

# Data, Digitalization, Decentralized Finance and Central Bank Digital Currencies

18. Jan. 2022



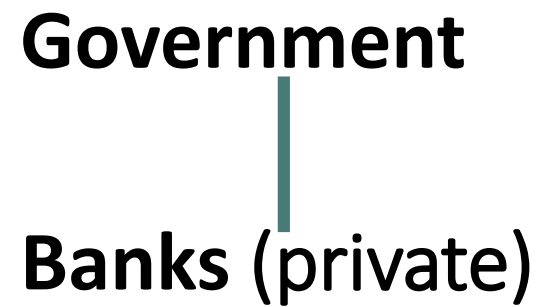
10<sup>th</sup> conference



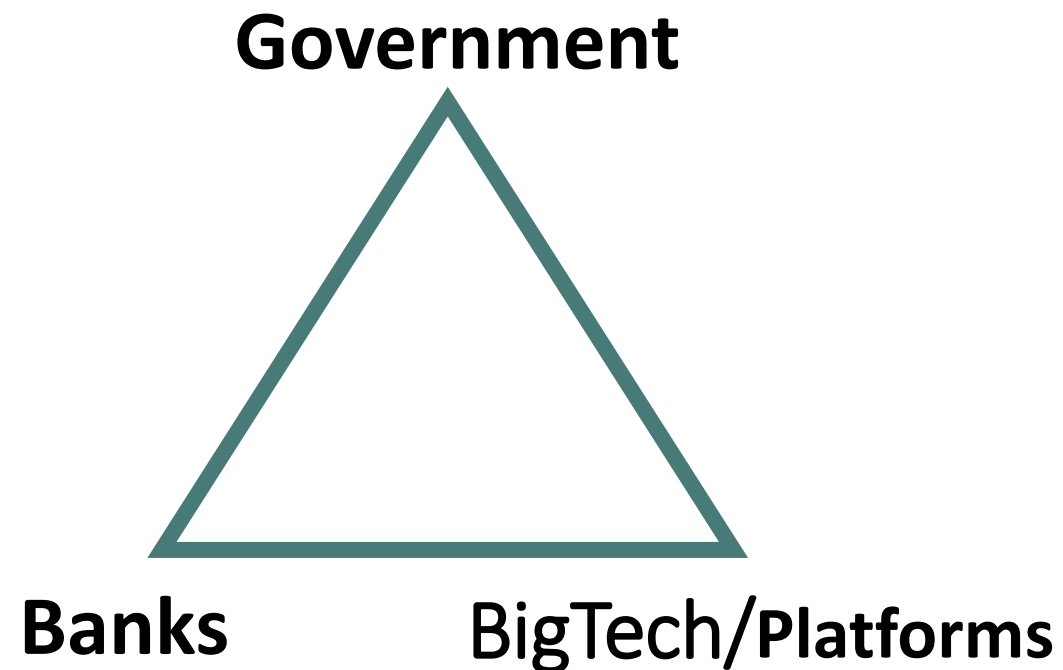
Markus Brunnermeier  
Princeton University

# Digitalization: Money and Finance

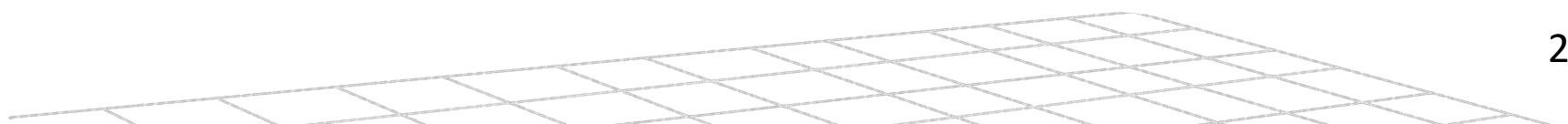
- Current 2 tier system: *multiple issuers, but one money*



- Future 3-way:



- International Competition



# Tech Trends that Impacts Money

- Smart phone

M-Pesa

- DLT (Blockchains)

