The Dark Side of Bank Wholesale Funding

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Introduction
Bank Funding

• **Retail deposits**
  – Insured, passive \(\rightarrow\) Effectively long-term
  – Limited supply \(\rightarrow\) Unused investment opportunities

• **Short-term wholesale funds**
  – Rolled over frequently
  – Other fin institutions, non-fin corps, state/local authorities, foreign entities, money market mutual funds...
  – Repo’s, Interbank deposits, Fed Funds, large denomination CDs, commercial papers...
Short-Term Wholesale Funds

• **“Bright side”**
  - Fully exploit investment opportunities
  - Market discipline (Calomiris, 1999)
  - Reduced liquidity risks (Goodfriend & King, 1998)

• **“Dark side”**
  - Aggressive lending + compromised credit quality
  - Limited market discipline
  - Sudden stops + inefficient liquidations

• **Reconcile?**
Wholesale funds in past bank failures

- Act on publicly-available information
- Run and escape unscathed

- Continental Illinois
- Northern Rock
- Bear Stearns
Wholesale funds in past bank failures

1. **Continental Illinois**
   - Exposure to energy sector and Penn Square
   - Wholesale depositors withdrew
   - The Fed kept lending to prop up the bank
   - Wholesale depositors did not experience loss or delay
   - Retail depositors (and ultimately FDIC) held the bag

2. **Northern Rock**

3. **Bear Stearns**
Wholesale funds in past bank failures

1. **Continental Illinois**

2. **Northern Rock**
   - U.S. subprime mortgage crisis
   - Wholesale financiers refuse to renew funding
   - After a while, NR had to turn to BoE for assistance
     - Did not stop exit by wholesale funds
   - *Then* retail deposit run finally started
   - *Short-term* wholesale investors did not lose a penny

3. **Bear Stearns**
Wholesale funds in past bank failures

1. Continental Illinois
2. Northern Rock
3. Bear Stearns
   - Worries about CDO market and Bear Stearns’ solvency
   - Secured lenders (~$32 billion) refused to continue funding
   - Liquidity pool (~18 billion) sold off to fund their exits
   - Long-term securities (~$80 billion) and customer funds (net ~ $60 billion) bailed out by JP Morgan and the Fed
   - Note: customer funds are insured by SIPC up to $500,000
Wholesale funds in past bank failures

1. Continental Illinois
2. Northern Rock
3. Bear Stearns

- Act on publicly-available information
  - Cheap but noisy
  - Both “correct” and “incorrect” liquidations
- Run and escape unscathed
  - Effective seniority due to first-come first-served
  - Central bank support also helps finance exit
This paper

• “Bright side” vs. “Dark side” of wholesale funding
  Informed vs. Uninformed

  ➢ Incentives to become informed
  ➢ Incentives to liquidate when uninformed
  ➢ Contracting: optimal seniority of short-term wholesale funds

• Incentives of banks to use short-term wholesale funds
• **Benchmark: Calomiris and Kahn (1991)**
  – Sophisticated funding beneficial: can monitor & liquidate bad
  – Seniority maximizes monitoring (allows to internalize benefits)

• **“Bright side”**

• **Add: A costless noisy (public) signal on bank quality**
  – Lower incentives to monitor
  – Excess incentives to liquidate: based on too noisy information
  – Particularly when senior

• **“Dark side”**
The Model
**Setup**

- **A bank with a long-term investment project**
  - t=0: investment size 1
  - t=1: liq value $L$ small: $L < 1$ and $L < pW$
  - t=2: $X$ w.p. $p$ or 0 w.p. $1 - p$ $pX > 1$

- **Funding**
  - Deposits: $D < 1$ (long-term: stay until t=2)
  - Wholesale funds: $W = 1 - D$ (short-term: roll over at t=1)
  - Seniority in liquidation $s \in [0;1]$: wholesale receive $sL$
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 $s = 1$
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

- Precision $\theta \in [0;1]$

- Publicly available information
  - e.g., Sector-wide or Market-wide news

- Relevance: can depend on asset types
  - Mortgages: relevant information from MBS prices
  - Small business loans: no similarly informative signal

- Correct or Incorrect
  - Energy prices and Continental Illinois
  - US subprime mortgages and Northern Rock
Liquidations based on a Noisy Signal

• Without a noisy signal: Uninformed liquidations never optimal
  \[ p \cdot WR > sL \]

• A noisy “Bad” signal: wholesale financiers may choose to liquidate when:
  \[ (p-\theta p) \cdot WR < sL \]

• May be socially suboptimal (signal precise but not so precise)
  \[ (p-\theta p) \cdot X > L \]

• What makes liquidations more appealing? \( \rightarrow \) Higher seniority!
Effects of Seniority

Benchmark: No noisy signal
- Higher liquidation payoff $sL$
- Higher incentives to monitor
- $m^*$ achieved in $s = 1$

With noisy signal
- Also: Higher incentives to liquidate
- More liquidations $\rightarrow$ less monitoring
- $m$ maximized for $s < 1$

![Graph showing the comparison between Benchmark and With noisy signal](image)
Optimal Seniority for S-T Wholesale Funds

$$s^* = \frac{(1-\theta)pWR}{L}$$

... lower for

Risk of “Noisy” Liquidations

$$(1-\theta)pWR < sL$$

... higher for

- **Opaque & illiquid assets:**
  *High* seniority encourages production of information (CK)

- **Liquid assets & relevant public information (e.g. mortgage banks with MBS):**
  *Lower* seniority encourages private information production and avoids inefficient liquidations

- Consistent with recent events
Summary
Main Results

• A small change to Calomiris and Kahn (1991)
  – Costless but noisy public signal
  – New predictions on optimal seniority

• High seniority of short-term wholesale funds may reduce monitoring, encourage inefficient liquidations

• Optimal seniority depends on:
  – Funding structure (e.g. share of deposits / long-term funds)
  – Precision of public signals on project quality (depends on assets)
  – Liquidation value of assets (liquidity buffers / tradeable)
  – Interest rates paid to wholesale financiers

• “Dark side” of wholesale funding consistent with recent events
Incentives of Banks

• **Main analysis**
  – Exogenous funding structure
  – Socially optimal seniority

1. Banks choose funding structure
2. Seniority determined by:
  – Sequential service, collateralization, suspension clauses
  – Official resolution procedures

• **Can banks’ choices differ from socially optimal?**
  – Yes, when long-term funding is insured or CB bailout likely
    ➢ Too high seniority for wholesale funds (cheaper!)
    ➢ Use of uninformed wholesale funds

• **What can regulators do?**
  – Reduce seniority of wholesale funds (??)
  – Restrict use of wholesale funds by banks(??)
Thank you!!