



The Digitalization of Money

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Rethinking Money in the Digital Age

- Ubiquitous digital money, M-Pesa, Alipay, Libra
 - So far: digital inside money (liability of issuer)
 - Now: digital outside money/ “currencies”

- Questions:

- Will private digital money drive out cash?
- Will central banks lose their grip on monetary policy?
- Digital Dollarization
- Digital Currency Areas
- Will CBDC be the answer?



Technological trends

- Digital platforms/ecosystems - “digital lifestyle”
 - data advantage
- Smart phone
- Speedier world: payments have to occur in real time
 - no 2 days delay and netting
 - “Fast crisis” (no weekend)
- Internet of things: payments from machine to machine
- Smart contracts and value chains:
 - contingent payments to minimize credit risk
- Token (instead of account-based) - DLT



impacts money

|| Currency Competition

Hayek (1976)

■ Unbundling the 3 roles of money

1. Unit of account
2. Store of value
3. Medium of exchange

• Convertibility, Gresham's law

- gold = store of value
- silver = medium of exchange,

• Declining Switching costs \Rightarrow declining Network externality

- Language analogy (speech translation software)

Historical example

■ Re-bundling with platform/ecosystem

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■ Re-bundling with platform/ecosystem

- Discounts on digital eco-system
- Smart contracts
- "Money product differentiation" (e.g. "privacy currency")

Closed ecosystem (incl. payment instruments)

 Digital Currency Area

International Monetary System

■ Digital Currency Areas

- Def.: own unit of account or payment instrument only inside
- Complementarity with digital platform (not geographic)
 - Price discounts, price discovery, transparency within

■ Digital Dollarization

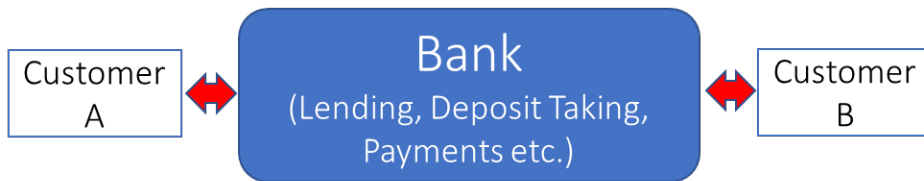
- Vulnerable countries: small, socially open,
- Sudden loss of “unit of account” (highly non-linear) (Chang&Velasco 2006)
- Via medium of exchange (invoicing) vs. store of value (reserves)

■ Digital Synthetic World Currency

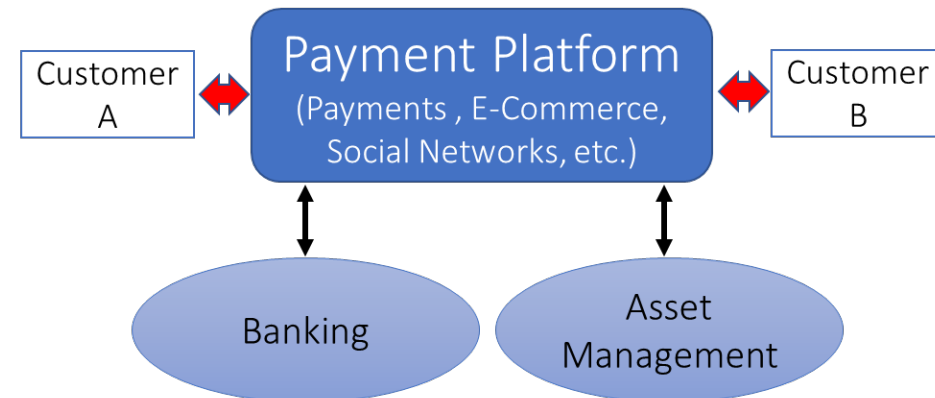
- Symmetric supply of a safe asset
(to avoid that flight to safety capital flows become cross border) (Brunnermeier & Huang)

|| Inversion of IO of financial activities

- Who controls the data?
- Bank-centric



Payment-centric



Public vs. private money (competition)

- Loss of “monetary sovereignty”
 - Is Facebook’s MoPo managing macroeconomy?
- History:
 - Single “national money” is recent phenomenon
- Store of value focus: tax backing
 - Iraqi dinar, Somali shilling
- Medium of exchange focus
- KEY: unit of account
 - New Keynesian: stickiness in private/public money (invoicing)
 - FinFrictions: Denomination of nominal debt (intratemporal numeraire)
 - MoPo impacts risk sharing

CBDC to maintain monetary sovereignty

- (Public) Cash is poor substitute for private digital money
⇒ calls for CBDC
 - Back “stable coins” with 100% CBDC
 - Retail CBDC
- How to design CBDC in a “neutral” manner?
 - “On the Equivalence between Private and Public Money”
(Brunnermeier and Niepelt, 2019)

... to sum up

- Digital platforms/eco-system, smartphone, tokens
- Unbundling enhances currency competition
- Re-bundling reduces
 - Interoperability, convertibility, limit product differentiation
- Inversion of IO of financial activity
 - Access to data: Banks vs. BigTech
 - Regulation: lobby by banks
- Digital Dollarization
- Digital Currency Areas
- “Monetary Sovereignty” to manage macroeconomy
Private vs. Public Money – important role of CBDC/LOLR

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Private vs. Public Money – important role of **CBDC/LOLR**

Is Bitcoin/Libra is like Napster
for the music industry?