Discussion of "Illiquidity in the Interbank Payment System following Wide-Scale Disruptions" by Bech and Garratt

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[1]The views expressed in this discussion do not necessarily reflect the views of the Federal Reserve Bank of Richmond or the Federal Reserve System.

The Question

- Effect of temporary communication disruptions on interbank payment systems
- Motivated by operational problems
  - 9-11
  - August 2003 blackouts
- Not so much by financial problems
  - e.g. Is a bank failing?

Outline

- Review the basic model
- Discuss coordination of payments
- Discuss issues not addressed

Key Features

- Two periods - morning and afternoon
- *n* banks - 0 balance
- Each needs to make a payment to every other bank
  - all payments equal
- Each bank pays **all** in morning or afternoon
- Delay costs *D*
- Each overdraft costs *F*
  - Overdraw **if** bank makes more payments than it receives
- **Disruption** - Fraction of banks unable to play **morning**.

The Coordination Problem (No Disruption)

- When $D \leq F$, two Nash equilibria
  - If others play morning, you play morning
  - If others play afternoon, you play afternoon

- morning equilibria
  - **Good** - No delay, no overdraft

- afternoon equilibria
  - **Bad** - Delay costs, still no overdrafts

Disruption

- Fraction of banks **must** play afternoon
- Can get overdraft if some banks disrupted
- Non-disrupted banks may want to delay to prevent overdrafts.

