



DeFi: opportunities and challenges

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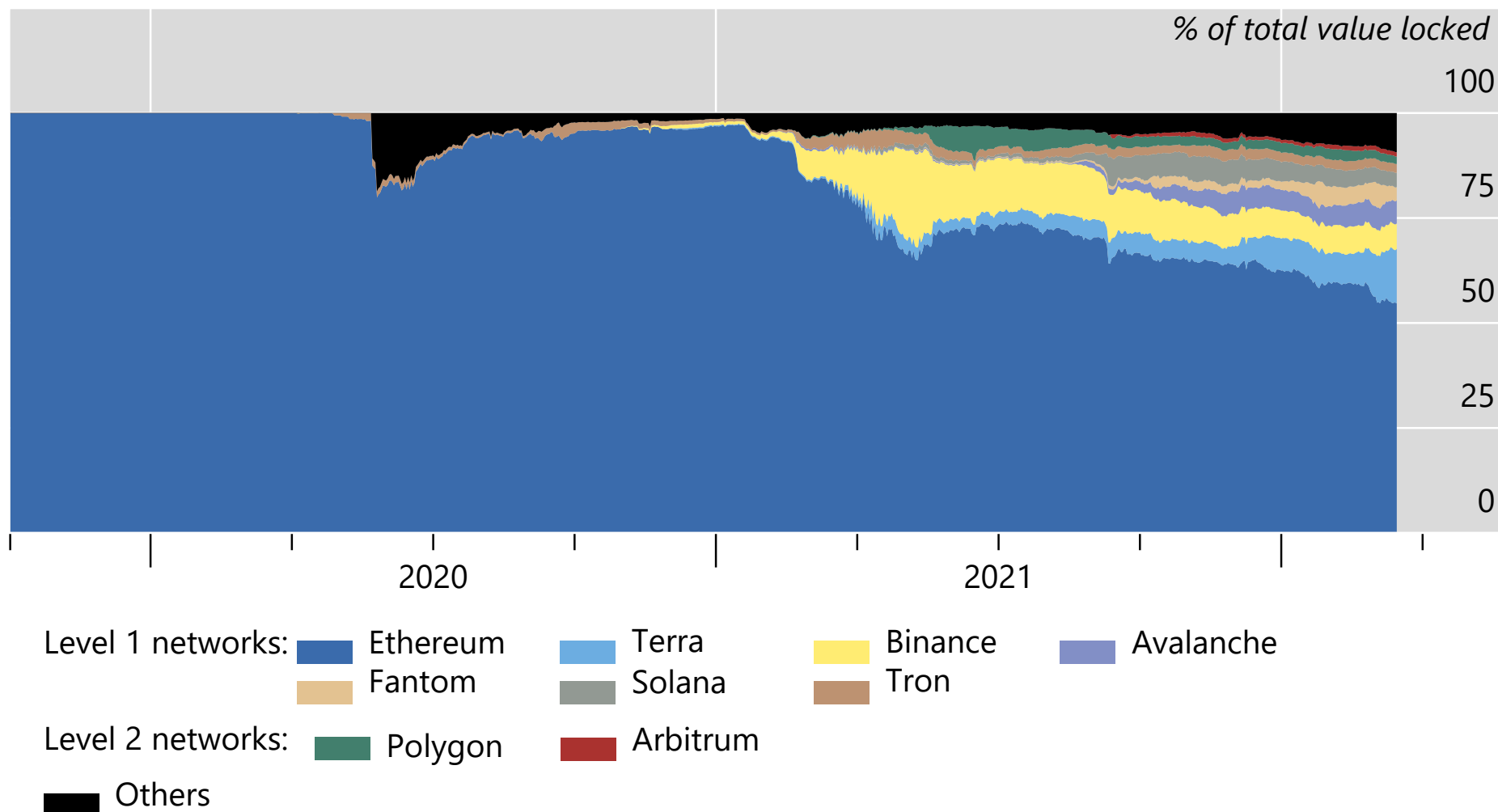
ECB/EC virtual conference "An EU financial system for the future", 6 April 2022

