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

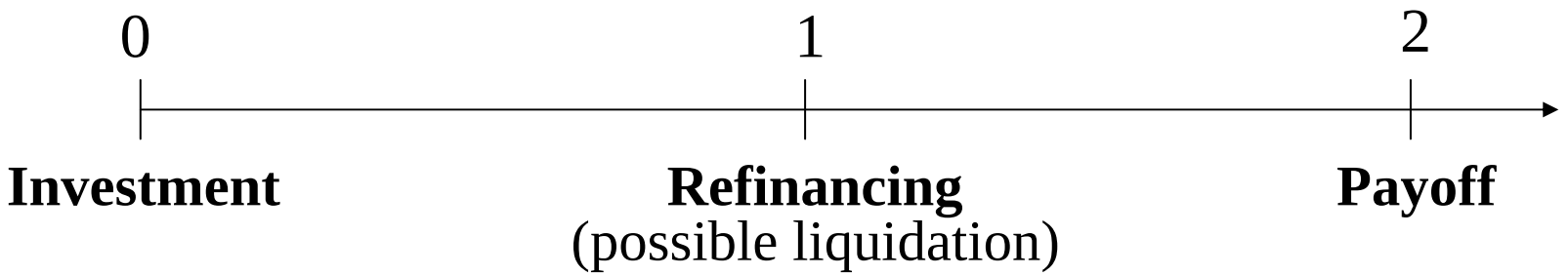
Wholesale funds in past bank failures

- **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

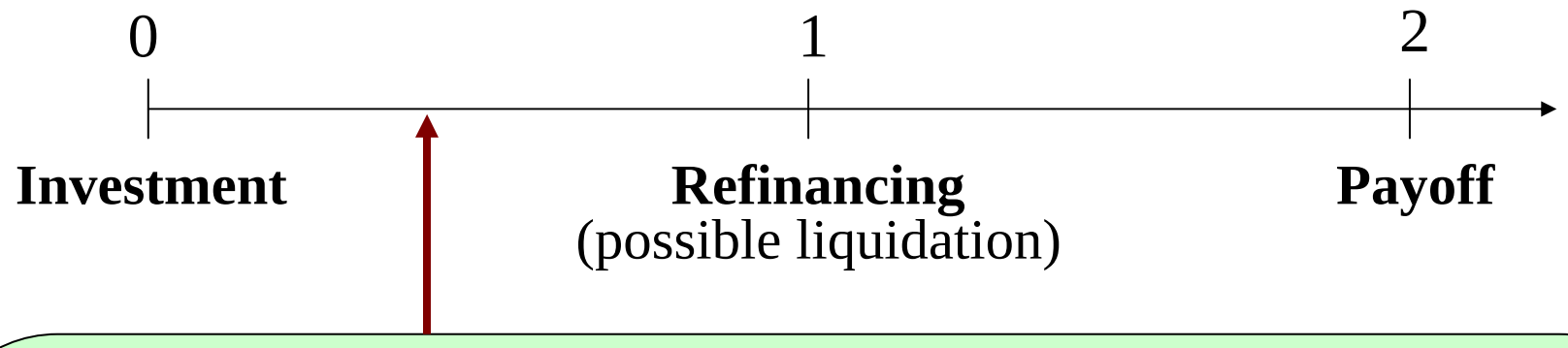
- Model "bright" and "dark" sides of wholesale funding
  - Calomiris-Kahn (1991) benchmark
  - Introduce a noisy public signal
    - Secondary market prices, credit ratings, housing market indicators…
  - Obtain opposite results under some conditions: effective seniority leads to less monitoring and 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?

