Debt Runs and the Value of Liquidity Reserves

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Research Questions

- Motivation: BIS Liquidity Coverage Ratio
- Research goal: study influence of portfolio liquidity composition on run behavior of creditors of banks and broker-dealers
- Stylized facts about modern-day bank runs:
  - Not so much about demand deposit runs than about wholesale term funding runs (Northern Rock, Lehman, Bear)
  - Not overnight, but prolonged over multiple weeks
  - Preceded by declines in liquid asset reserves
  - Might not be fatal to a bank
What I Do

- Continuous time partial equilibrium model
- One financial firm holding a portfolio consisting of:
  - Illiquid assets (GBM cashflow dynamics and liquidation cost)
  - Cash
- Liability side of the firm consists of a continuum of creditors:
  - Each debt contract expires with some fixed Poisson intensity;
  - Debt interest rate > creditors’ discount rate
- Imperfect capital markets: no outside debt or equity financing.
- Solution concept: symmetric cutoff Markov perfect equilibrium
- Key externality: running creditors do not internalize the cost of their action on remaining creditors
Liquidity vs. Solvency Boundary vs. LCR Requirement

Model Threshold

$\Delta = 0.5$ months

$\Delta = 1$ months

$\Delta = 3$ months
Extending Bank Liabilities’ Duration?

![Graph showing the relationship between Solvency Ratio (Asset/Debt) and Liquidity Ratio for different values of lambda (0.25, 1, 4).]
Par CDS Spreads

Credit Spreads (bps p.a.)

Solvency Ratio - maturity: 5yrs

Liquidity Ratio - maturity: 5yrs

liquidity ratio=0.1
liquidity ratio=0.2
liquidity ratio=0.3

solvency ratio: 1.75
solvency ratio: 2
solvency ratio: 2.25
Bear and Lehman CDS Pre-Default

![Graphs showing Bear Stearns and Lehman Brothers CDS premiums over time.](image)
Conclusion

- Quantitative model taken to the data;
- Novel role for cash in corporate finance, as run deterrent;
- Link established between liquidity, solvency and runs;
- Current liquidity regulations are too conservative for certain firms, and not conservative enough for others;
- Longer term debt does not always reduce creditor run propensity;
- Default mechanism different from traditional “Leland” literature.