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

Decentralisation in digital finance: possibilities and limits

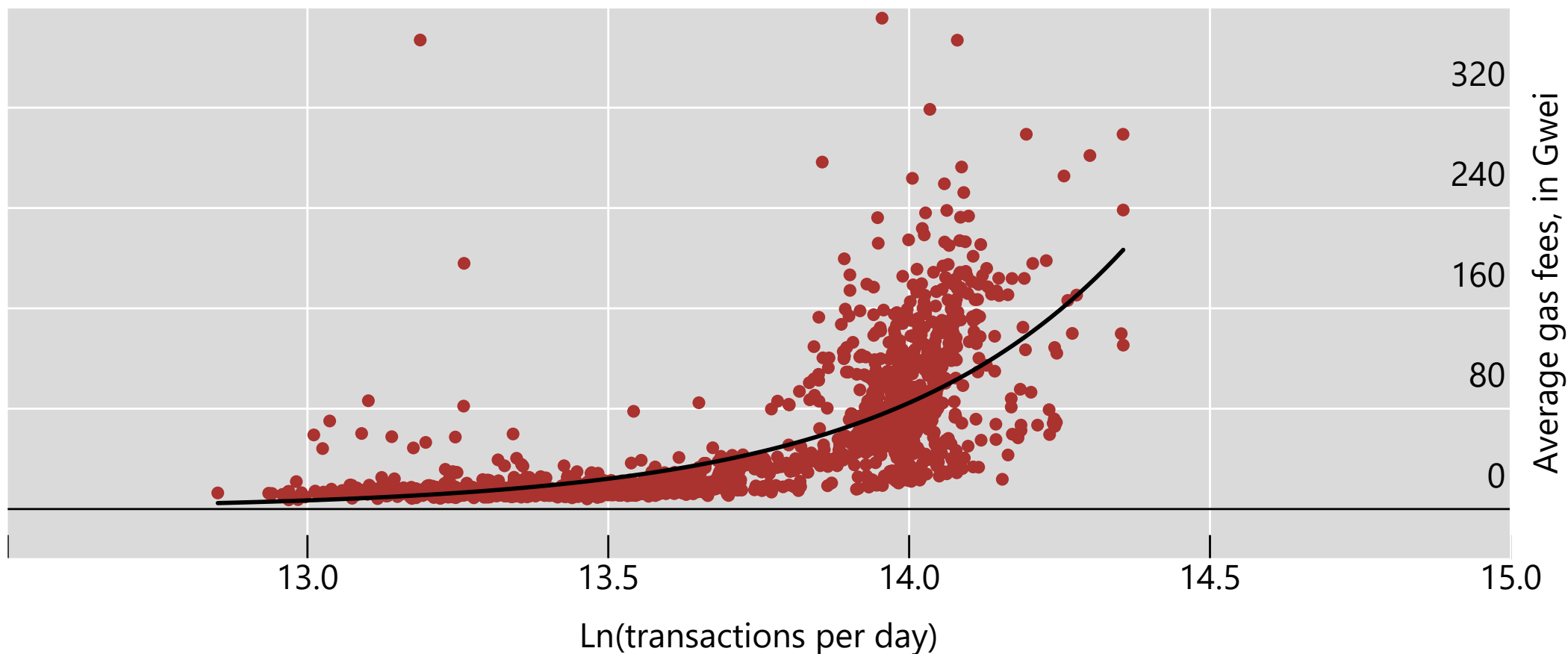
- DLT and smart contracts could improve the efficiency of the monetary and financial system
- At the same time, we need to preserve safety and integrity
- DeFi: decentralisation and anonymity
- As it stands now the DeFi system has some problems and could introduce serious risks
 - Limited network effects
 - Prone to congestions
 - Validators extract high rents

Network effects and “winner takes all” does not hold for DeFi; instead increasing fragmentation of blockchain platforms point to lack of scalability



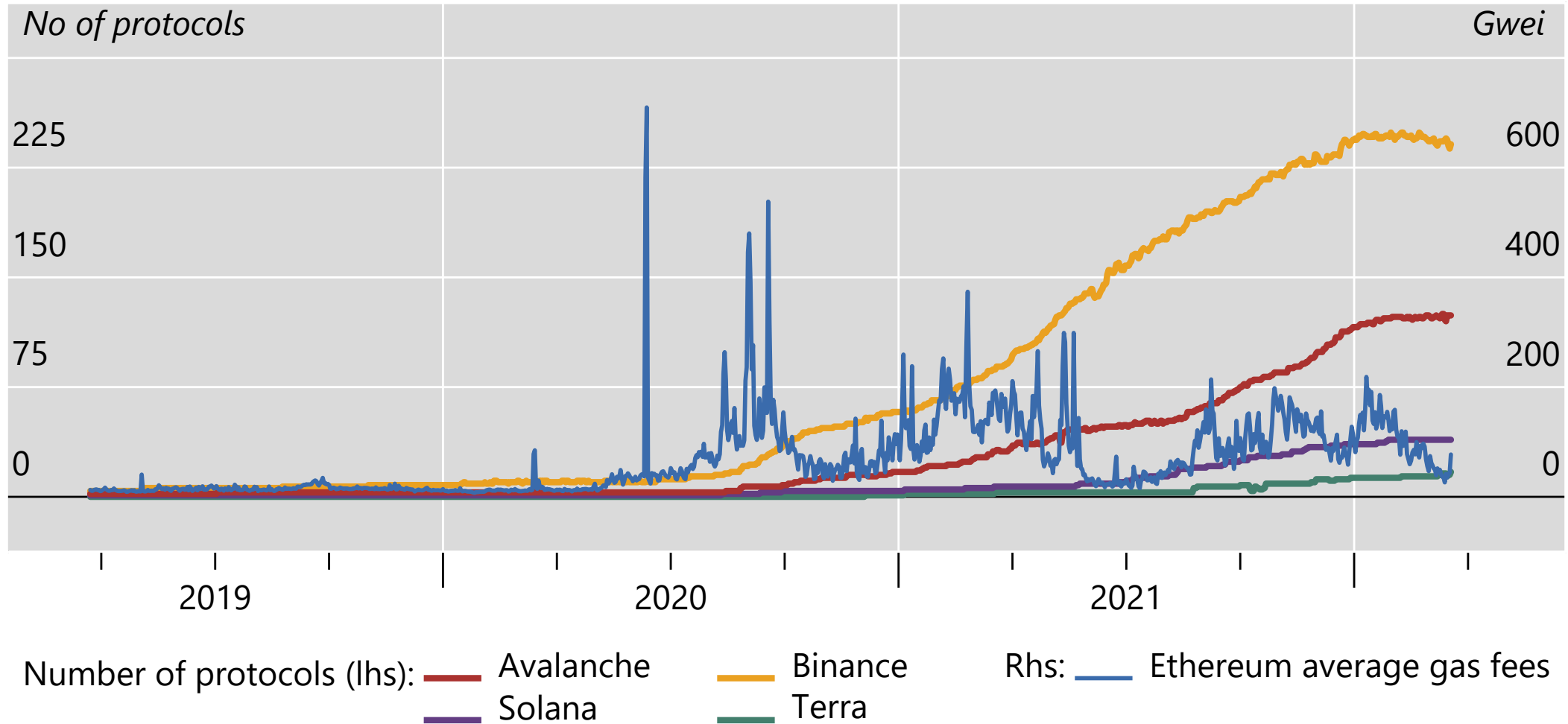
Sources: F Boissay, G Cornelli, S Doerr and J Frost, “Decentralised finance: more monies, more problems”, *BIS Bulletins*, forthcoming

