Discussion:
Digital Currencies and Bank Competition by Marianne Verdier

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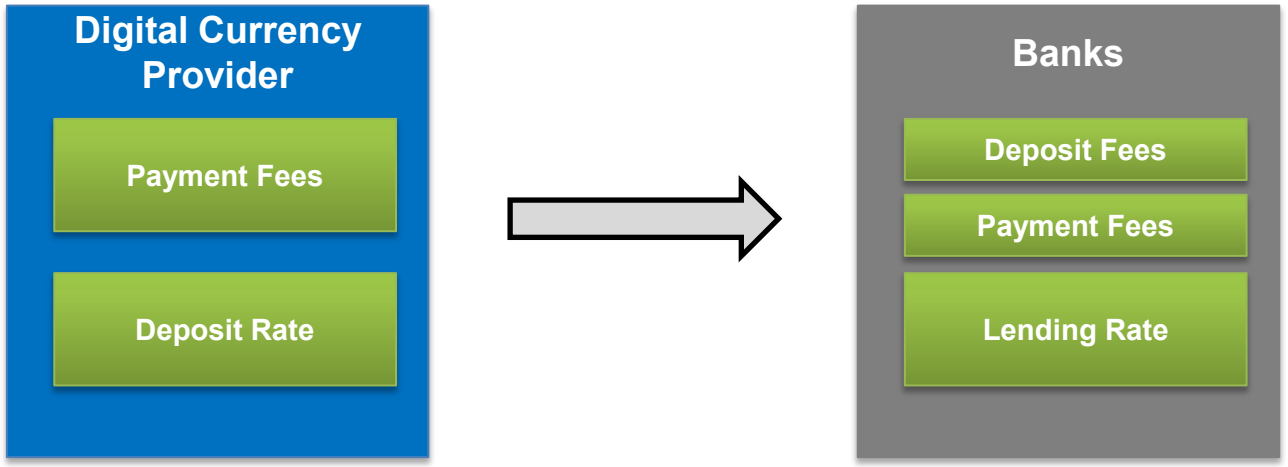
1. Summary

Objective

- To develop a model that shows how the issuance of a digital currency by a non-bank operator impacts competition between banks.

- How does competition among banks and a digital currency provider impact the pricing of retail financial services?

Partial Equilibrium IO Model of Competition



The Model in a Nutshell

Model

Market

- n banks (no limits to accessing liquidity)
- 1 DCP
- Consumers (depositors)
- Entrepreneurs (borrowers with no credit risk)

Banks

- **Compete for deposits and issue loans**
- **Maturity transformation** (short term deposits used to finance illiquid loans)
- Excessive payments from bank accounts → drain deposits → drain reserves → increase liquidity costs
- **Cross-subsidies: Liquidity costs passed to consumers** (payment fees, deposit fees and lending rates)

Consumer

- **Settlement choices:**
  1. Cash
  2. Transfer of bank deposit
  3. Transfer of digital currency
- **Choice depends on:**
  1. Bank transfer fees
  2. Foregone deposit interest
  3. Value of transaction being settled
- Little discussion on privacy considerations

Digital Currency Provider (DCP)

- A "narrow bank" that competes with banks for payments and deposits but does not issue loans
- No maturity transformation (holds all deposits as reserves)
- Payments do not lead to additional liquidity costs
- **DCP design choices:**
  - Transfer fees
  - Deposits interest bearing or not
  - Distribution mode
- Other variables (e.g., selling data)

Regulatory Framework

- DCP is private operator with regulated transaction fee and can keep customer deposits in CB reserves
- CB only regulates the transaction fee
- DC relies on the same unit of account as cash and bank deposits
- Model does not assess whether or not
  - CBs should issue a DC
  - It is optimal to use a different unit of account for DC (e.g., tokens) → Therefore, limited competition for store of value

Output

Market share of the DCP in Equilibrium

- **Design** (deposit rate, transaction fee, mode of distribution)
- **Market Conditions** (number of banks and cost of liquidity)

Impact of digital currency on

- Use of bank deposits for payments
- Lending rates

Impact of DC distribution arrangements

Conditions under which consumers use digital currencies to pay

2. Comments

Comment 1: Presentation

- **The paper would be easier to understand with a simplified base model**
  - For example:
    - 2 banks
    - 2 depositors (one per bank)
    - 1 DCP
    - 1 borrower
  - **This model could also be used to explore important features, such as**
    - **Credit risk** (from the borrower, from the bank or **from the DCP**)
    - **Changes in unit of account** (and **competition for store of value**)

- **Relationship between means of payment and value**
  - The discussion on why different means of payments are used to settle transactions of different values needs improvement (particularly, DC vs. bank transfers)

- **Consistent wording**
  - Consumers, borrowers, lenders, depositors, etc.

