Is there a role for crypto?

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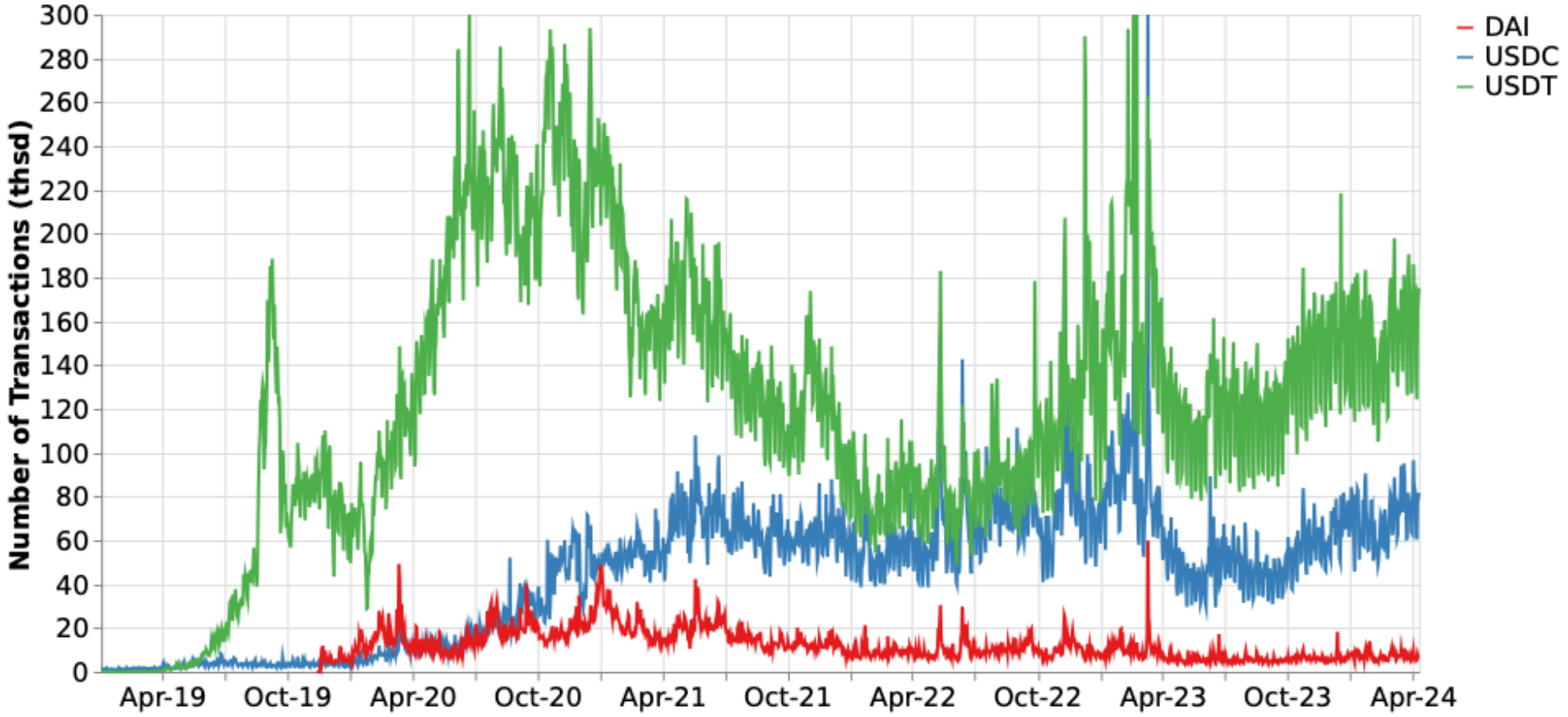
Overview