Higher gas fees are one symptom of scalability problem, but cutting corners on security cannot be the answer (eg, recent DeFi theft through hacks)



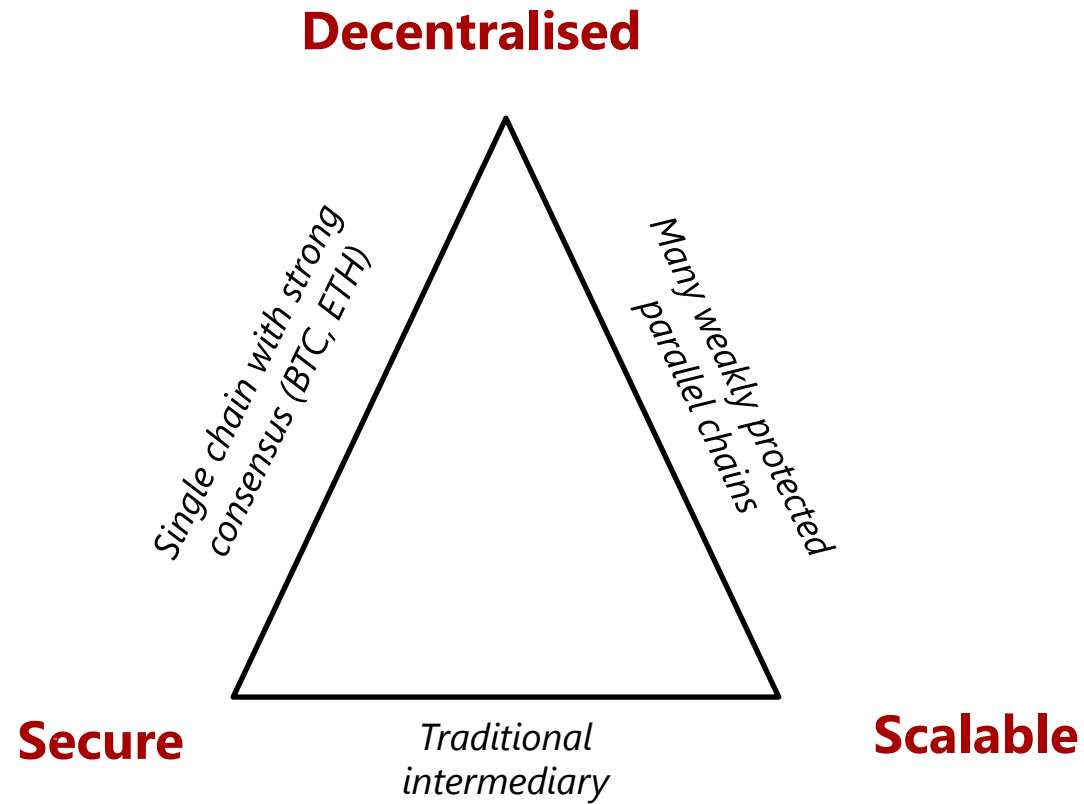
Sources: F Boissay, G Cornelli, S Doerr and J Frost, "Decentralised finance: more monies, more problems", *BIS Bulletins*, forthcoming; Etherscan.

