Discussion of:

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

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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
  - follows Wallace (1988), Green-Lin (2003), Peck-Shell (2003)

The methodology

- Find the constrained efficient allocation

$$\max\ E[U]$$

subject to

resource constraints

sequential service

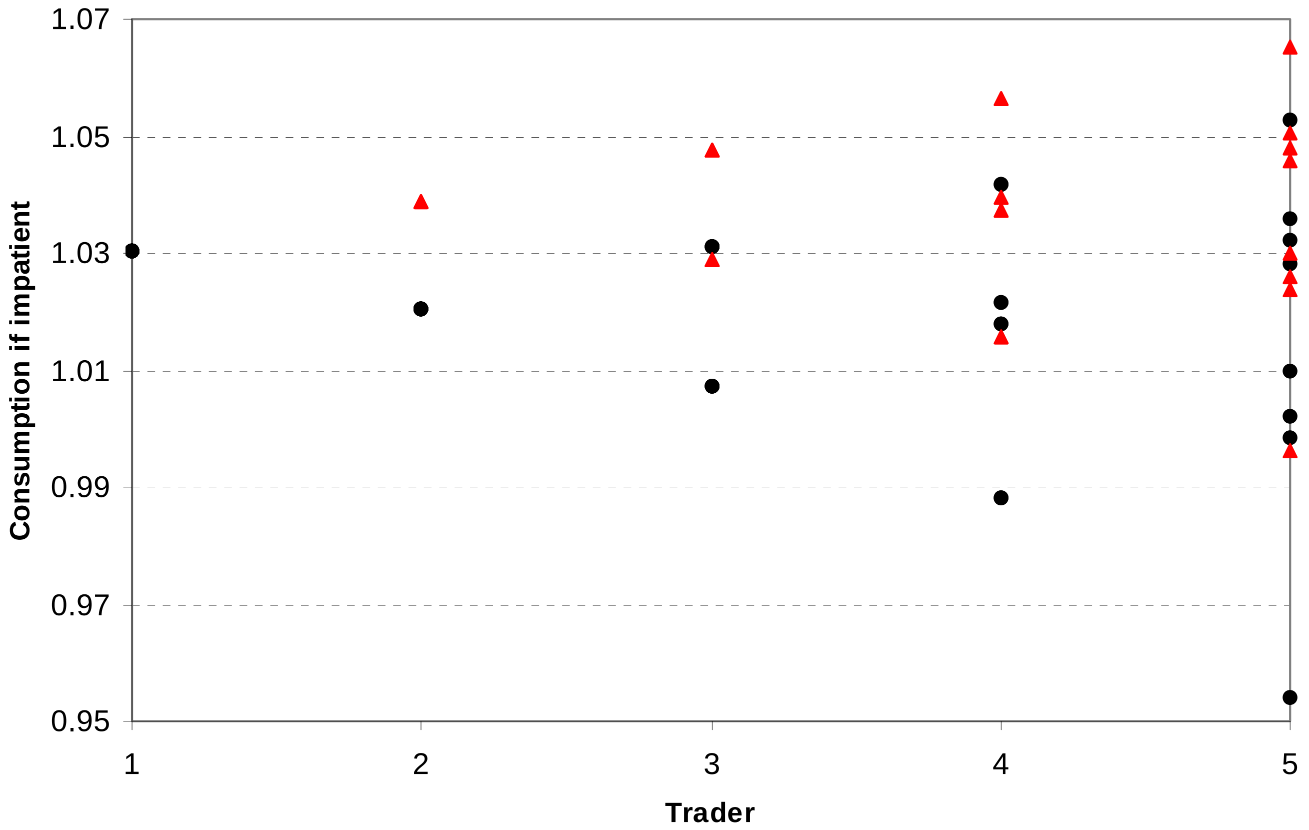
$$E[u(c_2)\,|\text{others do not run}] \geq E[u(c_1)\,|\text{others do not run}] \qquad \text{(IC)}$$

- 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

  $\Rightarrow$ Diamond-Dybvig theory of financial fragility

- Assume this is the case ...

