Discussion of:

CBDC and Financial Stability

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Summary

Q: How would a CBDC affect financial stability?

- clearly an important question; often raised in policy discussions
- answer is not at all obvious; many moving parts

- Set up a model where CBDC provides depositors with a better option …
  - during times of stress → changes cost of withdrawing — direct
  - in normal times → changes the equilibrium deposit contract — indirect
    - both channels strike me as relevant, first-order concerns

- Show: CBDC has competing effects on fragility
  - the direct effect *increases* fragility
  - the indirect effect *decreases* fragility (in the relevant region)
  - overall: under some conditions, effect on fragility is U-shaped
    - as CBDC is more attractive, fragility first decreases then increases

- These are interesting results with clear policy implications
  - paying interest on CBDC is good, but not too much
  - if CBDC interest rate needs to be high for some reason, holding limits can reduce the attractiveness of withdrawing

My discussion

1. Liquidity and the deposit contract (main)
2. What do depositors run into?
3. Idiosyncratic vs. systemic runs

1. Liquidity and the deposit contract

- If depositors have a better outside option (in normal times) …
  - how should we expect the deposit contract to change?
- Alternative model: Diamond-Dybvig preferences

$$\left\{ \begin{array}{c} u(c_1) \\ u(c_2) \end{array} \right\} \text{ if depositor is } \left\{ \begin{array}{cc} \text{impatient} & (\text{prob.} = \pi) \\ \text{patient} & (\text{prob.} = 1-\pi) \end{array} \right\}$$

- Monopolist bank offers the contract (r_1, r_2) that solves:

$$\max \; R(1-\pi r_1) - (1-\pi) r_2$$

$$\text{s.t.} \quad \pi u(r_1) + (1-\pi) u(r_2) \geq \omega^2$$

$$\text{FOC: } u'(r_1) = R u'(r_2)$$

- If depositors run, first π to arrive receive r_1 — sequential service
  - then the bank is placed in resolution
  - remaining impatient depositors receive $\hat{r}_1$ at $t = 1$
  - remaining patient depositors receive $\hat{r}_2$ at $t = 2$

  } ex post efficient

- If other depositors run (and I am patient), my choices are:
  - run: receive r_1 if I arrive early; otherwise receive $\hat{r}_2$ in resolution
  - wait: receive $\hat{r}_2$ for certain $\Rightarrow$ bank is fragile if $r_1 \geq \hat{r}_2$

Q: How does a better outside option affect r_1 relative to $\hat{r}_2$?

$$\frac{r_1}{\hat{r}_2} = \frac{r_1}{r_2}\,\frac{r_2}{\hat{r}_2}$$

liquidity provision — loss in resolution

- Results:
  - if $u(\cdot)$ is CRRA, then r_1 and r_2 increase *in proportion*
    - liquidity provision is *unchanged*
  - if bankers take dividends at $t = 0$, $\frac{r_2}{\hat{r}_2}$ is unchanged — indirect effect is absent
  - if bankers take dividends at $t = 2$ (if no run), $\frac{r_2}{\hat{r}_2}$ increases — indirect effect is reversed

- These results follow Xiao (2023)
  - "Revisiting Banking Competition and Fragility: a 'Too Big to Save' Perspective"

Q: Why does the paper give a different prediction?

- In the paper, depositors do not value liquidity (at the margin)
  - implicitly: depositors value the option to withdraw 1 in early period
    - but do not value (at all) the ability to withdraw more than 1
- A "better deal" for depositors means $r_2 \uparrow$ (and r_1 unchanged)
  - so liquidity provision *decreases* ⇒ fragility decreases (the indirect effect)
- In the alternative model, liquidity *is* valuable to depositors
  - when they get a better deal, liquidity provision is *unchanged* (CRRA case)
  - effect on fragility comes only through bank profit/capital

Q: Which model is a better guide for policy?

- Approach in the paper seems quite special
  - which clearly helps with tractability, transparency, but …
- Can a value for liquidity be incorporated into this model?
  - while still determining the probability q^* of a run?
  - there is Goldstein-Pauzner (2005), but … it is messy
  - is there a global-games version of the alternative model I described?
  - or perhaps follow the approach in Mitkov (2023) "Private Sunspots in Games of Coordinated Attack"?
- I don't know what approach would be best …
  - but it seems worth giving some serious thought

My discussion

1. Liquidity and the deposit contract
2. What do depositors run into?
3. Idiosyncratic vs. systemic runs

2. What do depositors run into?

- In the model (w/o CBDC), withdrawing depositors hold *currency*
- In practice, what do depositors run into?
  - idiosyncratic run → other banks (I'll come back to this)
  - systemic run → anything they can find
    - foreign currencies/foreign banks, real estate, other durables, bitcoin, etc.
- Effect: exchange rate ↓, asset prices ↑ ⇒ creates other problems
- A run into CBDC may be less costly
  - no pressure on exchange rate, asset prices; Brunnermeier-Niepelt neutrality
- If these other options & costs could be captured in the model:
  - perhaps a CBDC would be desirable even if it increases fragility …
  - … because it makes a run *less costly*

My discussion

1. Liquidity and the deposit contract
2. What do depositors run into?
3. Idiosyncratic vs. systemic runs

3. Idiosyncratic runs

- Model is about systemic runs into currency (I think)
  - idiosyncratic runs into other banks seem quite different
  - but … might the same effects be relevant?
- Imagine a setting with large and small banks
  - large banks have strong market power, offer low (r_1, r_2)
  - small banks have less market power; only available to some depositors
  - runs occur only on small banks (into large banks)
- Suppose CBDC serves as an outside option to large banks
  - in the spirit of Chiu et al. (2023) ⇒ large banks offer a better deal
- Then depositors in small banks have a better outside option …
  - in times of stress (direct effect)
  - and in normal times (indirect effect)

Can we apply the model to this case as well?

Bottom line

- An interesting paper on a (clearly) important topic
- I want to think more about the underlying source of liquidity demand
  - and how it varies with depositors' outside option
- The extensions of the model are interesting
  - there might be even more the authors can do