Rise of alternative chains has coincided with rising gas fees, raising question of whether fragmentation is inevitable consequence of Buterin's "Trilemma"

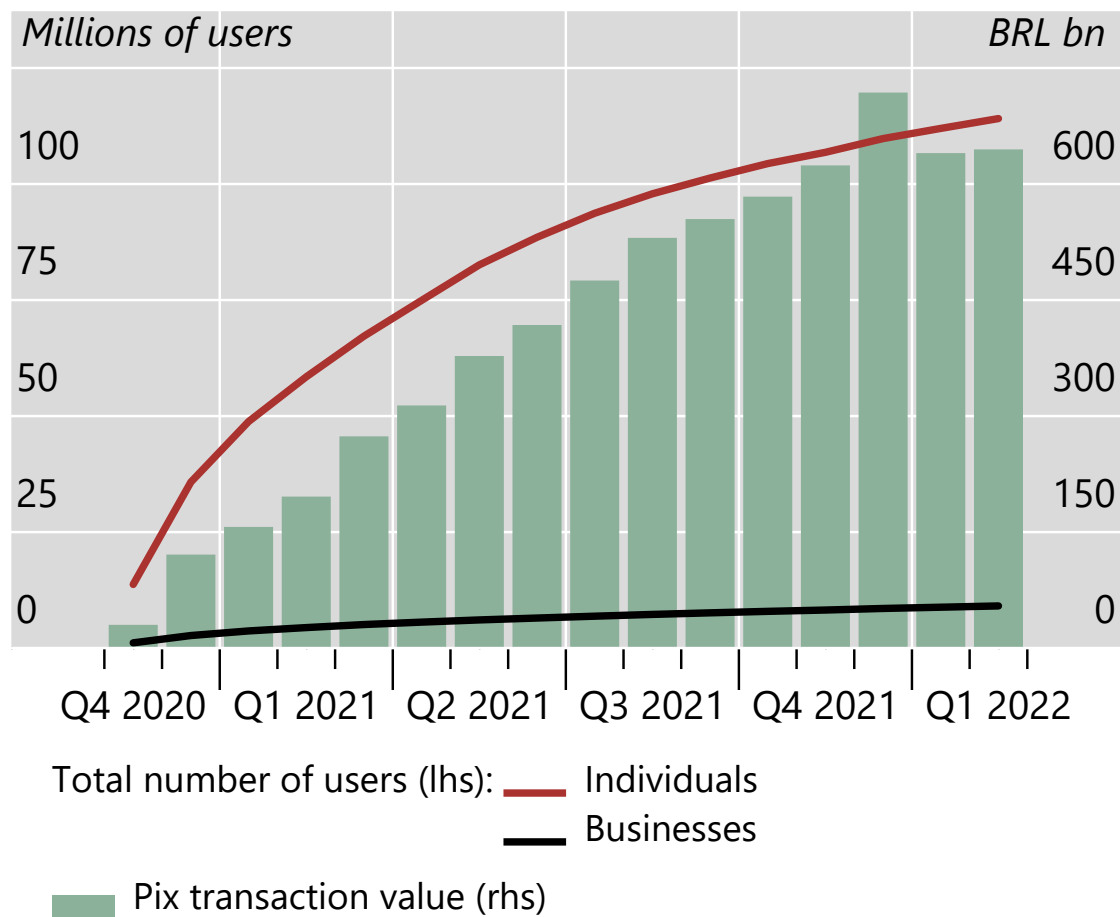


Sources: F Boissay, G Cornelli, S Doerr and J Frost, "Decentralised finance: more monies, more problems", *BIS Bulletins*, forthcoming; DeFi Llama; Etherscan; CoinGecko.