Bitcoin

- Token (vs account-based)

- Smart contracts and programable money

- Internet of things:  
payments from machine to machine

- Micropayments

- Digital platforms/ecosystems

Alipay, WeChatPay

- Big data, AI, deep learning



inverse selection



# “Big is better” AI, Machine/Deep Learning

## ■ Economies of Scope

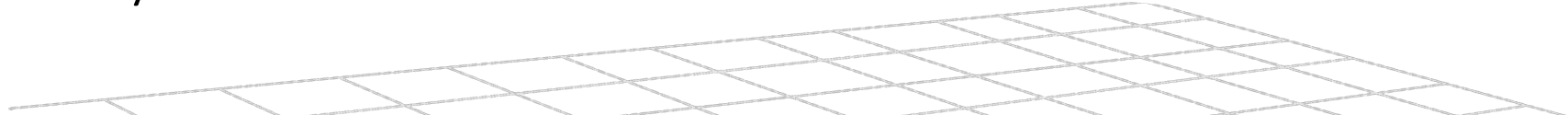
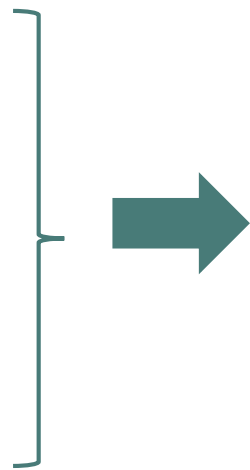
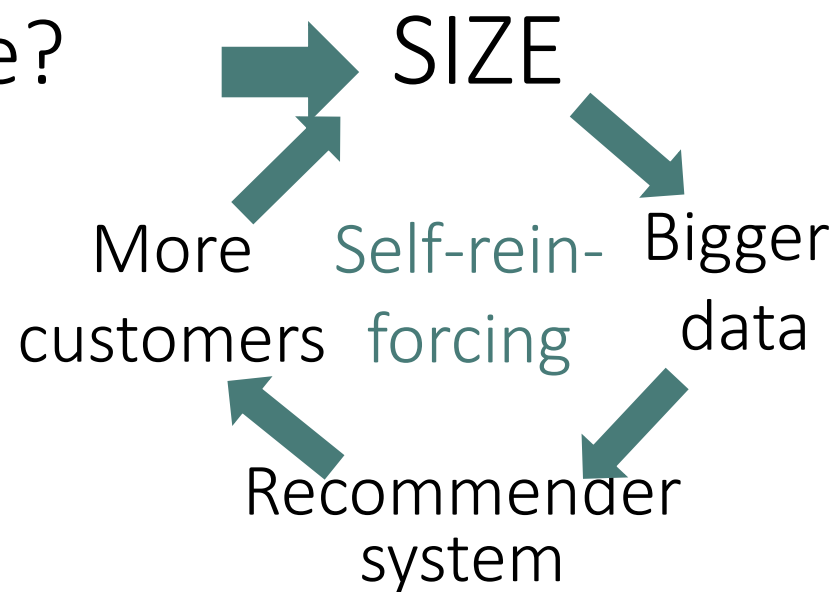
“statistical information”

- Unstructured data, textual data
- Social media data
- Payment system data
- Diversity

## Scale

- Increasing returns to scale?

PLATFORMS  
(transforms IO of finance)



# Inversion of “Information Advantage”

- Information advantage for customer

- Borrower
- Insurance client, ...

soon, seller

- Lender
- Insurance company
- Asset manager, ...

*“will know more about me than me”*

*“Inverse Selection”*



# Inversion of “Information Advantage”

## ■ Information advantage

for customer

- Borrower
- Insurance client, ...

soon, seller

- Lender
- Insurance company
- Asset manager, ...