Setup



- 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)

Setup



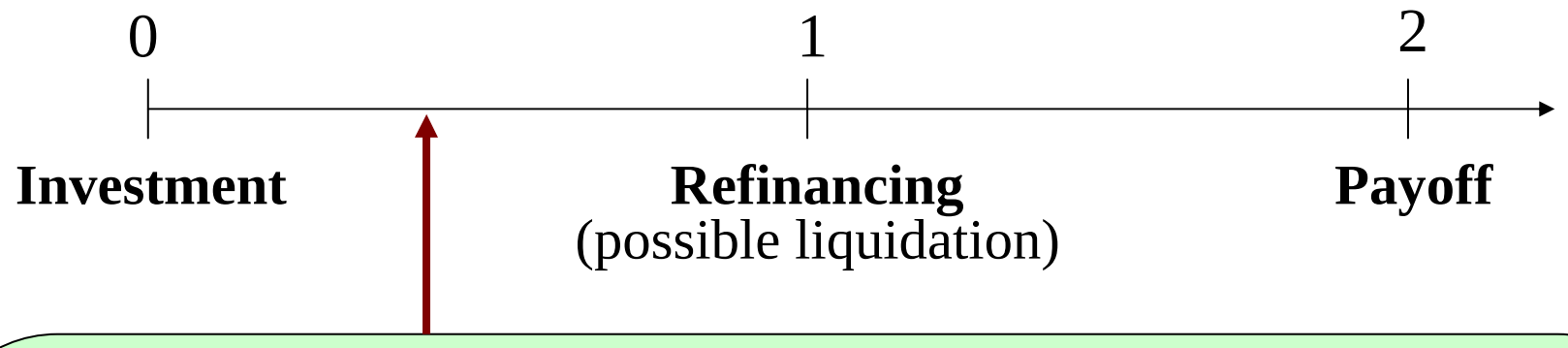
Information of wholesale financiers

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 $s = 1$

Setup: introducing a noisy signal



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**

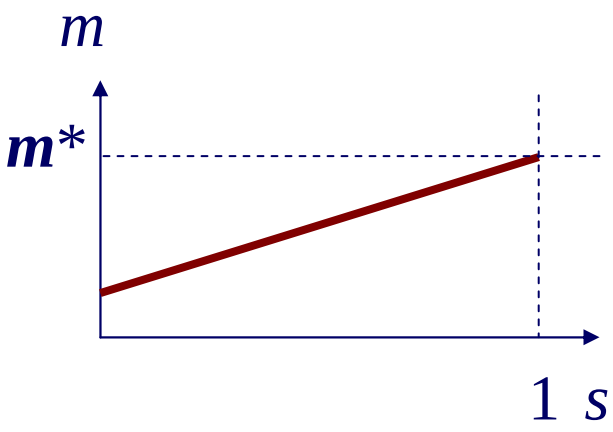
$$(p-\theta p) \cdot X > L$$

➢ **Incentive to monitor decreases in Seniority (s)**

Effects of Seniority on Monitoring Efforts

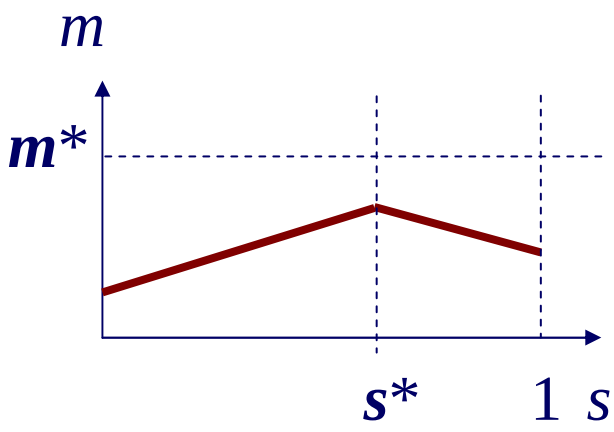
CK: No noisy public signal

- m^* at $s = 1$



With noisy public signal

- $s^* < 1$



No noisy liquidations

Liquidations on a noisy negative signal

Risk of 'Noisy' Liquidations: Cross-Sectional Predictions

- Wholesale funds less likely to monitor when
  - Precision of the public signal θ (+)
  - Liquidation value L (+)
- Cross-Sectional predictions
  - Most vulnerable: Originate-and-Distribute banks holding mainly arm's length assets (**high θ and high L)**
  - Least vulnerable: traditional banks holding mainly small business loans **(low θ 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 → 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 θ)**
    - **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