- Successful use cases
  - Payments
  - Digitization

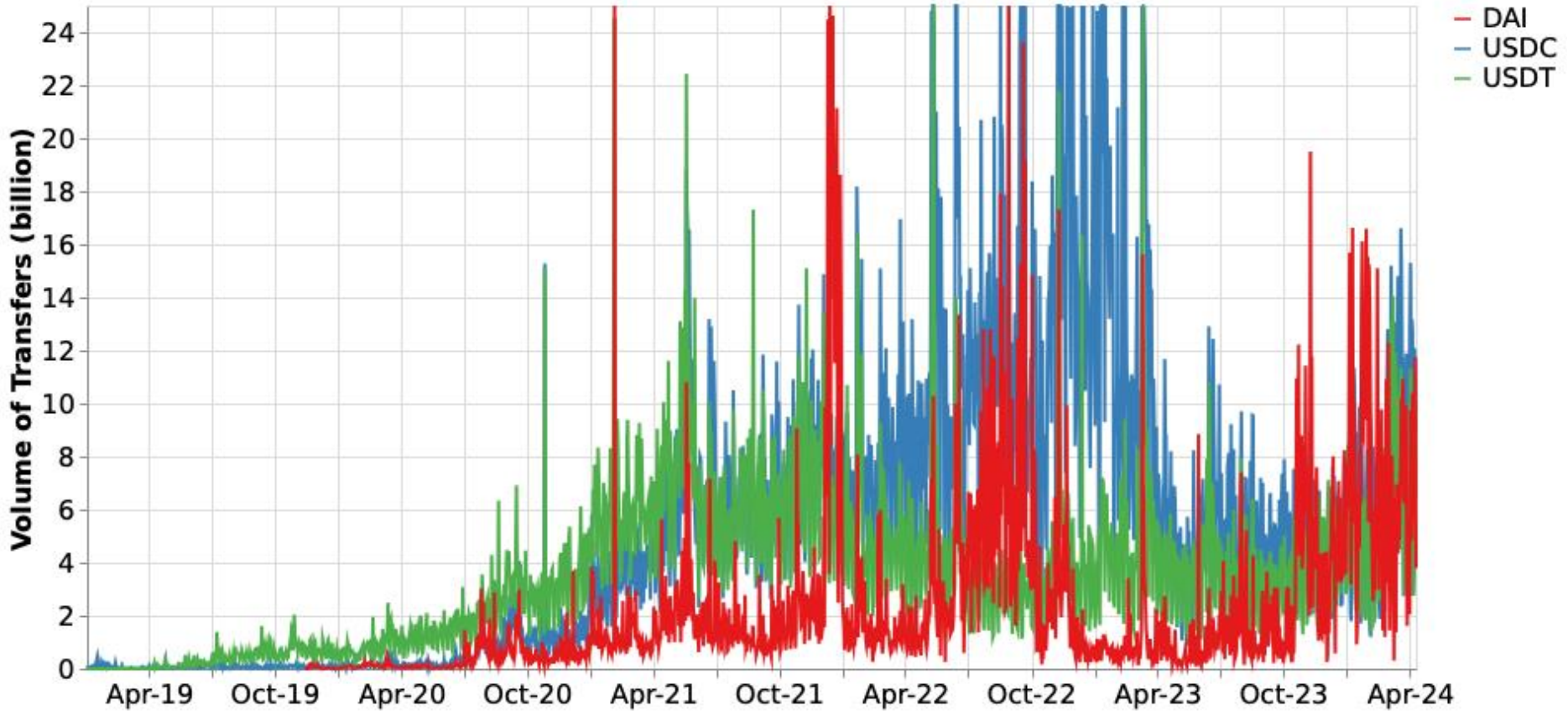
- Novel market designs
  - Automated market makers
  - Liquid Staking

