The Dark Side of Bank Wholesale Funding

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Bank Funding

• **Retail deposits**
  - Small, Insured, Passive → Stable long-term funding
  - Limited supply → Unused investment opportunities

• **Short-term wholesale funding**
  - **Large arm’s length deposits**
  - **Source:** other fin institutions, non-fin corps, state/local authorities, foreign entities, money market mutual funds...
  - **Instruments:** Large denomination CD, Repo, Interbank deposits, Fed Funds, Commercial paper...
  - **Terms of Contract:** Need to be rolled over frequently
  - “**Bright Side**”
    - Fully exploit investment opportunities
    - Market discipline (Calomiris & Kahn 1991)
    - Low liquidity risks (Goodfriend & King, 1998)
Wholesale funds in past bank failures

1. Northern Rock
   – U.S. mortgage crisis
   – Wholesale financiers refused to refinance
   – *Then* retail deposit run started

2. IndyMac
   – Run by large brokered deposits after Sen. Schumer’s letters were publicized

3. Washington Mutual
   – Accordingly to OTS, massive withdrawal of $16.5bn by large depositors in 2 weeks prior to collapse
Wholesale funds in past bank failures

- **Run and escape unscathed**
  - **Effective seniority**
    (withdraw *ahead* of passive depositors)
  - Historically, large uninsured deposits exit while small insured deposits stay prior to failures (Marino and Bennett, 1999; Billett, Garkfinkel and O’Neal, 1998)
  - Government liquidity support also helps exits
  - Dry up liquidity pool and retail deposit run starts

- **Act on public, noisy information**
  - Cheap but *noisy*
  - Both “correct” and “incorrect” liquidations
Our model

- **Model “bright” and “dark” sides of wholesale funding**
  - Calomiris-Kahn (1991) benchmark
  - Introduce a noisy public signal
    - Secondary market prices, credit ratings, housing market indicators…
  - Obtain opposite results under some conditions: effective seniority leads to less monitoring and more liquidation
  - Banks with arm’s length assets are more vulnerable than traditional banks with relationship loans

- **Decisions analyzed in the model**
  - Wholesale financiers: When to Monitor? When to Liquidate?
  - Banks: Why use risky wholesale funds?
  - Regulators: Balancing monitoring and risks?
A bank with a long-term investment project

0: Investment 1

1: Liquidation value $L$ small: $L < 1$ and $L < pW$

Seniority $s \in [0;1]$: wholesale receive $sL$

2: Payoff $X$ w.p. $p$ or 0 w.p. $1 - p$ $pX > 1$

Funding

- Deposits: $D < 1$ (long-term: stay until $t=2$)
- Wholesale: $W = 1 - D$ (short-term: roll over at $t=1$)
Information of wholesale financiers

1. Monitoring
   - Invest $C(m)$, correct signal w.p. $m$, no signal otherwise
   - “good”: roll over, “bad”: liquidate, no signal: roll over

   ➢ Calomiris-Kahn (1991) benchmark
     1. Objective: maximize $m$
     2. Solution: set $s = 1$
Information of wholesale financiers

1. Monitoring
   – Invest $C(m)$, correct signal w.p. $m$, no signal otherwise
   – “good”: roll over, “bad”: liquidate, no signal: roll over

2. Costless noisy signal
   – When monitoring produced no signal
   – Provides *some* information
Costless, Noisy Signal

• Public signal
  • market prices of securitized loans, credit ratings, performance of other similar banks…

• Precision $\theta \in [0;1]$
  • Relevance depends on asset types
    • Real Estate Loans: relevant information from MBS prices
    • Small Business Loans: no similarly informative signal

• Can turn out to be correct or incorrect, e.g.
  • Northern Rock didn’t have subprime exposures
  • Senator Schumer’s letter contained “incomplete or erroneous information” according to OCC
**When to liquidate based on a negative signal?**

- **Without a noisy signal:** Never want to liquidate randomly
  \[ p \cdot WR > sL \]

- **Liquidate based on a negative noisy signal **IF**
  \[ (p-\theta p) \cdot WR < sL \]

- **Can be socially sub-optimal:** Signal too imprecise
  \[ (p-\theta p) \cdot X > L \]

- Incentive to monitor decreases in Seniority \( s \)
Effects of Seniority on Monitoring Efforts

CK: No noisy public signal

- $m^*$ at $s = 1$

With noisy public signal

- $s^* < 1$
Risk of ‘Noisy’ Liquidations: Cross-Sectional Predictions

- Wholesale funds less likely to monitor when
  - Precision of the public signal $\theta$ (+)
  - Liquidation value $L$ (+)

- Cross-Sectional predictions
  - Most vulnerable: Originate-and-Distribute banks holding mainly arm’s length assets (high $\theta$ and high $L$)
  - Least vulnerable: traditional banks holding mainly small business loans (low $\theta$ and low $L$)
Incentives of Banks

- Short-term wholesale funds are risky (noisy liquidations)
- Why do banks use short-term wholesale funds and let them become effectively senior?
  - Senior short-term wholesale funds provide interest rate savings
    \[ = (1-p)(s-s^*)L(D+W) \]
  - Limited liability \( \Rightarrow \) Liquidity risks are not fully internalized by banks
Policy Solution

- Risk-sensitive deposit insurance premium
  \[ T = (1-p) \max\{(s-s^*);0\}L (D+W) \]

- Higher deposit insurance premium for
  - Use of shorter maturity wholesale funds
  - Banks with arm’s length assets, because:
    - More relevant public signals (higher \( \theta \))
    - More liquid (higher \( L \))
    - Optimal Seniority (\( s^* \)) is lower
  - Lower premium for traditional banks

- Premium charged based on all short-term liabilities (\( D+W \)), not just retail deposits (\( D \))
Summary

- Benefits vs. risks of wholesale funding

- ‘Bright side’: traditional relationship banks
- ‘Dark side’: ‘modern’ banks (arm’s length & tradable assets)
  - Limited monitoring
  - Runs triggered by noisy public information
  - Banks over-use wholesale funding

- Consistent with recent events