets, stablecoins and DeFi to address relevant risks