Buterin's trilemma



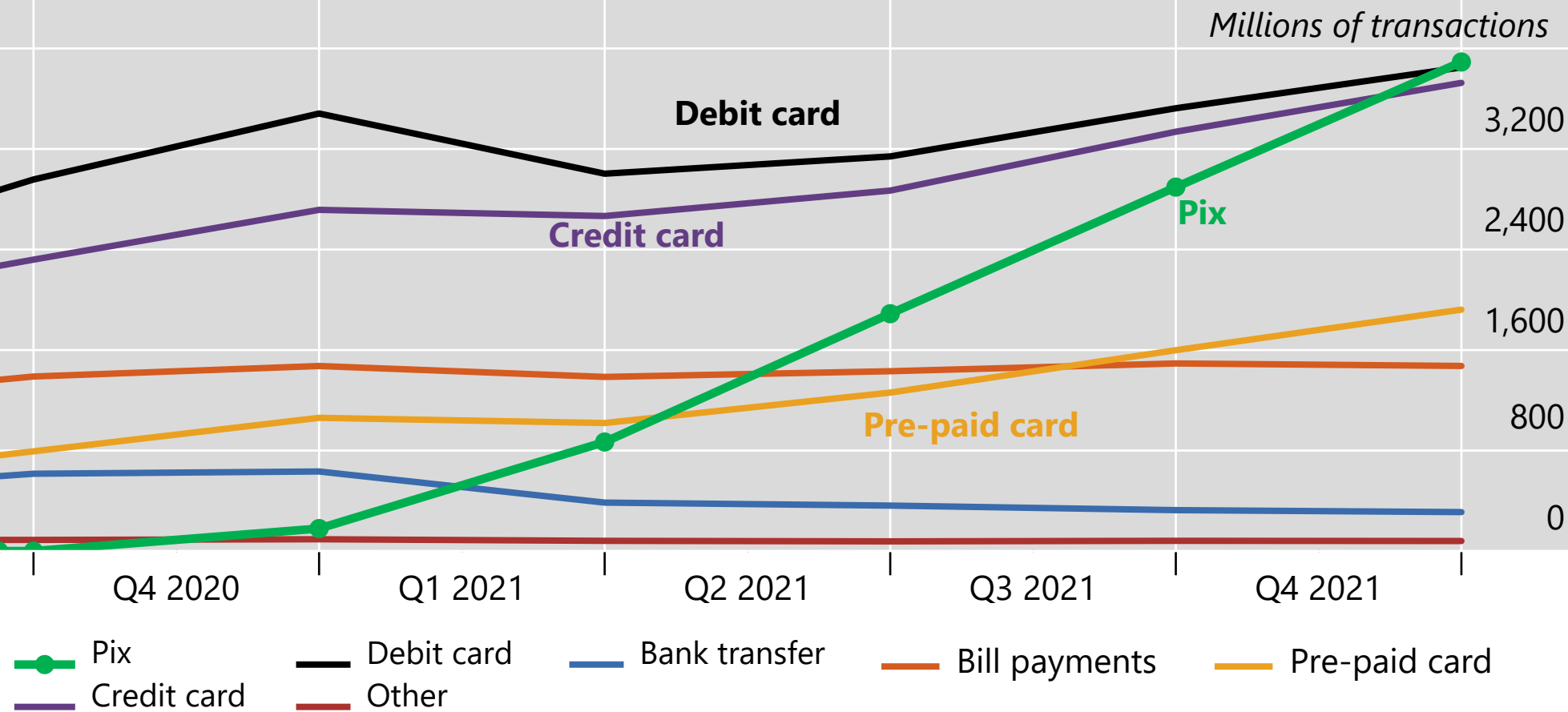
In stark contrast, good payment platforms harness network effects to scale; since its launch in Nov 2020, Brazil's Pix has signed up 67% of adult population



- **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

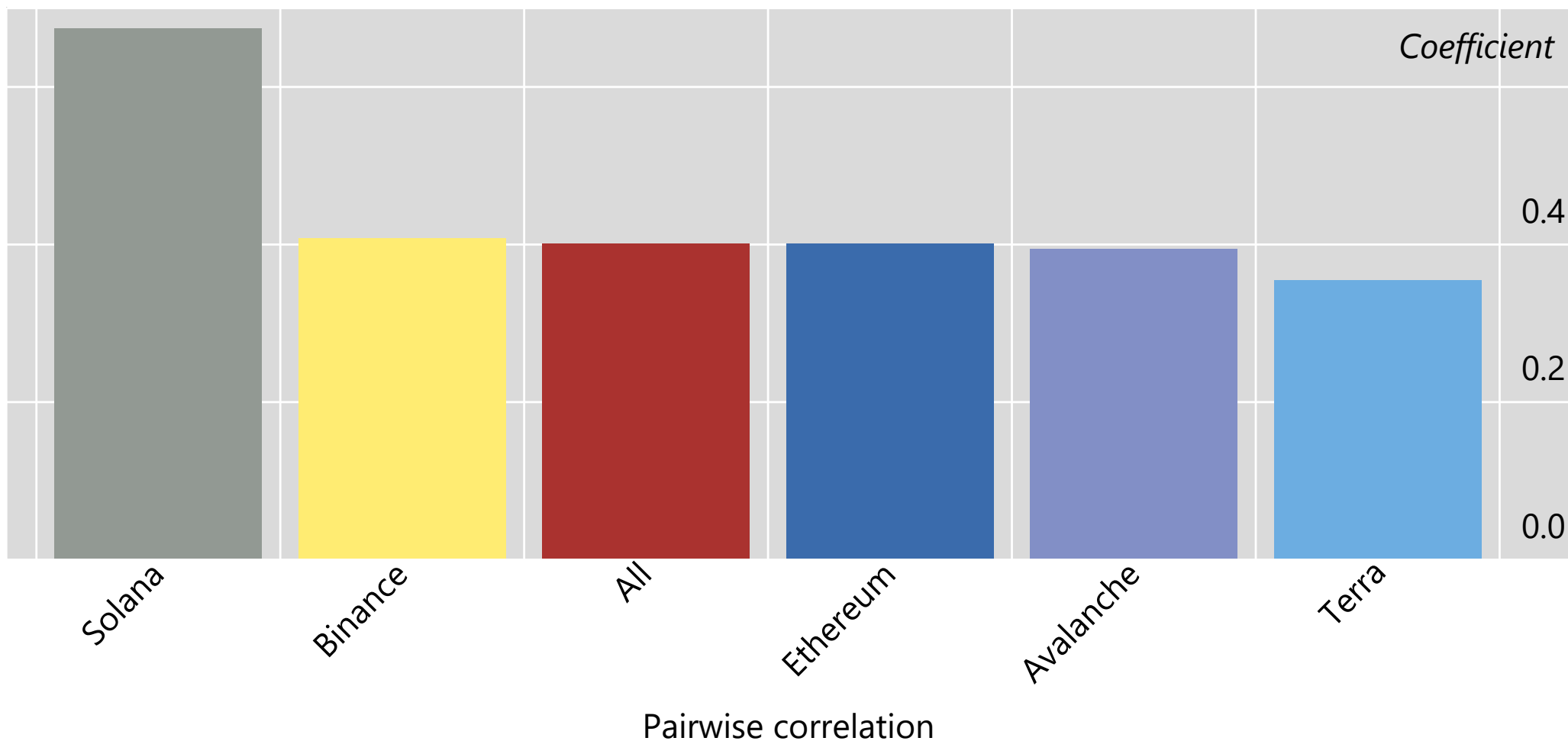
Source: A Duarte, J Frost, L Gambacorta, P Koo Wilkens and H S Shin, "Central banks, the monetary system and public payment infrastructures: lessons from Brazil's Pix", *BIS Bulletins*, no 52, March 2022.