Daily Transactions

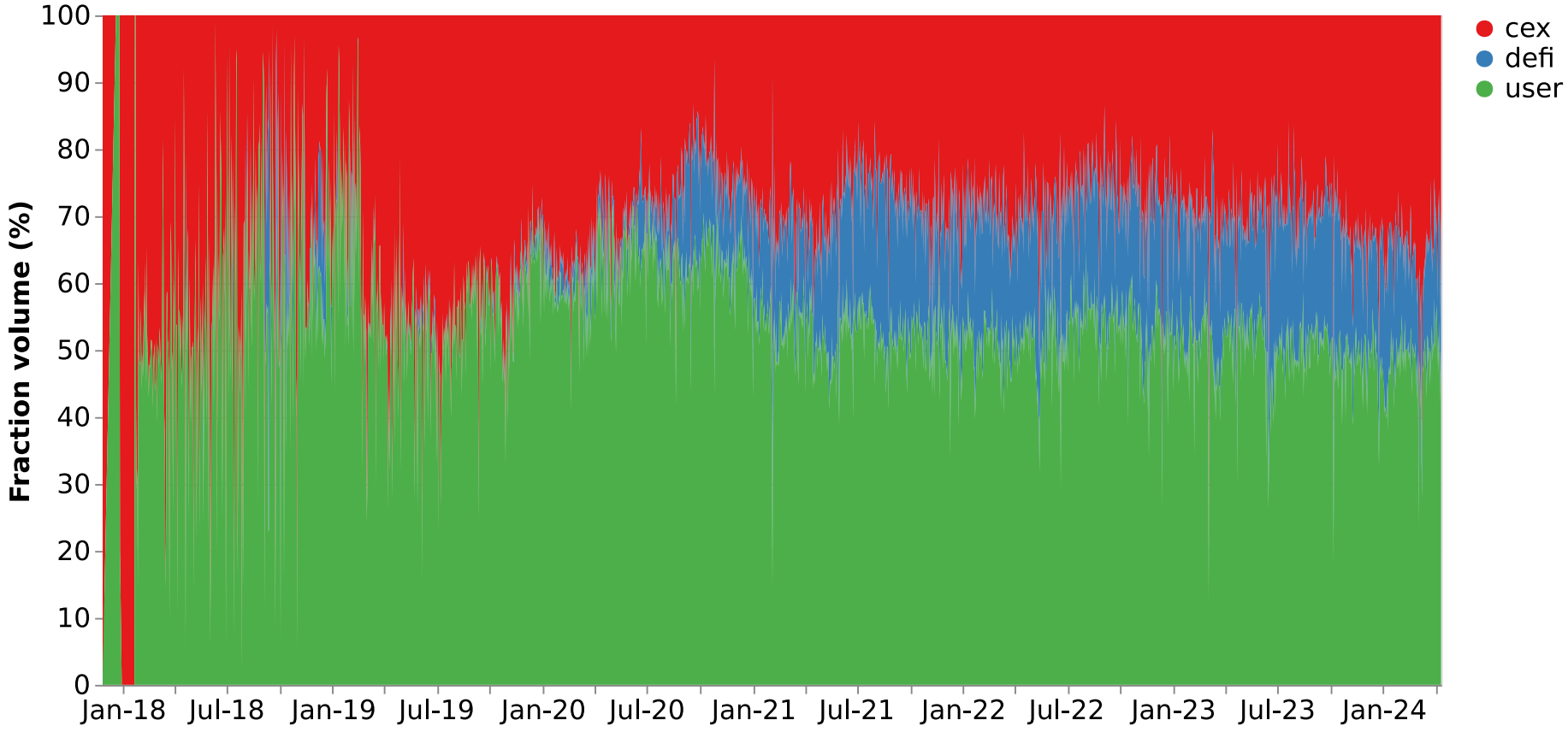
Based on work by
Lehar, Li, Parlour



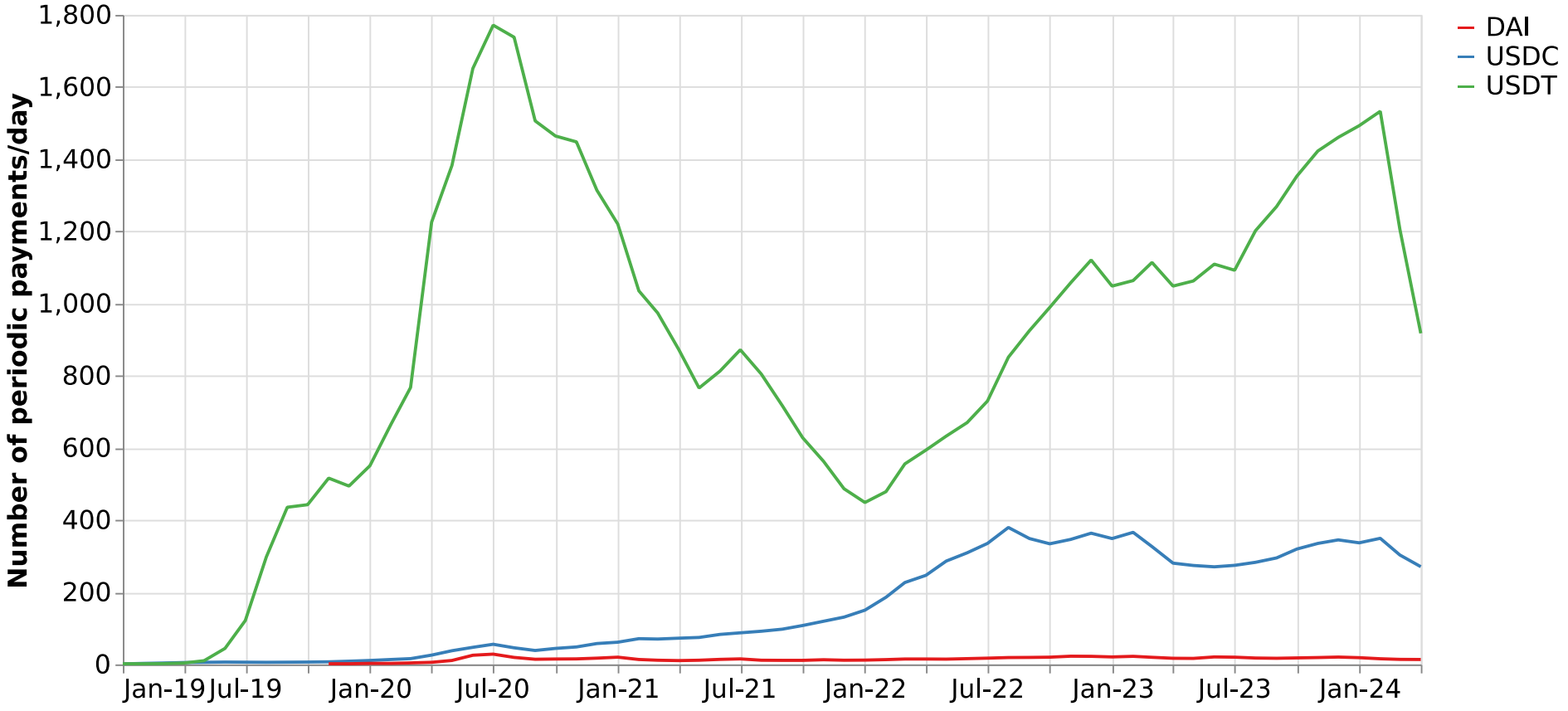
Capped Daily Volume by coin



