Monetary Policy Pass-Through with Central Bank Digital Currency[1]

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[1] The views expressed in this paper are those of the authors and not necessarily the views of the Bank of Canada.

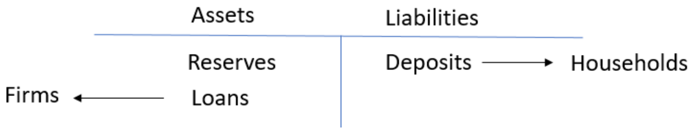
Research question

- Many central banks are contemplating issuing a central bank digital currency (CBDC) as a retail payment intrument
- How does CBDC rate affect pass-through of traditional policy rates, and vice versa?

Model

- Build on Chiu et al. (2019)

- Banks provide financial intermediation and payment services, issuing deposits to hhds and loans to firms s.t. reserve requirement



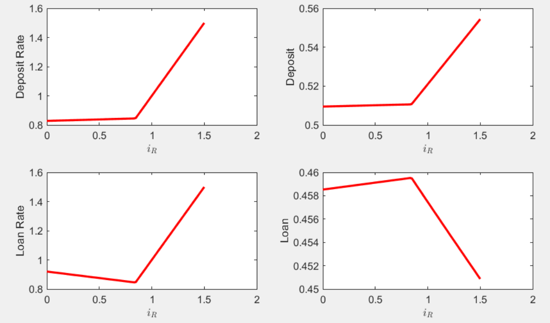
- CBDC as prefect substitute for deposits as means of payment

- How does CBDC affect pass through of interest rate on reserves (IOR)

Roadmap

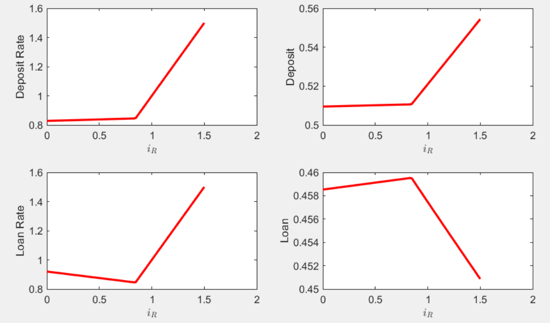
- Illustrate two mechanisms how IOR affects deposit and loan markets with competitive banking without CBDC
- Effect of CBDC on IOR pass through with competitive banking
- Effect of CBDC on IOR pass through with Cournot deposit market (competitive loan market)
- Summary

IOR pass through with competitive banking without CBDC



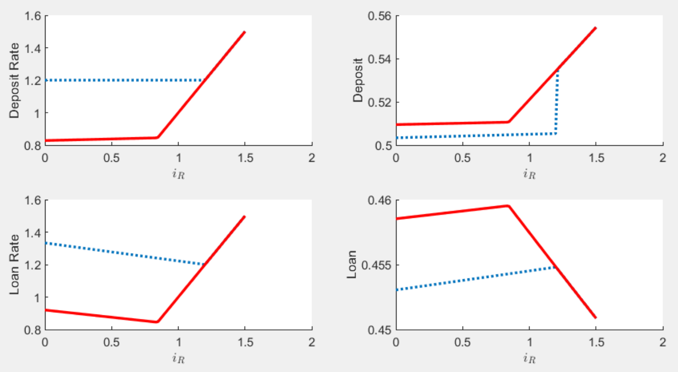
- Complementarity mechanism (when IOR is small)
  - RR binds: IOR $<$ deposit rate $<$ loan rate
  - Reserves & loans are **complements**: higher IOR lowers cost of loans
  - Bank expand business (deposits and loans increase)
  - Pass lower cost to both depositors as higher deposit rate, and firms as lower loan rate

IOR pass through with competitive banking without CBDC



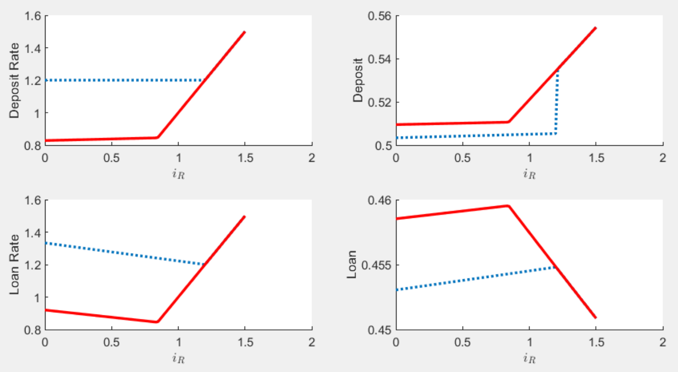
- Substitution mechanism (when IOR is large)
  - RR is loose: IOR = deposit rate = loan rate
  - Reserves and loans are **substitutes**: higher IOR increases the opportunity cost of loans; loans decrease (reserves increase)
  - Pass higher return to depositors as higher deposit rate, attracting more deposits