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



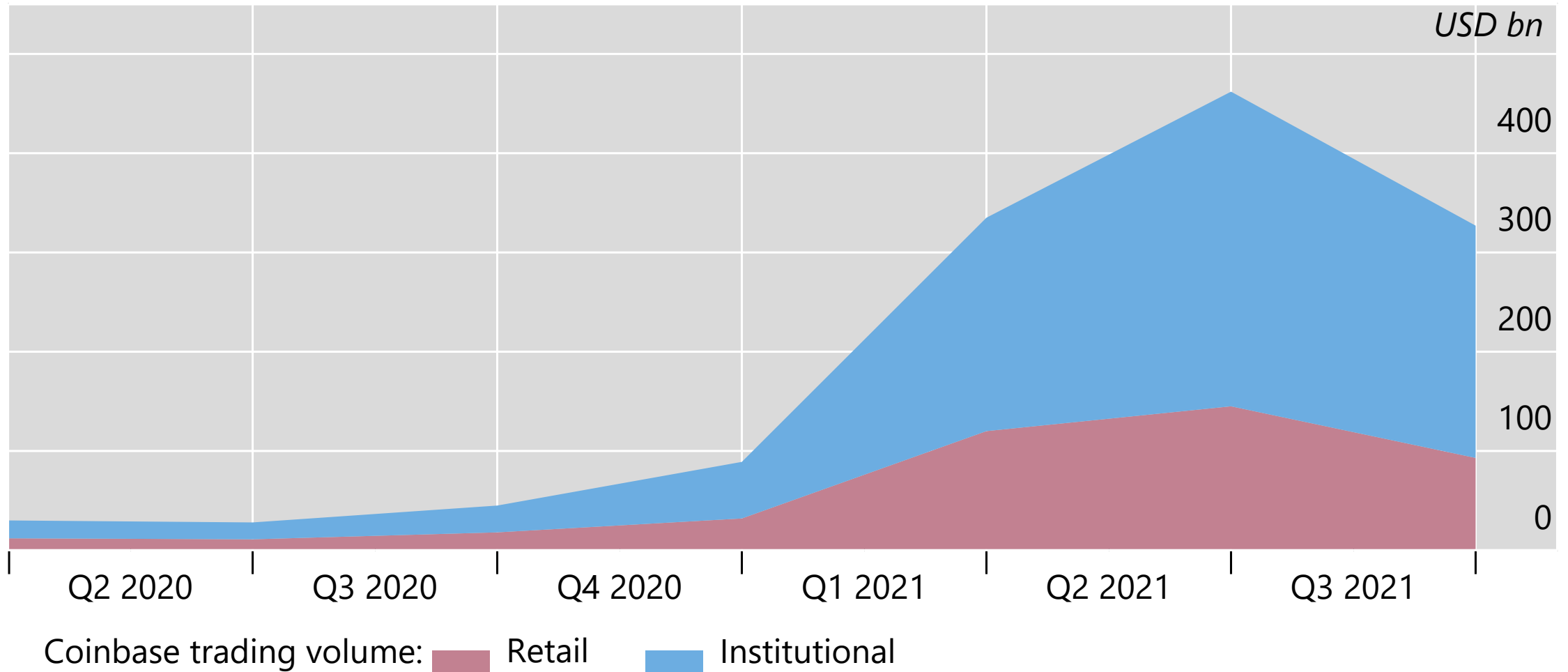
Source: A Duarte, J Frost, L Gambacorta, P Koo Wilkens and H S Shin, "Central banks, the monetary system and public payment infrastructures: lessons from Brazil's Pix", *BIS Bulletins*, no 52, March 2022.