## ■ Results:

1. Intricate price discrimination using algorithms

- Asymmetric information
- Size/dominance

 Big data

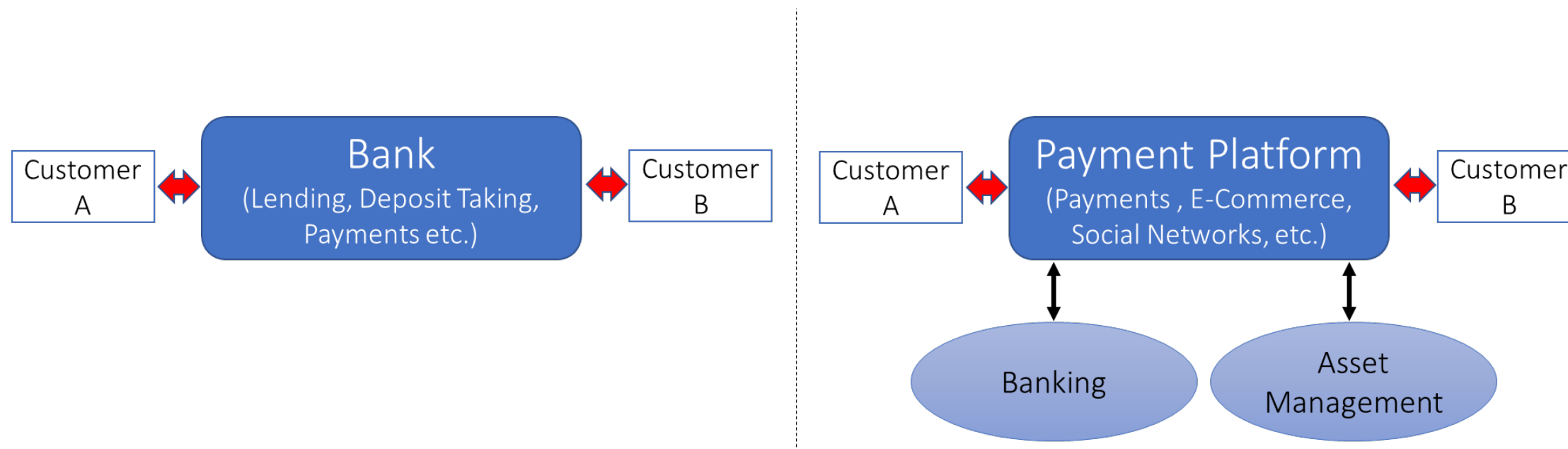
2. Averaged investor info disadvantaged to large asset managers

- Concentration in asset management
- AI/algorithms to read data, devise strategy
- Undermines efficient markets hypothesis



# The Rise of Platforms & FinTech

- Aggregation of diverse activities in closed ecosystem
- Capture of diverse data
- Transforms structure of financial intermediation



- Fundamental challenge for banks' business model
  - Bundling with other activities (on platforms)
  - Unbundling of activities (cream skimming by FinTech)

# Crypto currency vs. assets

- Alipay, WeChatPay
- Blockchain DLT technology - Crypto currency
- Smart contract
  
- Stable coins
- Libra/Diem by Facebook/Meta
- Central Bank Digital Currency (CBDC)