Comment 2: Implicit Assumptions

- **The paper provides important insights about the market in equilibrium:**
  - After introducing a DC, **consumers may pay more from their bank accounts because competition might drive down bank transfer fees**
  - Increase in use of bank payments → increases banks' liquidity cost → **increase in lending rate**

- **However, this mechanism is only possible because banks can cross-subsidize their lines of business**
  - This is embedded in the assumption that costs are non-separable (liquidity costs, lending rates and transfer fees are all fungible)
  - Highlight the importance of cross-subsidies when discussing the regulatory framework

- **Other implicit assumptions:**
  - Cash, DC and bank deposit transfers are all perfect substitutes, but **do all merchants accept these payments?** (The extension does not model the benefits of accepting each type of payment).
  - Banks only engage in maturity transformation and do not have trading, securitization, asset management or other operations which could help mitigate liquidity risks and cross-subsidize lower transfer fees.
  - Separation of borrowers and lenders also constrain cross-subsidies from offering multiple services to the same customer. It also breaks the banking model (i.e., creating money from lending, through simultaneous creation of assets and liabilities).
  - Consumer choices constrained (e.g., by how much is deposited in bank accounts: ½ or more of their wealth)
  - Cross-holdings not allowed:
    - Banks cannot hold DC (for investment or trading purposes, although they could be DCPs in the extended model)
    - In the extension, DCP can deposit customer funds in a bank, but once again credit risk is ignored

Comment 3: Suggested Extensions

- **The paper provides valuable insights regarding the regulatory framework**
  - Key determinant of the adoption of DC
  - Who is allowed to distribute DC? (e.g., banks, central banks, narrow banks)
  - Should DCPs hold reserves in the central bank?
  - What unit of account should be used for DC? (e.g., tokens)
  - Should the DC bear interest?
  - Should DC transaction fees be regulated?

- **However, most of these questions are not addressed in the current version of the paper**
  - What happens if DCPs can issue loans?
  - Should DCPs hold reserves in the central bank?
    - For international transfers, which CB?
  - What happens if DCPs do not have access to CB accounts?
    - Should they use a corresponding relationship with banks?
    - Impact on choice of unit of account (not included in the extension)
    - Opens a new channel of competition for unit of account and for store of value (in addition to the unit of exchange)
  - What happens if the CB is the DCP?
    - If the CB decides to not charge transfer fees, then how would commercial banks operate?
    - Would they exit the retail payments business? (and lead to a smaller banking sector)
    - What would happen to the lending rate? (liquidity costs might decrease, but there might be less competition in lending markets)

Other Comments

- **Transportation cost**
  - Based on Salop (1979)
  - Is there another interpretation?
  - In most G20 countries, banks offer online banking services

- **Cost of opening an account**
  - It seems like these would be pretty similar between banks and DC
  - How would one transfer cash to a DC?
    - Either one transfers from a bank account (so the bank account fee is also a DC fee)
    - Or one physically delivers the cash to the DCP (so there is a transportation cost)
  - The model restricts the second option, but why? (e.g., see Walmart (WMT) Offering Bitcoin (BTC) at Some Coinstar Kiosks – Bloomberg)

- **A contradiction**
  - The paper assumes a cashless economy (pg. 1).
  - However, it also assumes that "if there is no digital currency, all consumers deposit some money in a bank account and keep a fraction of their wealth in cash" (pg. 2).

- **Useful references**
  - Morales-Resendiz, Vega, Aurazo and Rodriguez (2021), Retail Payments and Financial Inclusion in Latin America and the Caribbean: Identifying Gaps and Opportunities, Journal of Financial Market Infrastructures, 9(2), 1-37.
  - Espinosa-Vega and Russell (2020), Interconnectedness, systemic crises and recessions, Latin American Journal of Central Banking, 1, 1-4.

Overall Impression

- **Very nice paper!**

- The explanation could be improved a little (e.g., by using a simplified model) and some additional questions could be answered, but overall, the paper is well written and provides interesting and useful insights.

Thank you!