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



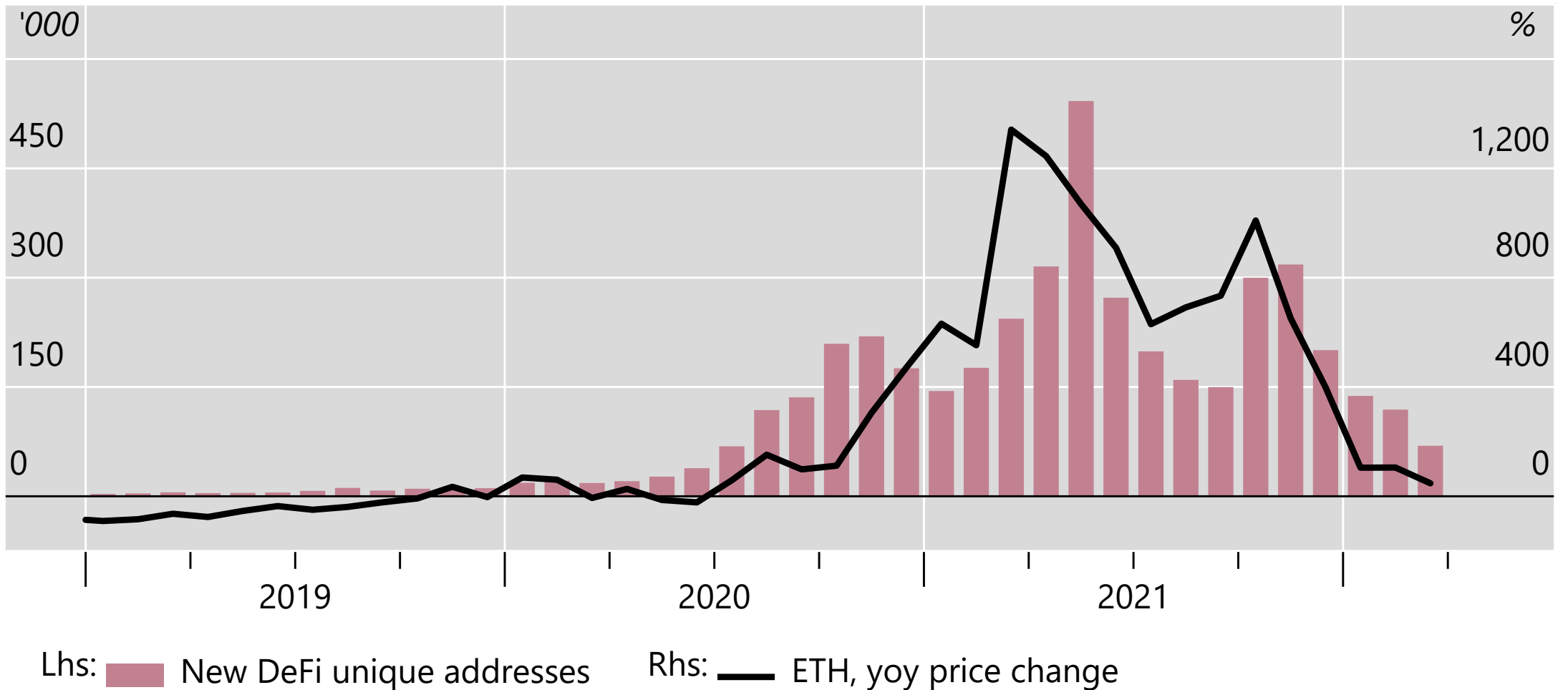
Sources: F Boissay, G Cornelli, S Doerr and J Frost, "Decentralised finance: more monies, more problems", *BIS Bulletins*, forthcoming; DeFi Llama; CoinGecko.

