Discussion of:

*High Interest Rates: The Golden Rule for Bank Stability in the Diamond-Dybvig Model*

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The views expressed herein are my own and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System.
What I am not talking about

• Debt, deficits and inflation dynamics

• The existence of equilibrium in non-Euclidean commodity spaces

• Any of the papers from yesterday

• The price of Italian government bonds

• The price of tea in China
The issue

Q: How costly would it be to ensure financial stability?

– currently being asked in a variety of contexts

• Paper addresses this question in a Diamond-Dybvig environment

The methodology

- Find the constrained efficient allocation
  \[
  \max E [U] \\
  \text{subject to } \text{resource constraints} \\
  \text{sequential service}
  \]

- Depositors decide when to withdraw before observing place in order
  \( \Rightarrow \) only one IC constraint

- Paper solves this problem for CRRA preferences
  - allows a novel form of correlation in types
Solution looks something like:

- $c_1$ adjusts as bank learns level of withdrawal demand
Financial fragility

- This allocation can be implemented by a direct mechanism
  - give each depositor a choice of withdrawing early or late
  - resembles some financial arrangements observed in reality

- There may be other equilibria
  - some depositors “run”; withdraw early when patient

⇒ Diamond-Dybvig theory of financial fragility

- Assume this is the case ...
Ensuring stability

- One way of measuring the welfare cost of fragility:
  \[ \text{prob}(\text{run}) \cdot (E[U (\text{no run})] - E[U (\text{run})]) \]

- The approach here: make sure no run occurs
  - a type of robust control approach
  - impose another constraint on the planning problem
    \[ E[u (c_2) | \text{others run}] \geq E[u (c_1) | \text{others run}] \quad \text{(RP)} \]
    - make the arrangement “run proof” (Cooper and Ross, 1998)

- Solve this new problem
  - how much does the RP constraint lower welfare?
What is the best way to satisfy (RP)?

- Need \( E[u(c_2)|\text{others run}] \geq E[u(c_1)|\text{others run}] \)
  \( \Rightarrow \) only involves a small subset of possible paths
• Suppose # impatient depositors = 3 with high probability
  – some nodes have low prob. (if no run), but are relevant in a run

• Set $c_1$ very low at these nodes
  – conserves resources during a run ($E[u(c_1)] \downarrow, E[u(c_2)] \uparrow$)
  – paper interprets this as a higher interest rate
  – Since these nodes are visited with low probability (with no run), ex ante cost is small

⇒ Similar to Diamond & Dybvig’s “suspension of convertibility”

• If all nodes are somewhat likely, however, distortion is more costly
Main results

• Existing literature focuses on whether or not run equilibria exist
  – in some examples, cost of eliminating the run equilibrium is small

• Paper shows (by example) that the cost of eliminating run equilibria:
  – tends to be small when types are independent
  – can be large when types are correlated

• Also introduces a third type of depositor (patient embezzler)
  – can make runs more costly to eliminate
Comments
Commitment

- Notice the important role of commitment

  (i) bank solves an optimization problem including RP constraint

  (ii) depositors decide when to withdraw

  (iii) depositors arrive one-by-one; bank makes payments

- At (iii), the RP constraint is no longer relevant

- Would the bank (or govt/central bank) continue to follow the original plan?
  - or would they re-optimize?
• Example: \# impatient depositors = 3 with high probability
  – to satisfy RP, set $c_1$ low after 3 early withdrawals

• Suppose a 4th depositor wants to withdraw early
  – due to either an unusual realization or a run
  – contract calls for $c_1$ to be low at this node...
    ... but that is inefficient (ex post)

• If bank/govt reoptimizes (sets $c_1$ higher here), undermines the run-proof incentives
  – with limited commitment, costs associated with runs may be much higher
Conclusion

• How costly are reforms that would ensure financial stability?
  – in some models, the answer is small/zero cost

• Might want to know: under what conditions is this cost large?

• This paper gives one answer
  – in the process, provides a nice algorithm for solving the Peck-Shell model with a binding IC constraint

• I would encourage authors (and others) to think about environments with limited commitment