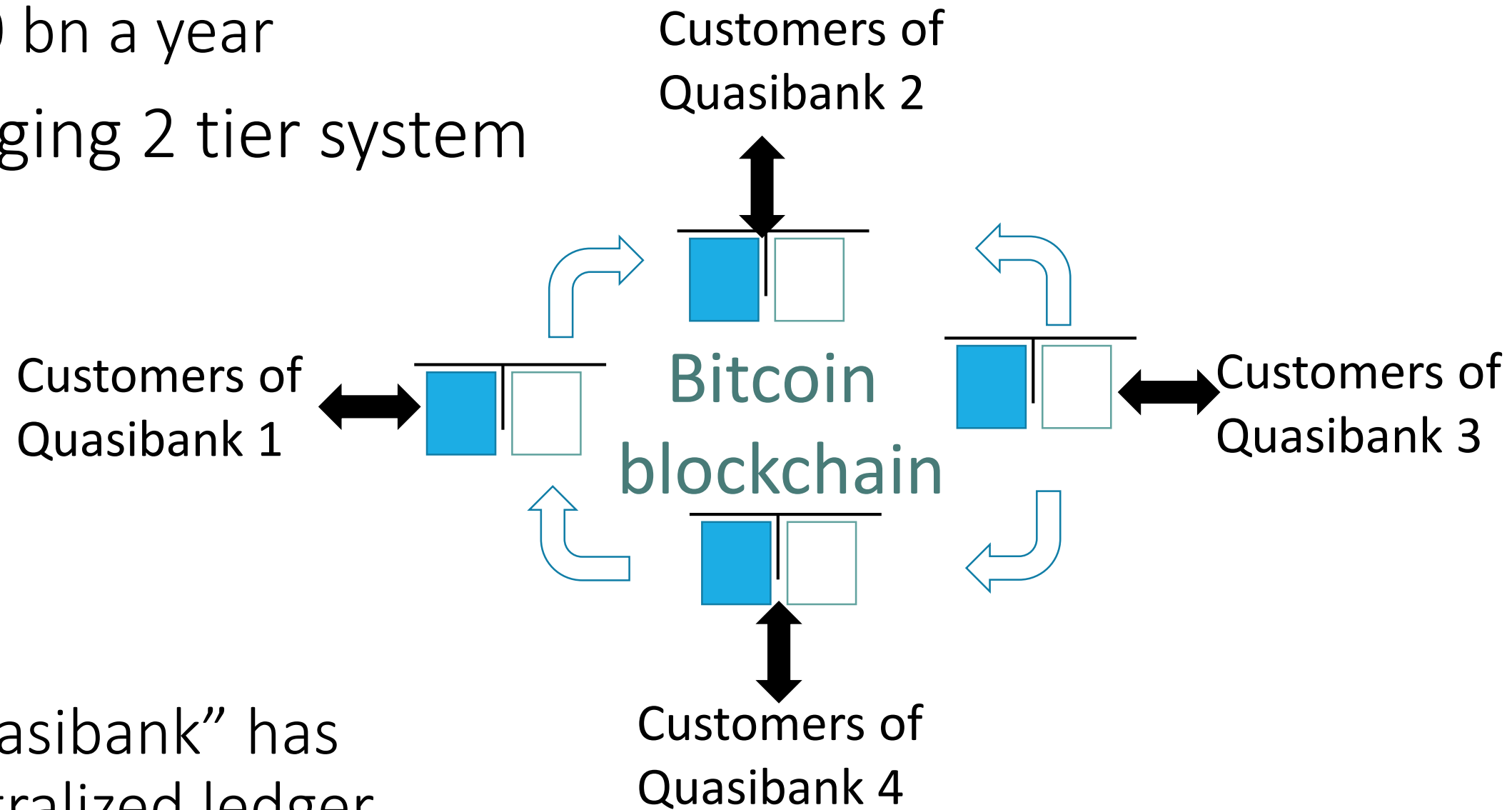
# Crypto currency vs. assets

- Where does the value come from?
- **Medium of exchange**                      **currency**
  - Cross-border transactions, Remittances
  - Illegal transactions
  - “smart contract” – programmable money (Ether)
  - Privacy protection
- **Store of value**                              **asset**
  - Inflation hedge
  - Alternative to gold

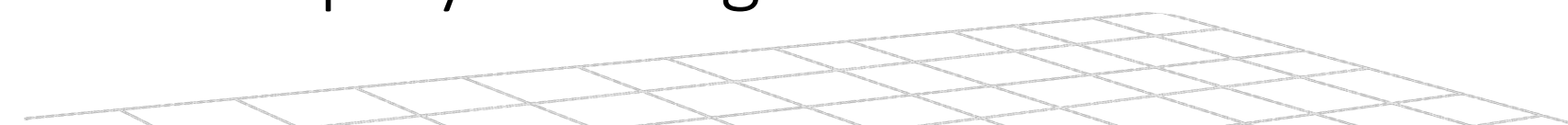


# Medium of Exchange: Emerging 2 Tier System

- >100 million credit card transactions in U.S. per day  
www.cardrates.com
  - ≈40 bn a year
- Emerging 2 tier system