Institutional investors now play a large role in crypto markets



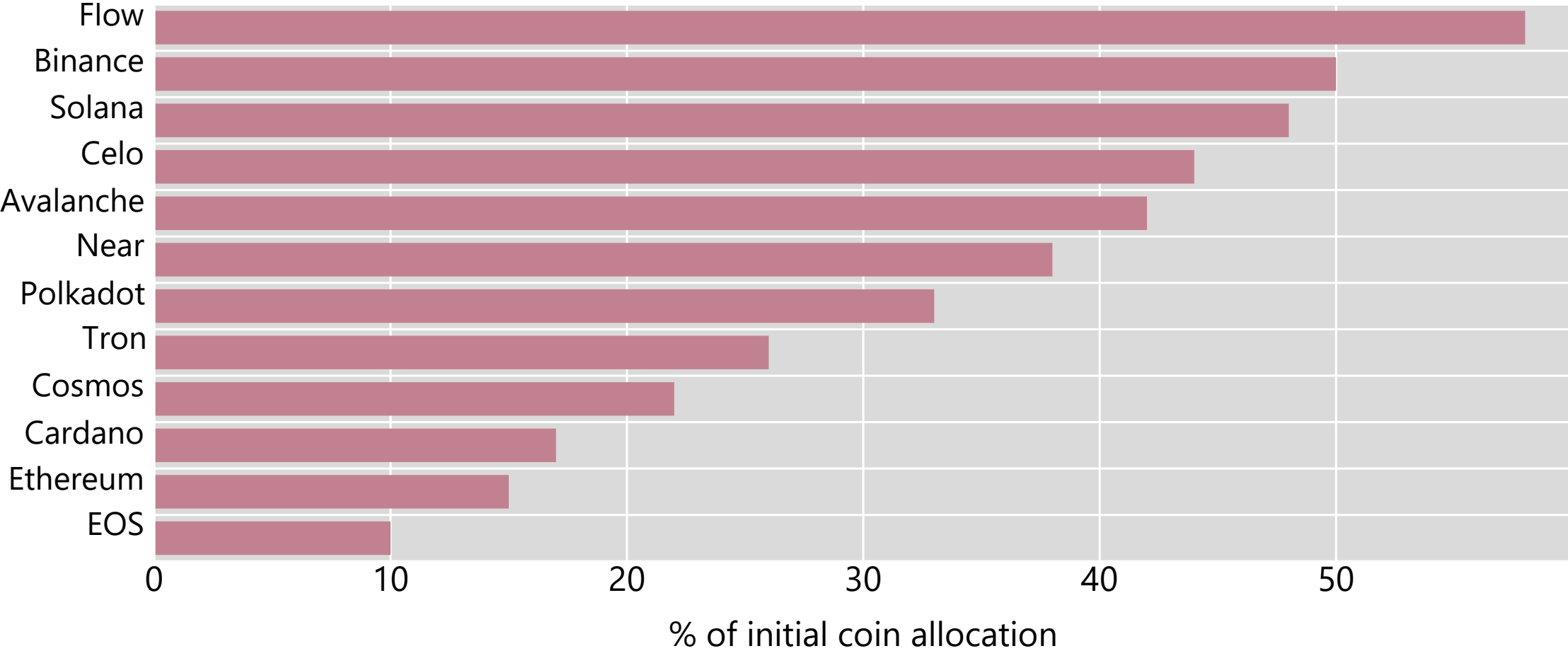
Sources: R Auer, M Farag, U Lewrick, L Orazem and M Zoss (2022), "Banking in the shadow of Bitcoin? The institutional adoption of cryptocurrencies", *BIS papers*, forthcoming; Coinbase.

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



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

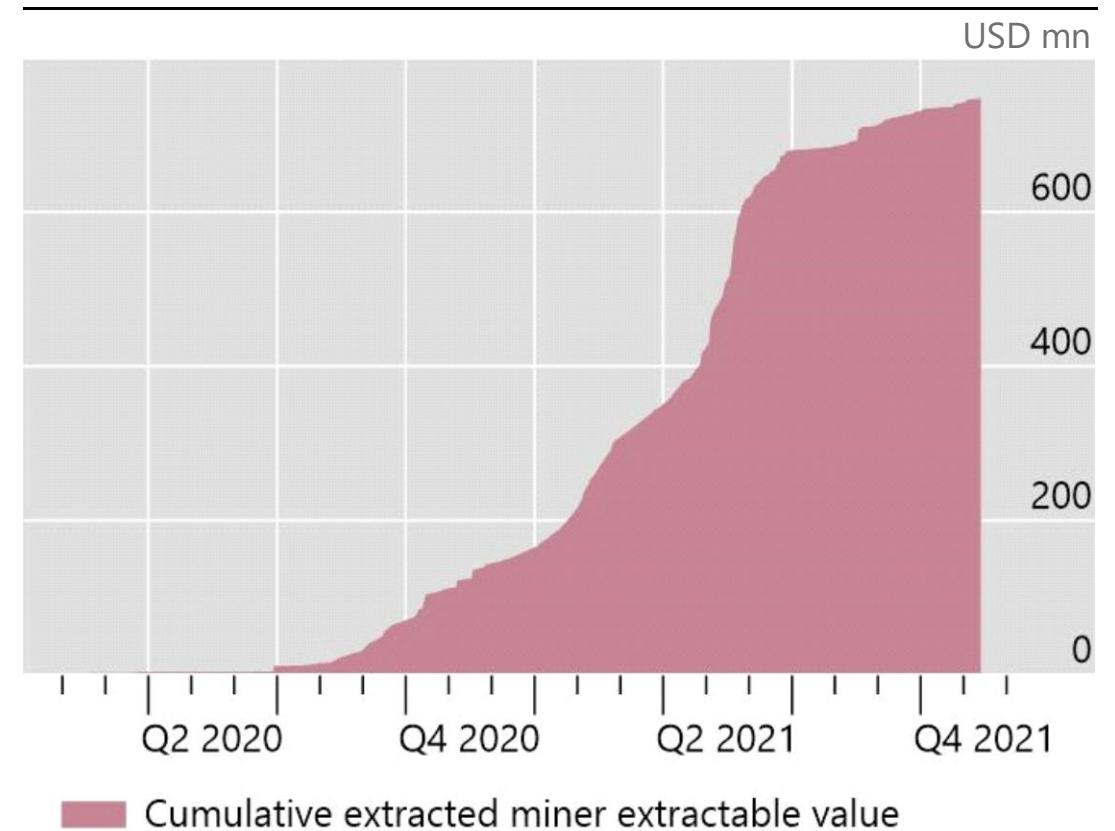
How decentralised is DeFi? Insiders with high coin allocation exert control and collect rents



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