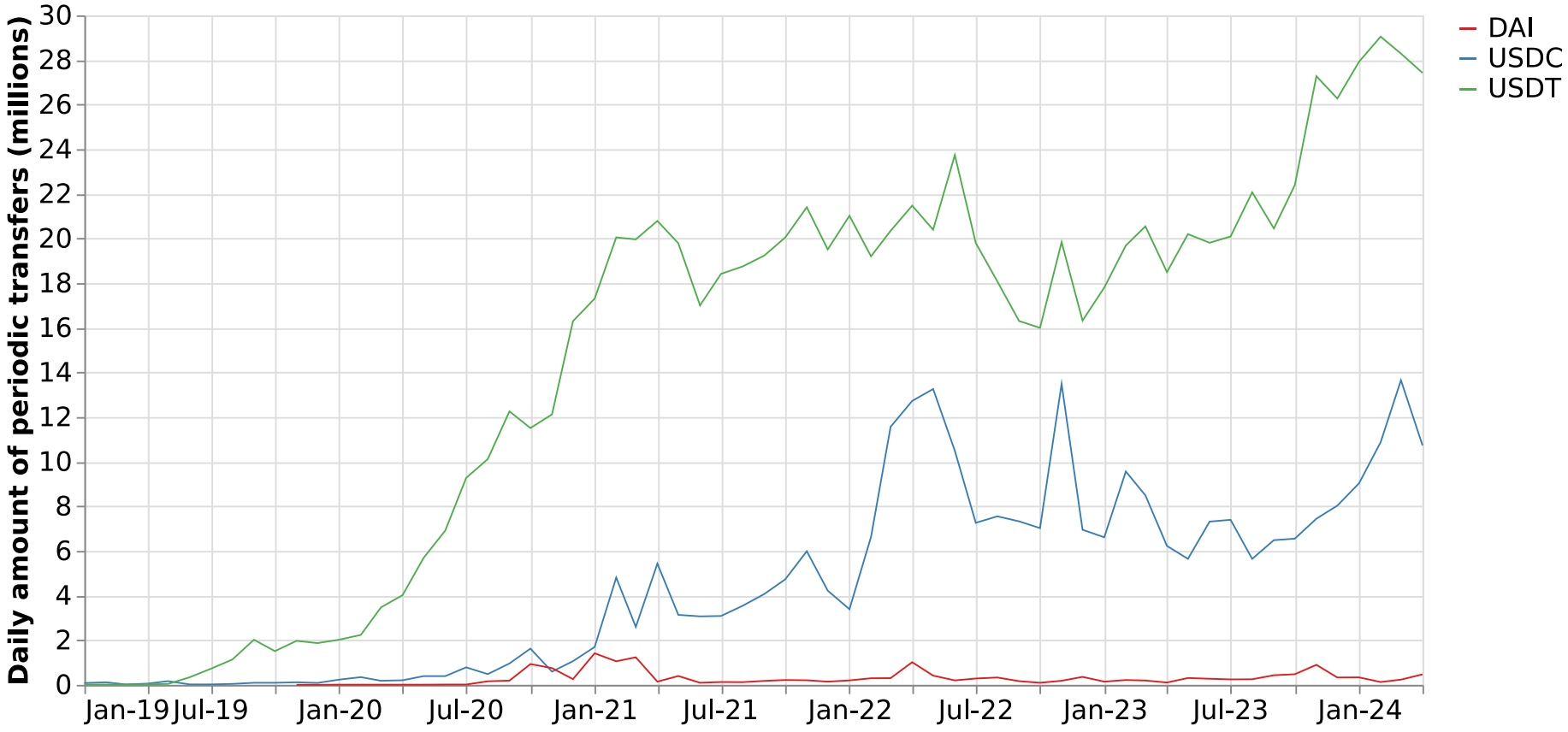
USDT Usage


Fraction volume (%)
100
90
80
70
60
50
40
30
20
10
0
Jan-18
Jul-18
Jan-19
Jul-19
Jan-20
Jul-20
Jan-21
Jul-21
Jan-22
Jul-22
Jan-23
Jul-23
Jan-24
cex
defi
user

