# Discussion of "On Interest-Rate Baring CBDC with Heterogeneous Banks" by Rodney Garratt & Haoxiang Zhu

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# Summary

- Central bank fixes abundant reserves, reserve rate $f$
- Large and small bank (risk neutral banker agents)
  - initially, hold only reserves and issue deposits – no equity
  - large bank has exogenous share $m_L > \frac{1}{2}$ of reserves $=$ deposits
- Banks have market power in loan market
  - mass 1 of entrepreneurs: have technology, need to hire workers
  - assigned to bank, can borrow fixed loan size \$1
  - iid risky projects, quality of project $q_i \sim Q(q_i)$
  - project payoffs $= \begin{cases} A & \text{with probability } q_i \\ 0 & \text{with probability } 1 - q_i \end{cases}$
  - entrepreneur is bad at bargaining:
    pays \$1 to worker, pays loan rate $R_i = q_i A - 1$
  - banks choose how to split assets into reserves and loans,
    make loan if $q_i > q^*$ project quality cutoff
- Workers work today for \$1, want to save in deposits
  - choose between large and small bank

# Summary ctd.

- Banks differ in ATM network, branches etc
  - workers get convenience yield $\delta \sim G(\delta)$at large bank, no convenience yield at small bank
  - large bank pays lower deposit rate $r_L < r_S$ than small bank
  - workers with high enough $\delta > r_S - r_L$ prefer large bank
  - large bank gets deposit share $\alpha_L = 1 - G(r_S - r_L)$
- Sequential game between large and small bank
  - $t = 0$, Banks choose their deposit rates $r_L, r_S$
  - $t = 1$, Banks make loans with quality cutoffs $q_L^*$, $q_S^*$
  - $t = 2$, Workers choose where to deposit
- In equilibrium, large bank has
  - lower deposit rate $r_L$, attracts higher deposit share
    $\alpha_L = 1 - G(r_S - r_L)$
    makes more loans so lower quality cutoff $q_L^*$

# Alternative designs for CBDC

- Very nice feature of the paper: affects bank differently!
- CBDC administered by commercial banks
  - CBDC with large bank has convenience yield $\delta$
  - if CBDC pays low rate, nothing happens
  - if CBDC pays higher rate $s$, large bank has to match $r_L = s$
  - large bank gets even more deposits, grows market share
- CBDC comes with its own convenience yield $v$
  - $v$ between small bank and large bank, $\delta > v > 0$
  - deposit rates, market shares, lending standards converge
- Impact on overall lending is ambiguous

# What explains differences in deposit rates?

- Motivation for convenience yield $\delta \sim G(\delta)$ in the paper:
  - large banks have better ATM network, more branches
- Large bank has better technology, produces better product
- In equilibrium, large bank charges more for better product
- Can get differences $r_S - r_L$ in deposit rates without market power
- Good to discuss this in the paper, characterize efficient allocations, important for welfare conclusions

# Comments on relationship lending

- Banks start out with exogenous clientele of borrowers
- Special assumption: both banks have same $Q(q_i)$
  they are not fishing from the same pond
- In the model, when workers choose their bank ,
  they based their decision only on banks' deposit rates $r_S$, $r_L$
- If relationship lending was as exclusive as in the model,
  bank customers would also compare lending standards $q_S^*$, $q_L^*$

# Disintermediation or not?

- This paper: CBDC has ambiguous results for overall bank lending
- Often key for overall desirability of CBDC
  especially when banks are essential for lending like in this paper
  - Keister and Sanches (2020)
  - Chiu, Davoodalhosseini, Jiang, Zhu (2020)
  - Williamson (2021)