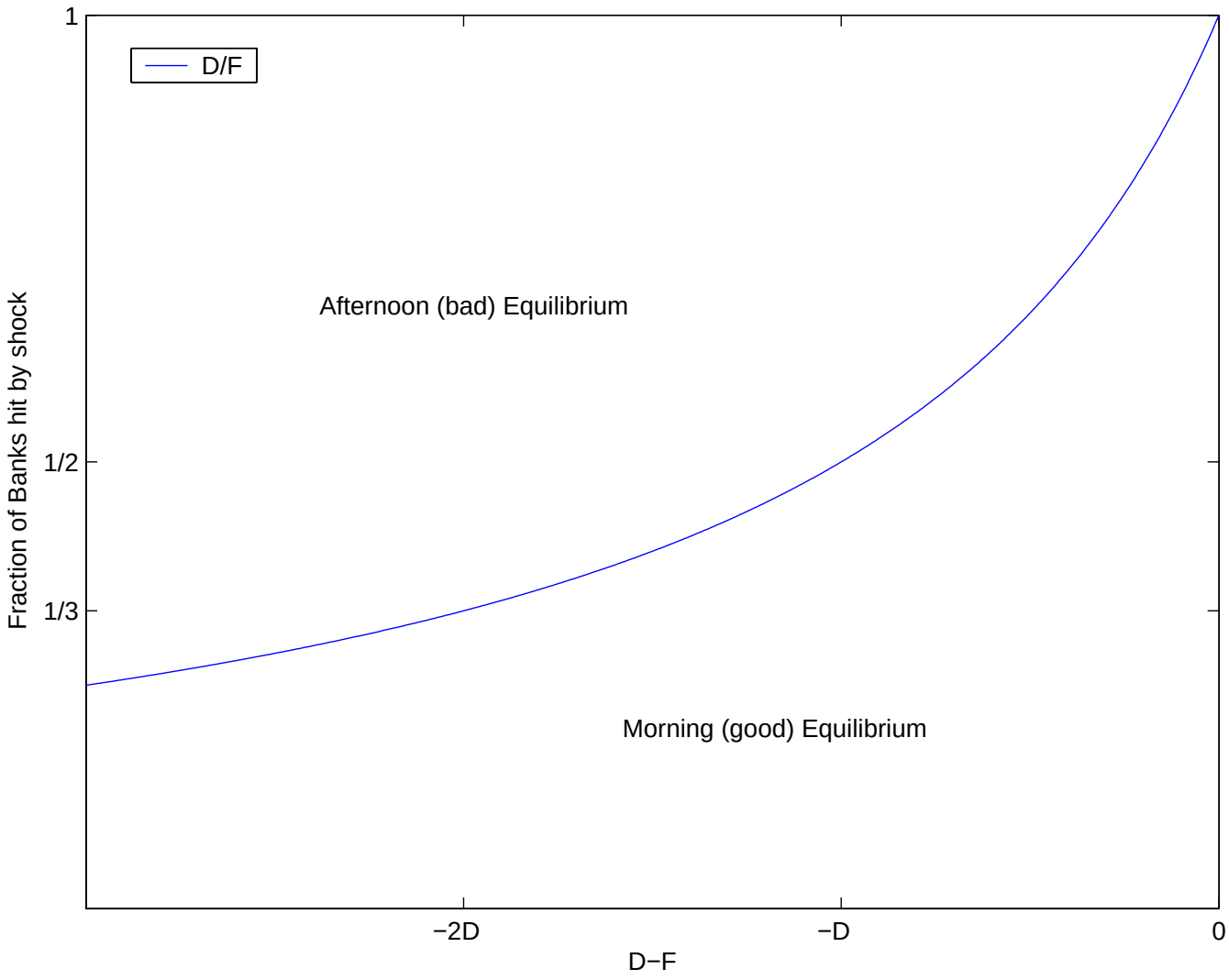
The Disruption Experiment

1. Start at morning equilibrium - standard conditions
2. Disruption - Fraction of banks can't send in morning
3. Next day disruption over
4. Which equilibrium will economy converge to?

Equilibrium Selection in response to a disruption

- Use adjustment process to select equilibrium.
- Game has special characteristics - easy to analyze
- Selection depends on D, F, and size of disruption
- Results intuitive: Afternoon equilibrium more likely as
  - more banks are disrupted
  - the bigger F is relative to D
- Policy implications
  - Lower F
  - Literally, cheap intraday credit
  - More generally, cheaper liquidity
  - Fed order early payment (help coordinate on equilibrium)

Comparative Statics for $F \leq D$



Extends Results to Heterogeneous Banks

- Make one bank larger than others
- Run more payments through large bank
- Similar analysis and logic
  - Now also matters if large bank disrupted
  - **Network structure** of payments - Very interesting
- Still want to lower F, Fed recommend morning strategy
- Might want to keep large bank operating
  - Payments based TBTF

What is Not Addressed?

1. Repeated interactions between banks
   - Will effect coordination.

2. Uncertainty about bank solvency
   - Both banks and Fed need to worry about
     - **Banks** - effect strategy
     - **Fed** - credit risk

No Real Risk in this Model

- Policy implication
  - Free intraday credit ($F = 0$)
- Unambiguously good in this model because
  - All banks can settle in afternoon
  - No risk to Central Bank

Risks Not in Model

- Payment flows are random
  - Can cause *intraday* overdrafts without disruption or insolvency
- Payments are not sent because of
  1. short-term infeasibility (this paper)
  2. insolvency
- What if operational shock occurs under **bad** banking conditions?
- What about delays in payments because of insolvency fears?

Central Bank Credit

- **Model** - set $F = 0$
- But may want $F > 0$ to control risk to central bank
- Central bank credit
  - Need to worry about uncertainty, moral hazard
- Other tools
  - Reserves Policy (balances, interest on reserves (Lacker (2004))
  - Bank supervision

Coordination and Credit Risk

- Would like to see both together.
- **Conjecture**: Would make the good coordination harder.
  - Don't want bad bank to owe you money, so hold payments.
- Pushing to good equilibrium might require Fed to extend lots of credit.
- In general, not sure that coordination can be separated from central bank credit policy

Summary

- Payment disruptions - important topic
- This is a good careful analysis of the coordination aspect to it.
- Look forward to incorporation with credit risk concerns.