Monthly average of # of periodic payments



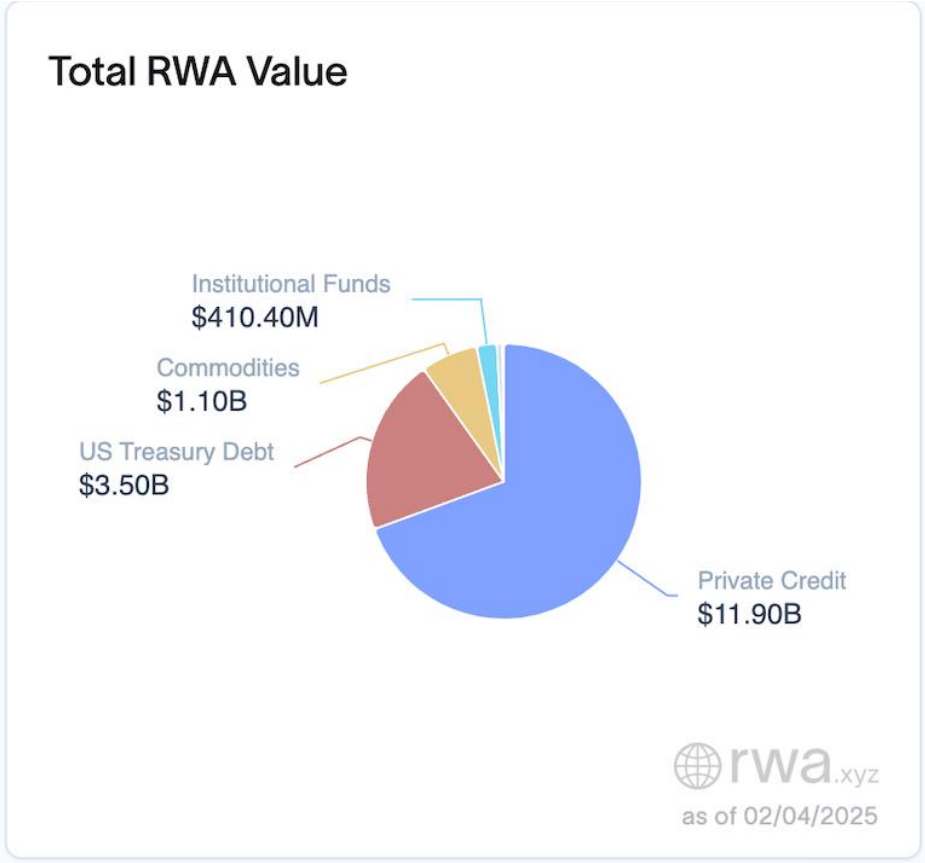
Daily amount of periodic payments daily



Optimal Regulatory Response

- Stablecoins disintermediate banks
- Not obvious that a central planner wants the same institution to process payments and to make loans.
- Because of network effects, competition in payments is difficult.
- Stablecoins are a plausible substitute for card networks --> encourage competition?
- But potentially distorts real lending if they are backed by treasuries

Tokenized Real World Assets



BUIDL

- BlackRock USD Institutional Liquidity Fund
- Largest tokenized treasury offering
- Qualified Investors
- Short term cash/cash equivalents
- BNY is custodian
- Stable $1 value + payments to the wallets
- On Ethereum Blockchain

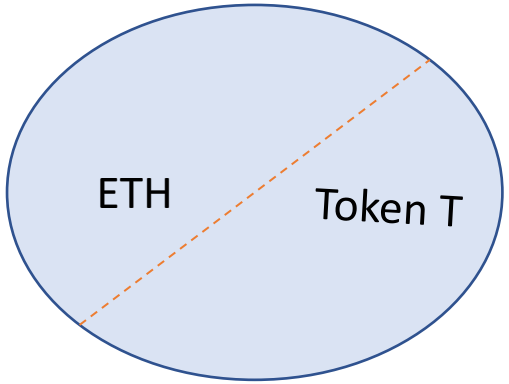
Developments:

- Ustb
- Collateral

Decentralized Exchange (DEX)

- Comprises multiple bilateral swap pools

- Liquidity Supplier adds ETH, T
- Proportion given by pool
- Receives a liquidity token



Liquidity Demander exchanges ETH for T
Price impact is **deterministic**

Automated Market Makers (DEXs)

- New model of liquidity provision
- Provides automated delivery against payment for any asset pairs
- Possible because of digitization.

    1. Liquidity demand and supply are separated.
    2. Price discovery separate from liquidity provision

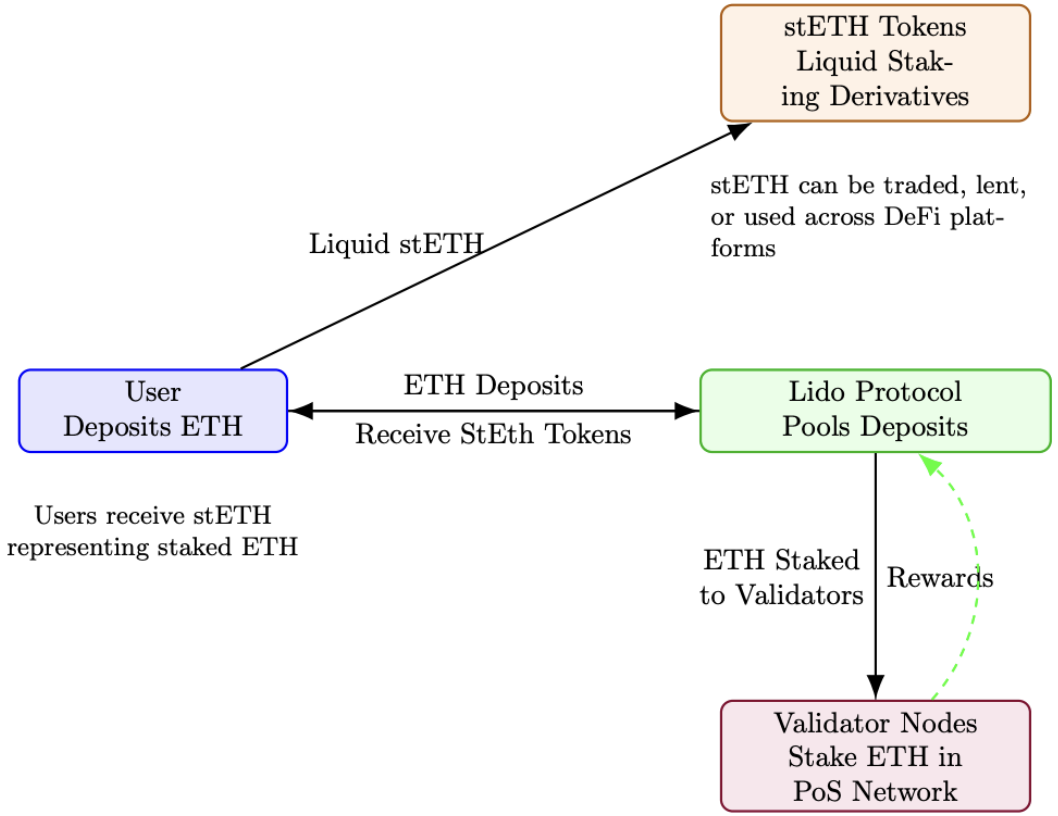
- Different macro prudential regulation?