- “Quasibank” has centralized ledger
- New capital regulation for banks: 100% equity backing



# Why CBDC?

- Why Central Bank Digital Currency (CBDC)?
  - After cash:
    - grant citizens access to public money
  - Preserve monetary sovereignty
    - Avoid “digital dollarization” ...
    - Esp. for emerging economies
  - Get around ZLB + cybersecurity
- Timing and Transition and financial stability

# Monetary Sovereignty

- **Monetary policy** to manage business cycle  
Should Facebook's MoPo manage the macroeconomy?
  - **Unit of account** role of money
- **Seigniorage** rents from money creation
  - **Store of value** role of money
  - Financial repression
- **Power to bail out** and to provide liquidity **LOLR**
  - Connected to taxing power, fiscal space, governance
- **Power to exclude** from monetary system

# “Digital Dollarization” – “Digital Colonialization?”

- Loss of “unit of account” role of money
  - Via medium of exchange (invoicing)  
vs. store of value (reserves)
  - Sudden and highly non-linear (Chang&Velasco 2006)
- Vulnerable countries: small, socially open
  - Small, open economy, large informal sector
  - Inefficient electronic payment system
- Defense:
  - CBDC
  - Private “stable coins” via 100% narrow bank (whole sale CBDC)
  - LOLR and taxing power + taxes in local currency
- Offense:

# Regulation 1

- **Purpose** of regulation:
  - Investor protection
  - Systemic risk reduction
  - Enhance international role of US dollar – preserve “monetary sovereignty”
    - unit of account in US dollar – uniformity of money
    - seigniorages for US Treasury
  - Interoperability across platforms
- **Points** of regulation: What to regulate?
  - Entry and exit points to dollar (exchanges)
    - Isolated separate unregulated universe (disconnected from rest of financial system)
      - Aim: avoid systemic relevance
      - Tax entry and exit (e.g. capital gains tax)
  - Asset holdings
    - Audit of asset holdings
    - Requirement to hold certain assets
  - Technological standards



# Conclusion

- The Rise of Platforms, token issuers, AI, Deep Learning
  - Inverse Selection
  - Banks?
- Crypto Space: Currency or assets?
  - Digital gold?
- Regulatory uncertainty
- Monetary Sovereignty
  - Digital Dollarization

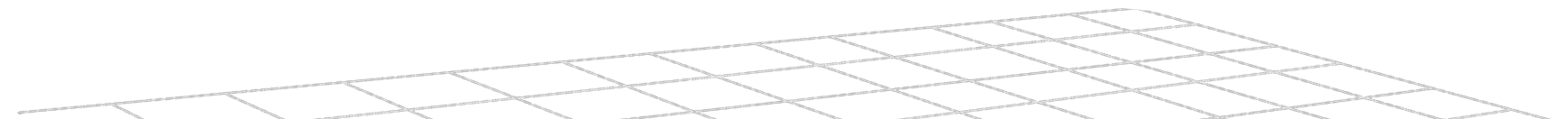
CBDC

Digital Currency Areas



# References

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# Regulation 2

- Unintended consequences/implications
  - Implicitly extends some “bailout guarantee”/lender of last resort guarantee (similarly to MMF’s breaking the buck rule, which is used as a marketing tool.)
  - Whac-a-mole feature of “money creation regulation”
- US Dollar as international global currency
  - Block stablecoins w.r.t. US dollar – other currencies gain in prominence
  - Not regulated undermines role of US dollar in crisis times
- When to regulate?
  - Too early: stifle innovation in US (innovation shifts to other countries)
  - Too late: systemic risks builds up, ICO issuers gain seigniorage and other rents, political pressure to modify system (MMF).