Ensuring stability

- One way of measuring the welfare cost of fragility:

$$prob(\text{run}) \cdot (E[U(\text{no run})] - E[U(\text{run})])$$

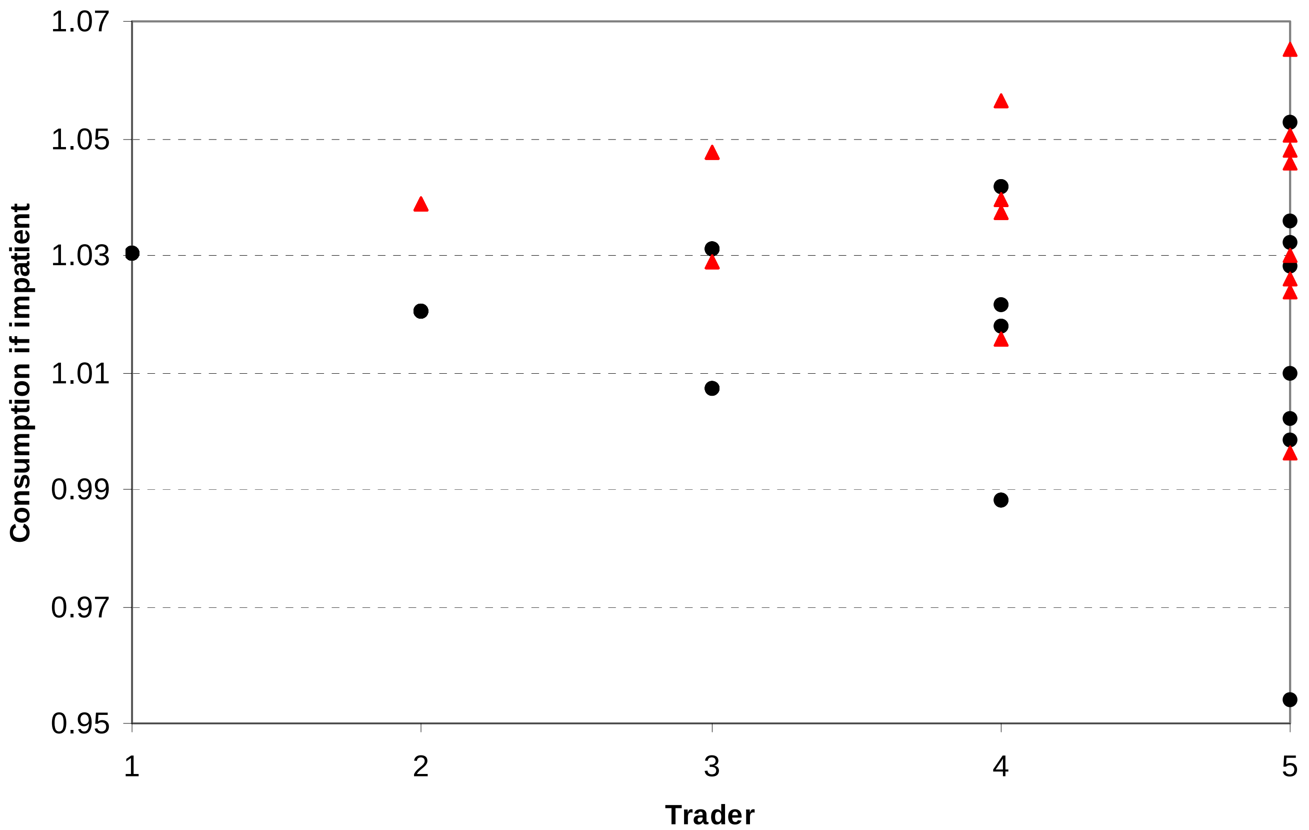
- The approach here: make sure no run occurs
  - a type of robust control approach
  - impose another constraint on the planning problem

$$E[u(c_2)\,|\text{others run}] \geq E[u(c_1)\,|\text{others run}] \qquad \text{(RP)}$$

  - 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 $E\left[u\left(c_2\right)|\text{others run}\right] \geq E\left[u\left(c_1\right)|\text{others run}\right]$

  $\Rightarrow$ 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

$\Rightarrow$ Similar to Diamond & Dybvig's "suspension of convertibility"

- If all nodes are somewhat likely, however, distortion is more costly

Main results

- Existing literature focuses of 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
  - Ennis and Keister (2009, 2010) on "The Perils of Intervention"
  - 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