Uniswap Evolution

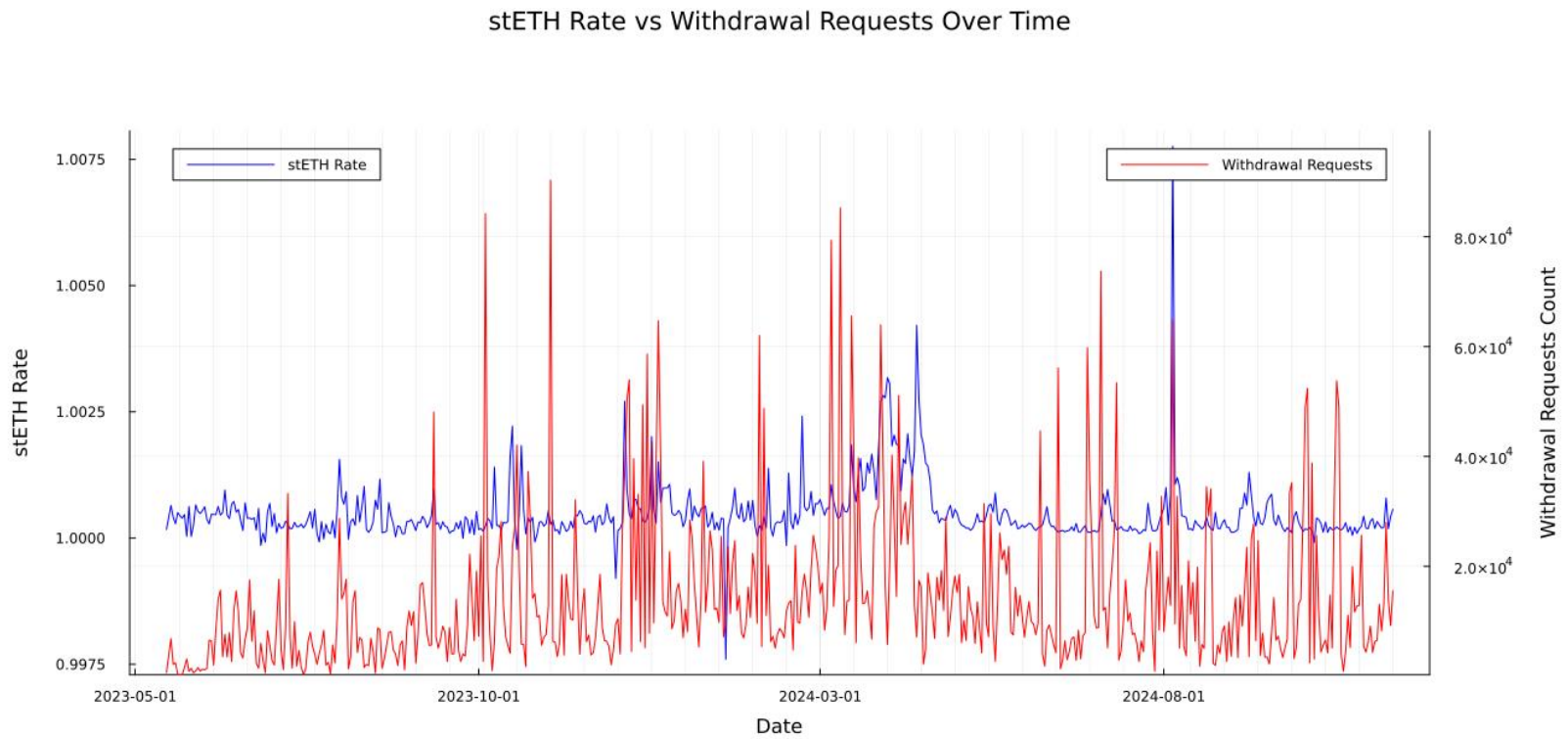
- Uniswap V3 “concentrated liquidity”

- Uniswap V4 “hooks” trade programming language
  - Only trade with KYC wallets
  - Only trade with a certain subset of wallets
  - Trade multiple asset pairs at the same time.