II: Introducing CBDC (dashed line)



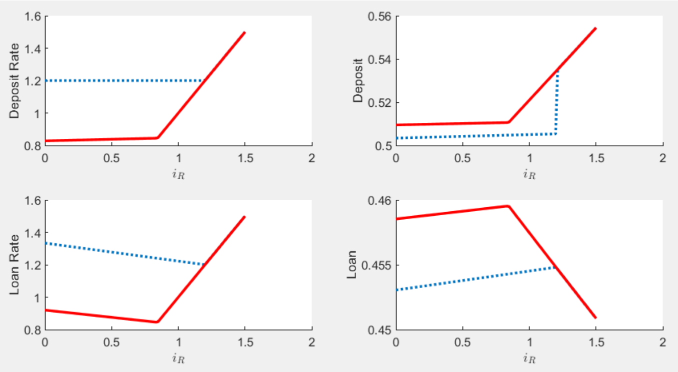
- CBDC rate is an effective floor when IOR is low
- When CBDC is effective, it forces up deposit and loan rates, crowds out intermediation, and tightens RR

II: IOR pass through with CBDC–Low IOR



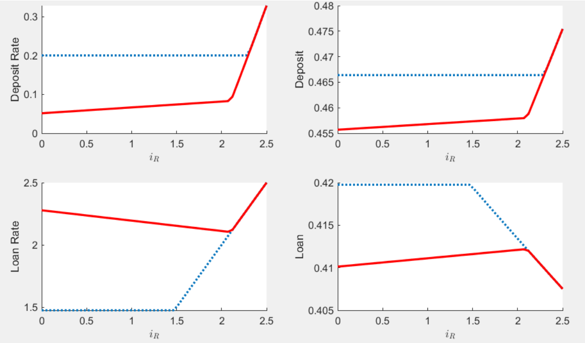
- RR continues to bind with CBDC, complementarity mechanism continues to work, banks issue more loans and deposits; stronger downward pass-through to loan rate because deposit rate is fixed at CBDC rate

IOR pass through with CBDC–intermediate IOR



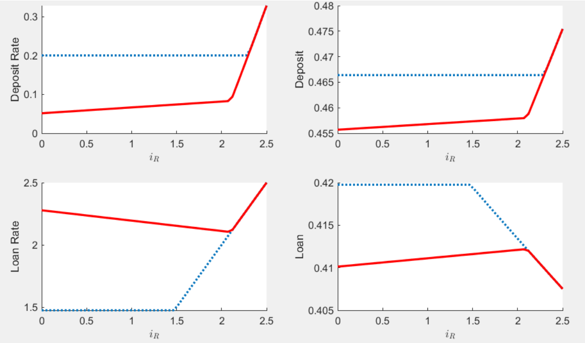
- CBDC changes RR from loose to binding and reverses sign of pass-through to loan market
- At IOR=CBDC rate, banks take over liquidity previously held in the form CBDC and use excess reserves to fund the increase in deposits

Cournot deposit market



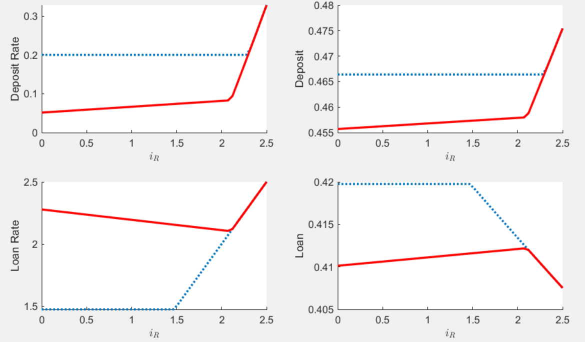
- Similar to the competitive case: two mechanisms, CBDC while effective dictates deposit rate
- Different from competitive case: with an intermediate rate, CBDC expands intermediation, reduces loan rate, and relaxes RR

Pass through Cournot deposit market–low IOR



- RR continues to bind with CBDC
- As IOR increases, CBDC fully dictates the economy and complementarity channel is muted: banks do not pass benefit to deposit and loan rates and simply earn higher profits (CBDC already forces them offer a high deposit rate and low loan rate)

Pass through Cournot deposit market–intermediate IOR



- CBDC changes RR from binding to loose (by suppressing loan rate), and reverses sign of IOR pass-through to loan market

Summary: how CBDC affects pass-through of IOR

While effective,

- Deposit market: CBDC blocks pass-through of IOR to deposit rate, and to quantity of deposit when banks have market power on the deposit market
- Loan market
  - Competitive: CBDC could strengthen pass-through to loans, or reverse sign of pass through by tightening RR
  - Cournot deposit market: CBDC could mute pass-through to loans, or reverse sign of pass through by relaxing RR
- Central banks should be mindful about the effect of CBDC on traditional monetary policy instruments, and coordinate CBDC and traditional policies