Liquid Staking



Based on work with
Lehar and Yuan



Liquid Staking and Digital Deposits

- Use a global games framework to investigate effect of a liquid market on runs.
- Find liquid market can exacerbate runs.
  - Liquid Market allows agents to convert their deposits for cash.
  - Liquid Market provides an informative signal that can increase run risk.
- Digitized deposits can be traded/exchanged useful to understand the tradeoffs.

Summary

- Automating finance offers opportunities for efficiency
  - Competition against natural monopolies/network effects
- Requires careful regulatory scrutiny.
  - Business models are different and way market power is expressed is different.
- Pervasive rehypothecation in the system suggests high potential for systemic events.

Appendix

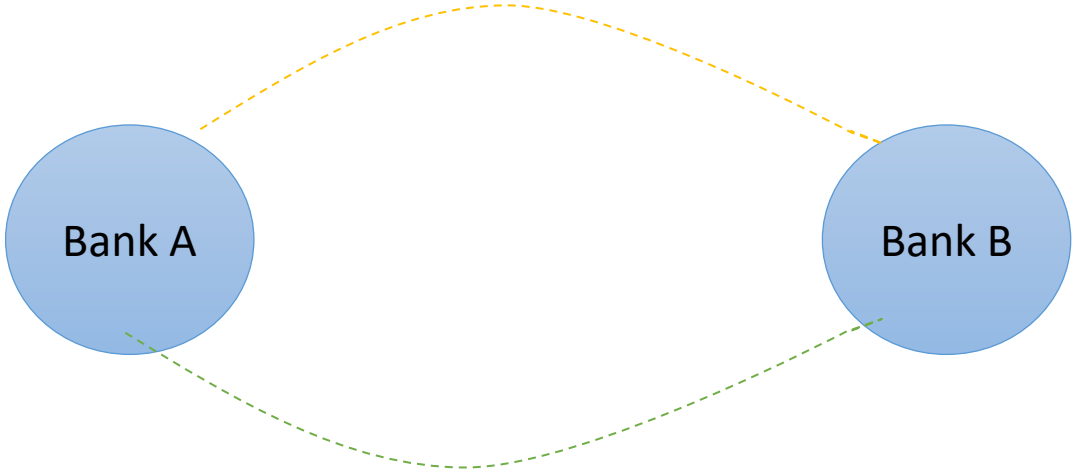
1. Effect on Banks of Changes in Payments
2. Market Power
3. DEX Price formation

Effect on banks: Changes in Deposits

Parlour, Rajan, Walden

Banks Demand for liquid assets

- Ex ante, banks trade deposits in anticipation of predictable liquidity demands. Use of an alternate Payment rail affect liquidity demand
  - Cost=interbank rate



Information in deposit accounts

- Informative about credit quality
  - Less information accessible

Banks Lending decision: Maturity Transformation

- Banks invest in less risky asset
- Create less inside money

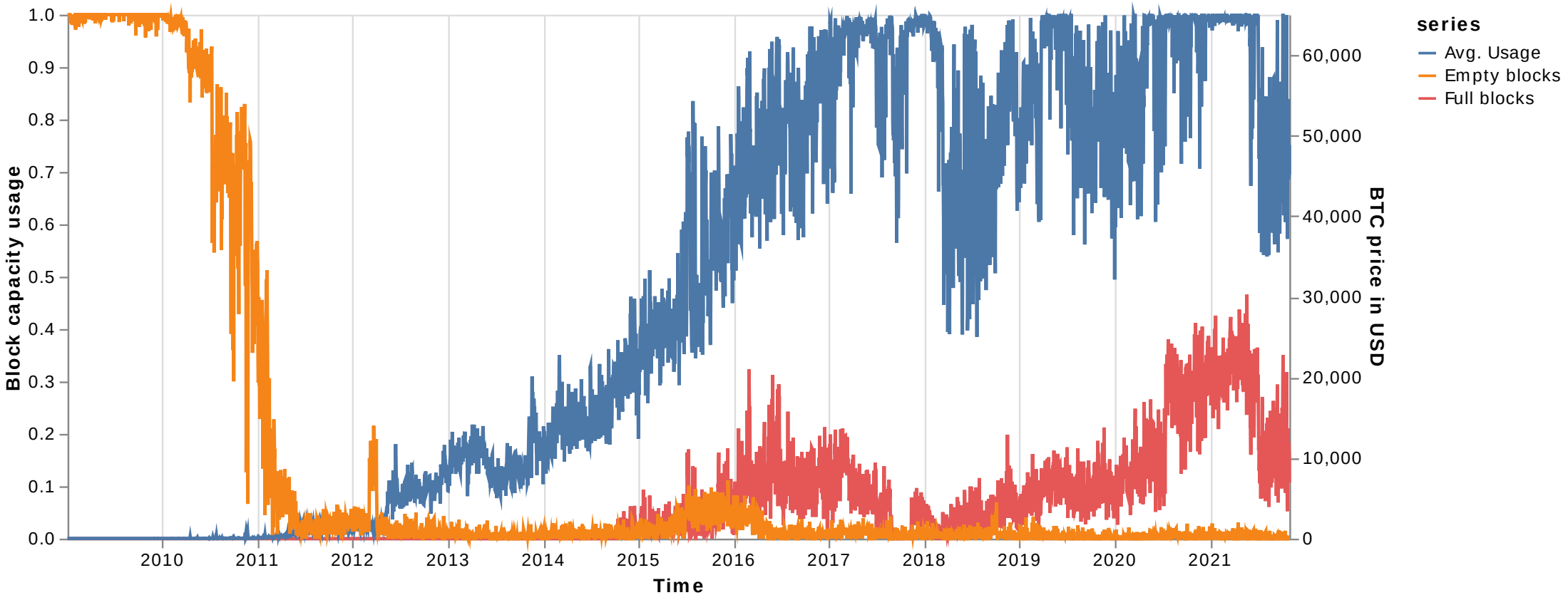
Market Power

- Observed concentration in most aspects of DeFi
  - Crypto holdings and protocol operation
  - Ethereum only two large block builders

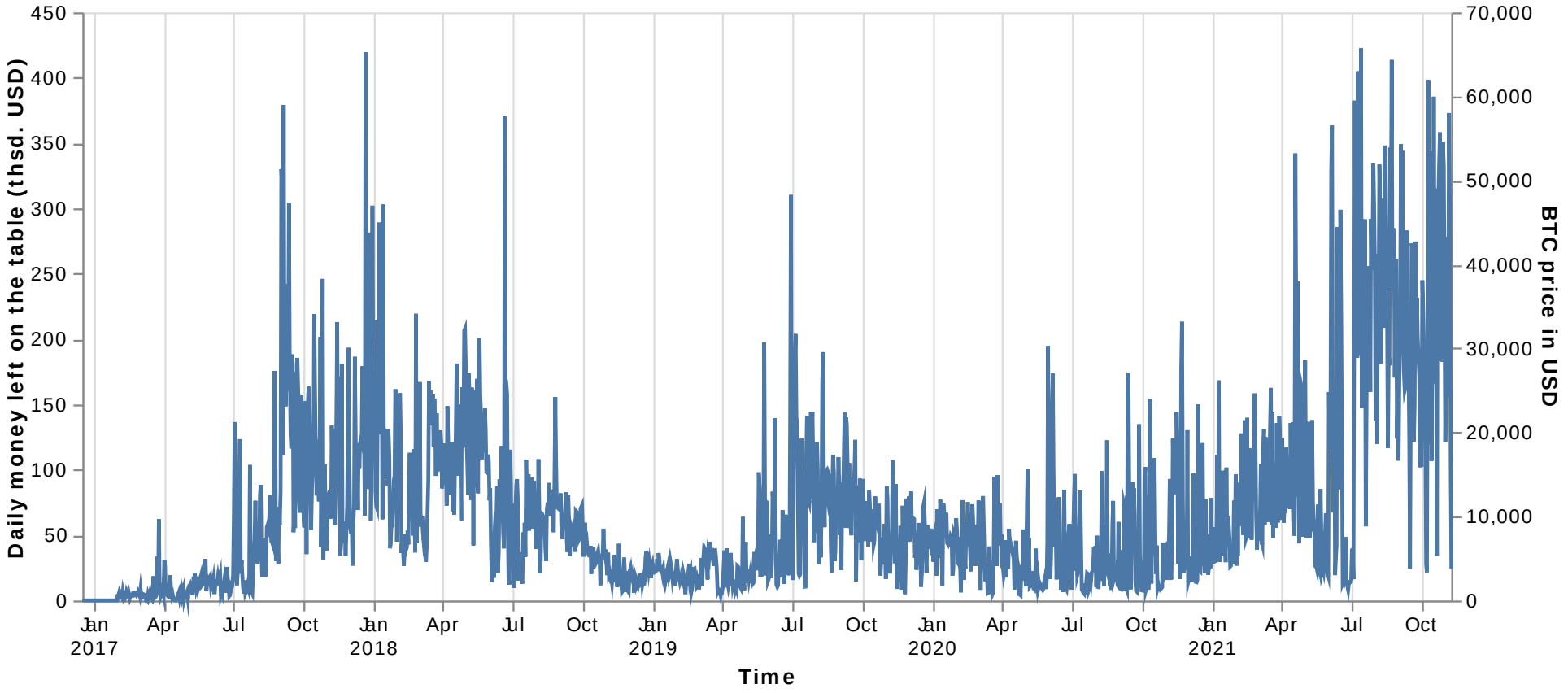
- Free entry, but expertise is required.
- Design of the systems do not completely take market forces into account.

Bitcoin Blocks are consistently mined empty

Based on work with Lehar



Spare Capacity is economically meaningful



Observation

- Bitcoin system is not designed in a way that provides lowest cost transactions for users.
- Validation by hashing means that there is no price mechanism that ensures low cost transactions for users.
- Validation by hashing gives miners to behave as if they were jointly profit maximizing.

- Economic cost of this has been large for consumers
- Over 300 million USD a year

Decentralized Exchange (DEX)

- Curve is a design feature
- Price efficiency maintained by arbitrageurs.
- Integrated clearing and settlement